NC 84
NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel
Construct Four Lane Roadway, Part on New Location
Union County

Federal-Aid Project No. STP-1316(10)
WBS No. 39019.1.1

STIP No. U-3467

Administrative Action

Finding of No Significant Impact

Submitted By

US Department of Transportation
Federal Highway Administration
and
North Carolina Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Submitted Pursuant to 42 USC 4332(2)(c)

4/25/18
Date of Approval

Laura E. Sutton
Laura Sutton, P.E.
Team Lead, Central Project Delivery Team
North Carolina Department of Transportation

4/26/18
Date of Approval

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Division Administrator
Federal Highway Administration

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April 2018

Documentation Prepared By:
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4-24-18
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4/25/18
Date

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Project Commitments

NC 84

NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel

Construct Four Lane Roadway, Part on New Location

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Federal Aid Project No. STP-1316(10)
WBS Element No. 39019.1.1

STIP Project No. U-3467

Current status, changes or additions to the project commitments as shown in the Environmental Assessment are shown in *italics.*

Project Development & Environmental Analysis Unit - Human Environment Section
NCDOT will coordinate with the NC Historic Preservation Office regarding archaeological investigations when a preferred alternative is selected.

This commitment was implemented following the selection of the Preferred Alternative. All identified archaeological sites located within the Area of Potential Effects have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

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

Hydraulics Unit
The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP) to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement *(MOA)* with FMP (dated April 22, 2013, modified February 5, 2015), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

The applicability of the MOA or CLOMR will be determined during final design, with any required submittal occurring after the Final Design Field Inspection.

Division 10
This project involves construction activities on or adjacent to FEMA-regulated streams. Therefore, NCDOT Division 10 shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying the drainage structure(s) and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

The Howard House property located on NC 16 between SR 1316 (Rea Road) and SR 1318 (Lochaven Road) is eligible for the National Register of Historic Places. Construction fencing shall be erected at the

back of the ditch line adjacent to Howard House during construction. No work shall take place in, and no utilities shall encroach into, the historic boundary.

The potential effect of the Preferred Alternative on historic architectural resources was evaluated in accordance with Section 106 of the Historic Preservation Act at a meeting on March 20, 2018, with the NC Historic Preservation Office finding the project would have No Adverse Effect to Howard House with the above conditions.

The Jacob Allen Deal Farm property located on NC 84 (Weddington Road) between SR 3675 (Lake Forest Drive) and SR 1341 (Twelve Mile Creek Road) is eligible for the National Register of Historic Places. A 25-foot buffer shall be maintained from the historic boundary, delineated by construction fencing erected at the back of the ditch line. The fencing shall extend 500 feet from each access drive, or to the property boundary, whichever is closer.

The potential effect of the Preferred Alternative on historic architectural resources was evaluated in accordance with Section 106 of the Historic Preservation Act at a meeting on March 20, 2018, with the NC Historic Preservation Office finding the project would have No Adverse Effect to Jacob Allen Deal Farm with the above conditions.

The Union County Historic Preservation Commission designated Siler Presbyterian Church and the 5.06-acre parcel it is located on at the intersection of NC 84 and Waxhaw-Indian Trail Road as a local Historic Landmark in February 2018. In accordance with North Carolina General Statute 160A-400.9, the Union County Historic Preservation Commission requires that the property owner obtain a Certificate of Appropriateness prior to alterations to exterior features. NCDOT will coordinate with Siler Presbyterian Church to verify a Certificate of Appropriateness for the proposed project's effects on the property has been obtained from the Union County Historic Preservation Commission prior to construction adjacent to the designated parcel.

Roadway Design Unit and Structures Design Unit
Bicycle safe railing will be provided on the proposed bridge over West Fork Twelvemile Creek.

Division of Bicycle and Pedestrian Transportation and Roadway Design Unit
In accordance with NCDOT Pedestrian Policy, the inclusion of sidewalks as part of the proposed project will be dependent upon a cost-sharing agreement with the Town of Weddington and the Village of Wesley Chapel. Bicycle and pedestrian accommodations will be further coordinated with the Town of Weddington and the Village of Wesley Chapel prior to final project design.

Roadway Design Unit
NCDOT will complete coordination with the Village of Wesley Chapel and Department of Natural and Cultural Resources to satisfy the elements required for the Parks and Recreation Trust Fund (PARTF) conversion of approximately 0.73 of an acre at Dogwood Park prior to construction.

Environmental Analysis Unit
A mussel survey will be conducted for Price Mill Creek. If necessary, findings will be coordinated with the US Fish and Wildlife Service prior to submitting the Section 404 permit application to the US Army Corps of Engineers.

NCDOT will coordinate with the US Army Corps of Engineers and North Carolina Division of Water Resources to verify additional delineations conducted in the extended study area prior to permitting.

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1.0 TYPE OF ACTION

This is a Federal Highway Administration (FHWA) Administrative Action, Finding of No Significant Impact (FONSI).

The FHWA has determined this project will have no significant impact to the human or natural environment. This FONSI is based on the May 28, 2015 Environmental Assessment, incorporated by reference, and subsequent public comment and involvement. The Environmental Assessment (EA) has been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. The EA provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the EA.

2.0 DESCRIPTION OF PROPOSED ACTION

2.1 Project Description

The proposed project is included in the North Carolina Department of Transportation's (NCDOT) approved *2018-2027 State Transportation Improvement Program* (STIP) as Project U-3467. NCDOT is proposing to extend Rea Road (SR 1316) on new location from NC 16 in Weddington to NC 84 (the new location roadway would be signed as NC 84), and widen existing NC 84 to just beyond Waxhaw-Indian Trail Road (SR 1008) in Wesley Chapel. A roundabout is proposed at Hardwood Drive. The proposed project is approximately 4.7 miles long. The project study area is shown on Figure 1 in Appendix A.

The project length noted as approximately 4.3 miles long in the U-3467 EA is updated in this FONSI to approximately 4.7 miles long to reflect the Preferred Alternative.

The project study area shown in the EA is revised to extend approximately 0.44 miles east along NC 84.

The proposed typical section for the relocation and widening of NC 84 consists of four lanes (two in each direction) with a 23-foot raised grass median. A 12-foot inside lane, 14-foot outside lane (to accommodate bicycles) and a ten-foot berm are proposed in each direction. Mountable curb and gutter

Exhibit A. U-3467 Typical Section

is provided on the inside lanes along the median. Curb and gutter along the outside lanes is 2.5 feet wide. The inclusion of sidewalks on both sides of the road is pending a cost-share agreement with local jurisdictions. The Town of Weddington and the Village of Wesley Chapel have expressed an interest in a cost-share arrangement with NCDOT for the inclusion of sidewalks in the proposed project. NCDOT will continue to coordinate with the Town of Weddington and the Village of Wesley Chapel regarding the inclusion of sidewalks as part of the proposed project within their jurisdiction.

The proposed right-of-way width is 150 feet. No control of access is proposed; however, the project is expected to be a median-divided boulevard-type facility utilizing a synchronized street design. While the addition of a median will not eliminate access to any parcels, it will change the way many parcels are accessed to right-in/right-out. The synchronized street design utilizes directional crossovers and U-turn bulb-outs. Left turns movements from NC 84 to most side streets will be provided by directional crossovers. Left turn and through movements from most side streets will be directed east and west of most intersections. The synchronized street design helps alleviate congestion and increase travel capacity. Another major benefit of synchronized streets is safety: Redirecting traffic to avoid high risk movements reduces the number of conflict points, or places in intersections where collisions can occur.

This FONSI adds more descriptive information regarding the project's synchronized street design to the proposed improvements described in Section 4 of the U-3467 EA.

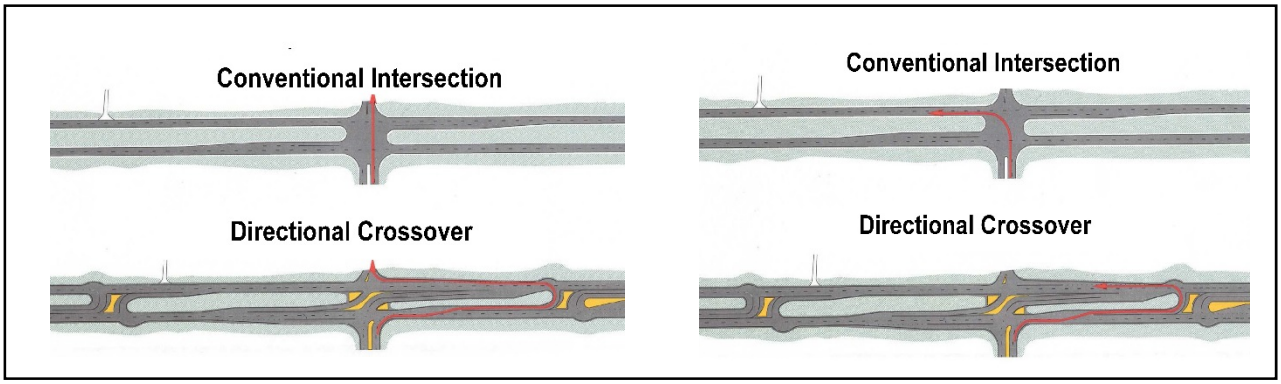

Exhibit B. Conventional Intersection vs. Directional Crossover - Through and Left-turn Movements

The proposed posted speed limit is 45 mph. No interchanges are proposed as part of the project. All existing and proposed intersections will be at-grade.

2.2 Purpose and Need

The purpose of the proposed project is to improve the mobility and connectivity of Weddington Road (NC 84) in the project study area.

This FONSI expands on the details regarding mobility and connectivity presented in the EA. The NEPA / Section 404 Merger Team requested this information be added to the Purpose and Need statement at a meeting on March 15, 2017.

Mobility refers to the movement of people or goods. The measure of performance for evaluating an improvement in mobility along NC 84 in the project area will be level of service (LOS). The proposed project is intended to bring the peak hour operations at study area intersections to an overall LOS D or better.

Connectivity refers to the density of connections in road networks and the directness of links. Improvements to connectivity reduce travel distances and times and provide enhanced route options for travelers and service providers.

Traffic volumes in 2035 are expected to exceed capacity on NC 84 in the project area. In addition, vehicles traveling west on existing NC 84 to Rea Road must follow a longer, indirect route. Currently, westbound traffic on NC 84 must turn left onto NC 16, travel approximately 0.75 mile, and then turn right onto Rea Road (see Figure 1 in Appendix A).

The proposed project is included in the Western Union County Local Area Regional Transportation Plan as NC 84 Relocation (Rea Road Extension). The Plan ranks U-3467 as the No. 1 High Priority Recommended Thoroughfare Plan project.

The proposed project would improve connectivity by providing a more direct link between western Union County and Charlotte/Mecklenburg County. It would provide an alternate route to I-485 and Charlotte, enhancing regional travel options. The proposed project would also provide additional capacity, improving level of service and mobility, on NC 84 in the project area.

2.3 Project Schedule

Based on the 2018-2027 STIP, utility relocation and right-of-way acquisition is scheduled to begin in fiscal year (FY) 2018 and construction is scheduled to begin in FY 2019.

3.0 COMMENTS AND COORDINATION

Agency coordination and public involvement activities during the U-3467 project development process up to the publication of the EA are documented in Chapter 6 of the EA. The following section provides a summary of agency coordination and public involvement activities since the May 2015 EA.

3.1 Circulation of the Environmental Assessment

Copies of the federal EA were distributed to state and federal environmental resource and regulatory agencies and to local governments. The EA and public hearing maps were also made available for download on the project website (www.ncdot.gov/projects/ReaRoad).

3.2 Agency Comments on the Environmental Assessment

Agency comments on the 2015 EA are summarized and responded to below. Copies of the comments are included in Appendix B.

US Environmental Protection Agency (March 13, 2017)

1. "Two new location alternatives were assessed and carried forward for detailed study: Alternative A2 and Alternative C2 were developed to minimize potential jurisdictional stream and wetland impacts to the initial alternatives A and C. Both alternatives have a typical section consisting of a 4-lane roadway with a 23-fiit *[sic]* raised grass median. The NCDOT does not have a preferred alternative noted in the EA; however, alternative A2 appears to have fewer impacts to the natural environment."

   Response: Alternative CA2, a hybrid of Alternatives A2 and C2, was selected as the Preferred Alternative by NCDOT and FHWA in July 2016. The NEPA / Section 404 Merger Team identified Alternative CA2 as the Least Environmentally Damaging Practicable Alternative at their April 12, 2017 meeting.

2. "Three federally-listed species are located within the project study area: *Lasmigona decorata* (Carolina heelsplitter), *Rhus michauxii* (Michaux's sumac), and *Helianthus schweinitzii* (Schweinitz's sunflower). The Biological Conclusion is that the proposed project will have 'no effect'."

   Response: As documented in Section 7.1.4 of this FONSI, the biological conclusion for Carolina heelsplitter is revised to "unresolved". In response to public comments, the Preferred Alternative preliminary design was modified to include a roundabout at NC 84 and Hardwood Drive and the eastern end of the project study area was expanded as a result. Price Mill Creek is included in the revised project study area. While the Preferred Alternative will not directly impact this stream, an additional mussel survey will be needed to incorporate Price Mill Creek and a final biological conclusion will be rendered per findings. A review of North Carolina Natural Heritage program records, updated October 2017, indicates no known Carolina heelsplitter occurrences within one mile of the study area. Additional investigation regarding the project's potential effects on endangered species will be conducted by NCDOT's Biological Surveys Group. If necessary, findings will be coordinated with the US Fish and Wildlife Service prior to submitting the Section 404 permit application to the US Army Corps of Engineers.

3. "A variety of utility lines will need to be relocated due to the widening. If the impacts from these utility relocations were not included in the table of impacts, the EPA requests that these be accounted for during NCDOT NEPA/404 Merger meetings as well as the Finding of No Significant Impact (FONSI) document."

   Response: As noted in the April 12, 2017 NEPA/Section 404 Merger Packet, it is anticipated impacts associated with the relocation of utilities would occur within the evaluated impact boundary (slope stakes plus 25 feet).

4. "An Indirect and Cumulative Effects Screening was completed in July 2012. Six of the nine categories in the screening matrix (Table 5-11, page 5-31) indicate a moderate to high level of concern for indirect and cumulative effects potential as a consequence of the proposed project. Of most concern is the increase in population growth rate, water and sewer extensions into this part of the county, and the market for development (e.g., commercial and residential development)."

   Response: Comment acknowledged.

5. "With respect to ozone, the project is within the Charlotte-Gastonia-Rock Hill [SC] area, as defined by the EPA. The area was originally designated non-attainment for O3 under the 2008 8-hour ozone standard on July 20, 2012; however, the NC portion of the area was re-designated as maintenance for the standard on July 28, 2015. While NCDOT anticipates that the proposed project will not create any adverse effects on the attainment status of the NAAQS, the proposed speed limit would be posted at 45 mph. With speeds expected to increase, there would also be an expected increase in increased emissions of VOCs and other pollutants that contribute to form ground-level ozone. EPA notes that the section on Mobile Source Air Toxics (MSAT), pages 5-39 to 5-47 does not use the latest FHWA guidance, which represents an update to the 2012 Guidance [see https://www.fhwa.dot.gov/environment/air_quality/ air_toxics/policy_and_guidance/msat/]. As a result, the EPA requests that this newer guidance be used prior to issuing the FONSI.

   Response: Section 7.8 of this FONSI discusses potential air quality impacts for the proposed project using FHWA's October 18, 2016 MSAT guidance titled *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. The current posted speed limit on existing NC 84 is 45 mph

through most of the project area. The proposed posted speed limit is also 45 mph.

6. "The EPA appreciates the opportunity to provide comments on this project and requests a copy of the FONSI when it becomes available. The EPA anticipates continuing to be an active participant in the 404/NEPA Merger process."

   Response: A copy of the completed FONSI for the proposed project will be provided to EPA and other appropriate federal, state, and local agencies.

North Carolina Wildlife Resources Commission (March 31, 2017)

1. "We do concur with plans to replace the three-barrel culvert carrying West Fork Twelvemile Creek with dual bridges. As we indicated at the scoping meeting, West Fork Twelvemile Creek may support protected mussel species, including the Carolina Creekshell (*Villosa vaughaniana*), Federal Species of Concern, and State Endangered, and other State listed species. These vulnerable species were not addressed in the Environmental Assessment."

   Response: The hydraulic structure design proposed to replace the existing three-barrel culvert carrying West Fork Twelvemile Creek under NC 84 has been revised from dual bridges to a single bridge to provide better site distance and accommodate a U-turn bulb. NCDOT does not survey for state-listed species as the state law does not apply to NCDOT activities. However, a freshwater mussel survey was conducted for the project between August 6 and 28, 2013. Three freshwater mussel species were documented during the survey: *Elliptio complanata* (10 live, 5 shells), *Elliptio icterina* (1 shell) and *Villosa delumbis* (1 live). Mussel surveys were again conducted on August 23 and October 6, 2017. One shell of *Elliptio complanata* and *Corbicula fluminea* were observed.

2. "As the EA indicated, the project is in an urbanizing area where growth and infill development are planned for and anticipated by local governments. Population growth is high and several housing developments are either under construction or are being planned in the project area and vicinity. No access control is proposed; however, we agree with the Village of Wesley Chapel Land Use Plan that indicated driveway access onto NC 84 should be limited. We are concerned that with the growth rate, the new access to developable land, and the amount of planned development, access management may be needed to better manage traffic and prolong an acceptable level of service for the roadway so that the need for additional widening can be avoided or delayed."

   Response: No control of access is proposed for U-3467. Developers will be required to submit development plans and traffic volumes to NCDOT in order to be granted access to NC 84 – Rea Road Extension. Any road upgrades needed as a result of a development will be paid for by the developer. Traffic volumes used to determine level of service factor in current zoning. Proposed development plans in the vicinity of the new location section of the project show subdivision roads would also have access to existing NC 84 (Weddington Road) and do not include individual property access to NC 84 – Rea Road Extension.

3. "Indirect and cumulative effects of the proposed project are a significant concern. Increased impervious coverage and habitat fragmentation and loss will negatively impact water quality and area wildlife. Already, 340 of the 845 acres of land available for development in the study area have plans for development. The EA indicated that six of nine screening categories in the indirect land use effects analysis reflect a moderate to high level of concern. We, therefore do not understand the conclusion that 'there is a lower level of concern for indirect and cumulative effects potential as a

result of the proposed project'. Cumulative effects were not discussed at all, but seem to be an important consideration for this project. Cumulative effects should be analyzed and percentage of impervious coverage should be provided for current and future build-out conditions."

Response:
The *Indirect and Cumulative Effects Screening Report* prepared for the proposed project and discussed in the EA considered both indirect and cumulative effects. Six of nine screening categories in the indirect land use effects analysis reflect a low to moderate level of concern for indirect and cumulative effects potential. The relative ratings of factors considered in Section 5.8.1 of the EA (Analysis of Indirect and Cumulative Effects) determined a lower level of concern for indirect and cumulative effects potential as a result of the proposed project and further evaluation was not recommended.

4. "The conversion of the culvert crossing of West Fork Twelvemile Creek to a bridge may provide an important wildlife crossing, reconnecting once fragmented habitat. Steps should be taken to maximize the wildlife use of this connection by maintaining or restoring the natural habitat on either side and under the bridges and along the stream corridor. Use of this crossing by wildlife may reduce or minimize vehicle collisions with wildlife and therefore enhance safety.

   Response: Construction activities associated with the project will strictly follow NCDOT's Best Management Practices for Construction and Maintenance Activities and Protection of Surface Waters. A channel will be restructured through the culvert area that closely matches the existing channel dimensions that are present upstream and downstream. A constructed riffle and other natural stream techniques will be utilized to stabilize the stream bed and banks through the culvert area as well. Additionally, a flat/level area free from obstructions will be developed between the top of bank and bridge abutment on the west side to provide for sufficient wildlife crossing under the bridge.

5. "In developed settings, we recommend strategies that minimize impervious surface and maximize stormwater treatment to protect water quality and aquatic life. We encourage NCDOT and local officials to work together and to use low impact development techniques to maximize the management of storm water quantity and quality in the project area. Information on LID measures can be found at www.lowimpactdevelopment.org, http://www.epa.gov/ owow/nps/lid/lidnatl.pdf and http://www.stormwatercenter.net/. Other important protective measures can be found in the Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality at http://www.ncwildlife.org/portals/0/Conserving/documents/2002_GuidanceMemorandumforSecondaryandCumulativeImpacts.pdf."

   Response: Comment acknowledged. Best management practices for construction will be utilized.

NCDEQ Division of Waste Management, Solid Waste Section (March 9, 2017)

1. The Solid Waste Section has reviewed the Environmental Assessment document for the NCDOT proposed project to extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw Indian Trail Road in Wesley Chapel, Union county, North Carolina. The review has been completed and has seen no adverse impact on the surrounding community and likewise knows of no situations in the community, which would affect this project from a solid waste perspective.

During construction and demolition, every feasible effort should be made to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this project where suitable. Any waste generated by this project that cannot be beneficially reused or recycled must be disposed of at a solid waste management facility approved to manage the respective type of waste. The Section strongly recommends that any contractors are required to provide proof of proper disposal for all waste generated as part of this project.

Response: NCDOT will minimize the generation of waste during the construction of the project where possible and utilize best management practices.

NCDEQ Division of Waste Management, Inactive Hazardous Sites Branch (March 9, 2017)

1. "The Superfund Section has reviewed the proximity of the NC Department of Transportation project. No sites under Superfund jurisdiction were identified within a 1-mile radius of any of the individual projects."

   Response: Comment acknowledged.

NCDEQ Division of Air Quality (March 9, 2017)

1. "There do not appear to be any applicable air quality regulations. If landclearing is necessary and disposed of by burning, the open burning regulations shall be followed."

   Response: Comment acknowledged. As noted in Section 5.13 of the EA, during construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the Contractor. Any burning done will be done in accordance with applicable local laws and ordinances and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15A NCAC 2D.1903. Care will be taken to ensure burning will be done at the greatest distance practical from dwellings and not when atmospheric conditions are such as to create a hazard to the public. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits.

NCDEQ Division of Water Resources, Water Quality Regional Operations Section (Aquifer and Surface), March 21 and 29, 2017

1. "MRO WQROS defers to the DWR Transportation Permitting Unit for all commentary specifically related to transportation planning and permitting issues.

   - In reference to the maps provided, it appears that a Section 401 Water Quality Certification/ Section 404 Permit will be necessary (box checked). Potential stream impacts should be determined prior to construction.

     Response: The commenter is correct that Section 401 Water Quality Certification and a Section 404 Permit will be necessary. Potential stream impacts based on the preliminary designs for the detailed study alternatives are discussed in Section 5.1.2 of the 2015 EA and listed in Table 5-3. This FONSI updates the potential stream impacts for the Preferred Alternative in Section 7.1.2 (see Table 8). During the Section 401 Water Quality Certification and Section 404 Permit application process, NCDOT will work with NCDWR and USACE to determine more precise

stream impacts based on the final design, as well as potential mitigation opportunities.

- Modification to NPDES Wastewater, and Wastewater Collection System Permits may be necessary if existing facilities are modified as a result of the project (box checked). NPDES Stormwater Permitting may be required through DEMLR.

  Response: NCDOT will apply for all permits necessary to construct the proposed project.

- If located, wells should be properly abandoned (box checked).

  Response: Comment acknowledged.

2. Please provide the species of mollusks found during development of the NRTR, no species were listed."

   Response: A freshwater mussel survey was conducted for the project between August 6 and 28, 2013. Three freshwater mussel species were documented during the survey: *Elliptio complanata* (10 live, 5 shells), *Elliptio icterina* (1 shell) and *Villosa delumbis* (1 live). Mussel surveys were again conducted on August 23 and October 6, 2017. One shell of *Elliptio complanata* and *Corbicula fluminea* were observed.

NCDEQ Division of Energy, Mineral, and Land Resources (March 10, 2017)

1. "Erosion and sediment control permit along with Stormwater permit is required."

   Response: NCDOT will apply for all permits necessary to construct the proposed project, including an erosion/sediment control permit and a stormwater permit.

NCDEQ Division of Waste Management, Underground Storage Tank Section (March 9, 2017)

1. "I have reviewed the scoping document for the proposed project. A search of the proposed area revealed one open Underground Storage Tank (UST) incident at 206 South Providence Road in Weddington. The site may be inside of the project area. The risk is classified as Low. The incident number is 36104."

   Response: The UST referenced is listed as Site 1 in Table 5-17 (Underground Storage Tanks in the Project Area) of the 2015 EA and Table 15 of this FONSI. The site would not be impacted by the Preferred Alternative.

2. "The following are general comments and are pertinent to my review:

   - The Mooresville Regional Office (MRO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum above ground storage tanks (ASTs) within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs.

   - Any petroleum spills must be contained and the area of impact must be properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environmental Quality – Division of Waste Management Underground Storage Tank Section in the Mooresville Regional Office at 704-663-1699.

   - Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosion or inhalation hazards exist. Also, notify the

UST Section of the Mooresville Regional Office at 704-663-1699. Petroleum contaminated soils must be handled in accordance with all applicable regulations."

Response: Soil and groundwater assessments will be performed prior to right-of-way acquisition if right-of-way is required from any potentially contaminated properties. NCDOT will notify the local Fire Marshall if soils showing evidence of petroleum contamination are excavated. NCDOT will notify NCDEQ Division of Waste Management regarding UST/AST impacts and/or spills of significant quantity. NCDOT will remove any USTs or ASTs that are directly impacted by the project.

North Carolina Department of Natural and Cultural Resources, State Historic Preservation Office (March 16, 2017)

1. "The Environmental Commitments state that once an alternative is chosen, NCDOT will coordinate with the NC State Historic Preservation office concerning archaeological resources. We will offer comments once that consultation is complete."

   Response: An archaeological survey and evaluation of the proposed improvements was conducted from March 20 to June 14, 2017. There are no National Register listed archaeological sites within the project's APE. Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register. All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project. No additional archaeological work is recommended. The proposed project falls under the terms of the *Programmatic Agreement for Minor Transportation Projects* (NCDOT/NCHPO/FHWA, 2015). Because no NRHP eligible sites were documented, no further correspondence with SHPO is required. However, the No National Register of Historic Places Eligible or Listed Archaeological Sites Affected form (included in Appendix B) was submitted to NC State Historic Preservation office as part of NCDOT's annual Programmatic Agreement report.

2. "The Environmental Commitments in the EA contain the conditions agreed on to avoid adversely affecting the Howard House (UN 0831) and Jacob Allen Deal Farm (UN 0097)."

   Response: Comment acknowledged. The Environmental Commitments from the EA regarding the conditions agreed on to avoid adversely affecting the Howard House (UN 0831) and Jacob Allen Deal Farm (UN 0097) are included in the Environmental Commitments section of this FONSI.

3.3 January 2016 Public Hearing

In accordance with 23 U.S.C. 128, the NCDOT certifies that a public hearing for the subject project has been held and the social, economic and environmental impacts, consistency with local community planning goals and objectives, and the comments from individuals have been considered in the selection of the Preferred Alternative for the project.

A Combined Location and Design Public Hearing was held January 26, 2016 at Graceway Baptist Church, 4700 Monroe-Weddington Road in Matthews, North Carolina. An informal pre-hearing open house was conducted from 4:00 – 6:30 p.m., followed by the public hearing at 7:00 p.m., which began with a formal presentation. One hundred forty-one (141) citizens registered their attendance at the Combined Public Hearing. NCDOT representatives were available at the open house to answer questions and receive comments regarding the proposed project. Participants included residents, property owners, local

government employees and officials, as well as WCWAA/Optimist Park and local church representatives. Citizens had the opportunity to submit written comments and questions during the informal open house and public hearing. The formal presentation included an explanation of the purpose of the meeting and the public comment process. A summary of the proposed project, including the purpose and need, the location and design of the Detailed Study Alternatives, and potential impacts, was also presented. Citizens had the opportunity to ask questions and record their verbal comments after the formal presentation.

A project newsletter announcing the hearing was sent to citizens on the project mailing list prior to the hearing. The newsletter also provided public notice of a proposed *de* minimis impact determination under Section 4(f) for the project's potential effect on Jacob Allen Deal Farm. A project handout, synchronized streets handout, and comment sheet were provided to meeting attendees at the sign-in table. Several displays were located around the room including information on the DSAs, probable environmental impacts, the proposed typical section, the project schedule, and Title VI Voluntary Public Involvement. Meeting participants were directed to a room with a looping video describing the meeting format and project details. Throughout the meeting, representatives from NCDOT and the consultant team engaged the public to discuss concerns, answer questions, and receive comments on the proposed project.

A total of 385 comments were received as of March 23, 2016. Thirty-three (33) written comments and twelve (12) recorded verbal comments were submitted at the meeting. The remaining comments were submitted by mail, email and through the NCDOT Contact Us website portal. Many of the respondents identifying themselves as residents of a particular subdivision shared common concerns.

The most frequent comments expressed by citizens were in regard to the following:

- Concerns about impacts to the athletic fields at Optimist Park (243)
- Requests for a deceleration lane along NC 84 at Optimist Park (199)
- Requests to widen NC 16 instead of the proposed project (44)
- Opinions about specific intersection configurations (41)
- Alignment modification suggestions for Alternatives A2 and C2 (41)
- Potential environmental impacts (37)
- Impacts to home values at specific properties (34)
- Disagreement with the proposed project's purpose and need (31)
- Concern about noise impacts (30)
- Suggestions and requests for specific pedestrian facilities (14)

Table 1. U-3467 Alternative Preferences from Combined Public Hearing

Alternative A2	Alternative C2	Combination of Alts. A2 and C2	Had No Preference	Alternative B[1] (Improve Existing)
33	14	10	17	41

[1] Alternative B was eliminated from further consideration during the preliminary alternatives review phase because it did not meet the purpose and need of the project.

3.4 June 2017 Public Meeting

NCDOT conducted an open-house format Public Meeting on June 20, 2017 at Graceway Baptist Church. The purpose of the meeting was to provide information and gather comments on the proposed project. Details regarding the U-3467 Selected Alternative and the proposed conversion of approximately 0.73 acre of Parks and Recreation Trust Fund (PARTF) grant-assisted land at Dogwood Park in Wesley Chapel were presented and discussed with meeting attendees.

The public meeting was conducted from 4:00 – 7:00 p.m., during which time the public had the opportunity to review project maps and displays, ask questions, provide comments, and discuss the project informally with NCDOT representatives. Ninety-five (95) citizens registered their attendance at the public meeting. Participants included residents, property owners, local government employees and officials, and church and local organization representatives.

A project newsletter announcing the public meeting was sent to citizens on the project mailing list prior to the hearing. The newsletter also provided public notice of a potential conversion of PARTF project land and potential *de minimis* impact determination under Section 4(f) as related to U-3467 impacts at Dogwood Park. The following information was provided to meeting attendees at the meeting registration table: A handout describing the meeting process, project details and changes since the public hearing; a synchronized streets handout; a "Roundabout NC" brochure; a "Safe Access is Good for Business" handout; a Title VI comment form; and, comment sheets for the project and proposed PARTF conversion.

Staffed information stations were located around the room and included: Informational Project Video, Right-of-way Acquisition, Traffic Noise, 3-D mapping and Visualization, PARTF, two Design stations with large displays of the Preferred Alternative, and areas for attendees to submit both written and verbal comments. Several informational boards were also displayed regarding proposed typical section, the project schedule, and Title VI Voluntary Public Involvement.

A total of 285 comments were received as of August 15, 2017. Fourteen (14) comment forms were received at the meeting and were comprised of two (2) PARTF comments and twelve (12) general project comments. No meeting participants recorded spoken comments. The remaining comments were submitted by email and through the NCDOT Contact Us website portal. One comment was submitted via a phone message. Many of the respondents identifying themselves as residents of a particular subdivision shared common concerns. A number of individuals provided comments on multiple topics.

Eighty-one (81) individuals submitted comments regarding the design shift that would avoid impacts to WCWAA ball fields and Southbrook Church parking but result in the conversion of approximately 0.73 acre of PARTF grant-assisted land at Dogwood Park. Seventy-nine individuals were in support of the shift, one (1) individual was opposed to the shift, and one (1) person wanted to know where the replacement property would come from.

The most frequent project specific comments expressed by citizens were in regard to the following:

- Requests for a left turn at NC 84 and Lester Davis Road via a traffic light or round-a-bout (90)
- Requests to keep the existing right turn into the Hollister Subdivision (69)
- Requests for two left turn lanes instead of one at NC 84 and Deal Road (67)
- Requests for a left turn on Weddington Road out of Optimist Park (68)
- Requests for additional traffic studies to be conducted at Optimist Park in September or October (69) and at Lester Davis Road and Newtown Road during weekday a.m. peak (57)
- Requests for a median break at Aero Plantation entrance (10)

3.5 Additional Project Coordination

Local Officials

A Local Officials Meeting (LOM) was held January 26, 2016 at Graceway Baptist Church prior to the public hearing. The LOM was held from 2:30 to 3:30 p.m. and was attended by representatives of the Town of Weddington, the Village of Wesley Chapel, and Union County. The purpose of the meeting was to answer questions and receive comments regarding the proposed project.

NCDOT conducted a LOM on June 20, 2017 at Graceway Baptist Church prior to the public meeting. The purpose of the meeting was to provide information and gather comments on the U-3467 Selected Alternative and the proposed PARTF conversion of grant-assisted land at Dogwood Park. The LOM was held from 1:00 to 3:00 p.m. and was attended by representatives of the Town of Weddington, the Village of Wesley Chapel, and Union County.

NCDOT also provided project status updates and answered questions at Village of Wesley Chapel Council meetings in February 2016, November 2016 and September 2017.

NEPA/Section 404 Merger Process

As noted in the EA, a NEPA/Section 404 Merger screening was conducted on September 17, 2012 with Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE), and NC Department of Environment Quality - Division of Water Resources (NCDWR). It was agreed the project would follow a modified process, with a joint Merger Team meeting for Concurrence Points 2A (Bridging Decisions and Alignment Review) and 4A (Avoidance and Minimization).

A meeting with several members of the Merger Team was held on December 7, 2016 to provide an update on the status of the project. At this meeting, Team members suggested it was likely the project's modified Merger process would also include Concurrence Point 3 (Least Environmentally Damaging Practicable Alternative). The USACE, FHWA and NCDOT determined the U-3467 Merger process would include Concurrence Points 2A, 3 and 4A.

At a meeting on March 15, 2017, the NEPA/Section 404 Merger Team concurred on Bridging Decisions and Alignment Review (Concurrence Point 2A). The Merger Team concurred on Alternative CA2 as the Least Environmentally Damaging Practicable Alternative (Concurrence Point 3) and on Avoidance and Minimization (Concurrence Point 4A) at a meeting on April 12, 2017. A copy of the signed concurrence forms are included in Appendix B. An informational Concurrence Point 4B meeting (review of conceptual drainage design with 30 percent hydraulic design) was held on December 13, 2017.

NC Division of Parks and Recreation / Recreation Resources Service

NCDOT first met with the NC Department of Natural and Cultural Resources, Division of Parks and Recreation and North Carolina State University Recreation Resources Service (RRS) to discuss potential impacts to Dogwood Park in April 2016. The purpose of the meeting was to discuss the implications of PARTF grant assistance at the park in relation to the U-3467 alignment. Since then, NCDOT has coordinated, and will continue to coordinate, with the Village of Wesley Chapel, DNCR and RRS regarding the effects of U-3467 on Dogwood Park. Additional details regarding PARTF are provided in Section 7.4 of this FONSI.

4.0 ENVIRONMENTAL ASSESSMENT ERRATA

The legend on the Environmental Features Map, Figure 2A-2G in Appendix A of the EA incorrectly listed two symbols in the legend indicating sites with "Hazardous Waste". The corrected annotation for the tan triangle in the legend is "Impacted Noise Receptor".

References to All Nations Fellowship Church on Figure 2F and in Section 5.5.6 of the EA are corrected to Crossroads Church.

The following avoidance and minimization measure included in Section 5.1.2.4 of the EA is corrected as follows: "The new location alignment*s* of Alternative*s* ~~A2 and~~ C2 *and CA2* were designed to avoid the confluence of ~~tributaries to~~ *stream SK and* Mundys Run."

5.0 ALTERNATIVES ANALYSIS

A range of alternatives were reviewed for the proposed project. This section summarizes alternatives that were considered and eliminated, the alternatives that were carried forward for detailed study and the Least Environmentally Damaging Practicable Alternative (LEDPA) / Preferred Alternative.

5.1 Preliminary Alternatives

A range of preliminary alternatives were considered for the proposed project, including the No Build Alternative, and alternatives that considered alternate modes of transportation. As documented in Section 3.1 of the EA, these preliminary alternatives did not improve the mobility and/or connectivity of NC 84 in the project study area. Therefore, they did not meet the Purpose and Need of the project and were eliminated from further consideration.

An "improve existing" alternative (Alternative B) was also evaluated. Alternative B would widen existing NC 84 to a four-lane median divided roadway from just east of the roundabout at Weddington-Matthews Road (SR 1344) to Waxhaw-Indian Trail Road. Alternative B would provide additional capacity on NC 84 in the project study area. However, the alternatives carried forward for detailed study (see Section 5.2 of this FONSI) would provide a greater increase in system capacity with the addition of four travel lanes in the new location portion of the project area, as opposed to only two additional lanes with Alternative B.

This FONSI provides additional details regarding why Alternative B was not selected for detailed study than what was presented in the U-3467 EA. The NEPA / Section 404 Merger Team requested additional information regarding Alternative B at a meeting on March 15, 2017.

With Alternative B, drivers travelling west on NC 84 to Rea Road would follow a "dog-leg" route, proceeding through the roundabout to the signalized intersection at NC 16, turn left onto NC 16, travel approximately 0.75 mile to the signal at NC 16 and Rea Road, and turn right onto Rea Road. As a result, the "improve existing" alternative would also increase travel distance, travel time, stops and fuel use for motorists travelling from NC 84 to Rea Road when compared to the alternatives carried forward for detailed study. Because the "improve existing" alternative does not improve the connectivity of NC 84 in the project area it does not meet the project's Purpose and Need and was eliminated from further consideration. Alternative B was shown at the June 2013 public meeting.

Two Build alternatives were developed for the proposed project that extend Rea Road on new location from its current endpoint at NC 16 to existing NC 84 approximately 0.35 mile west of Twelve Mile Creek Road (relocate NC 84), and from there widen existing NC 84 to Waxhaw-Indian Trail Road (Alternatives A

and C). Options were developed to further minimize potential impacts to wetlands (Alternatives A2 and C2). In consultation with FHWA, NCDOT selected Alternatives A2 and C2 for detailed study because they meet the project's Purpose and Need and minimize potential impacts to wetlands. Alternatives A2 and C2 were shown at the January 2016 public hearing.

5.2 Detailed Study Alternatives

Alternatives A2 and C2 were selected for detailed study because they meet the project's Purpose and Need and minimize potential impacts to wetlands. Proposed improvements associated with Alternatives A2 and C2 are described in Chapter 4.0 of the EA. Potential impacts to the human and natural environments that could result from the construction of the detailed study alternatives are described in Chapter 5.0 of the EA.

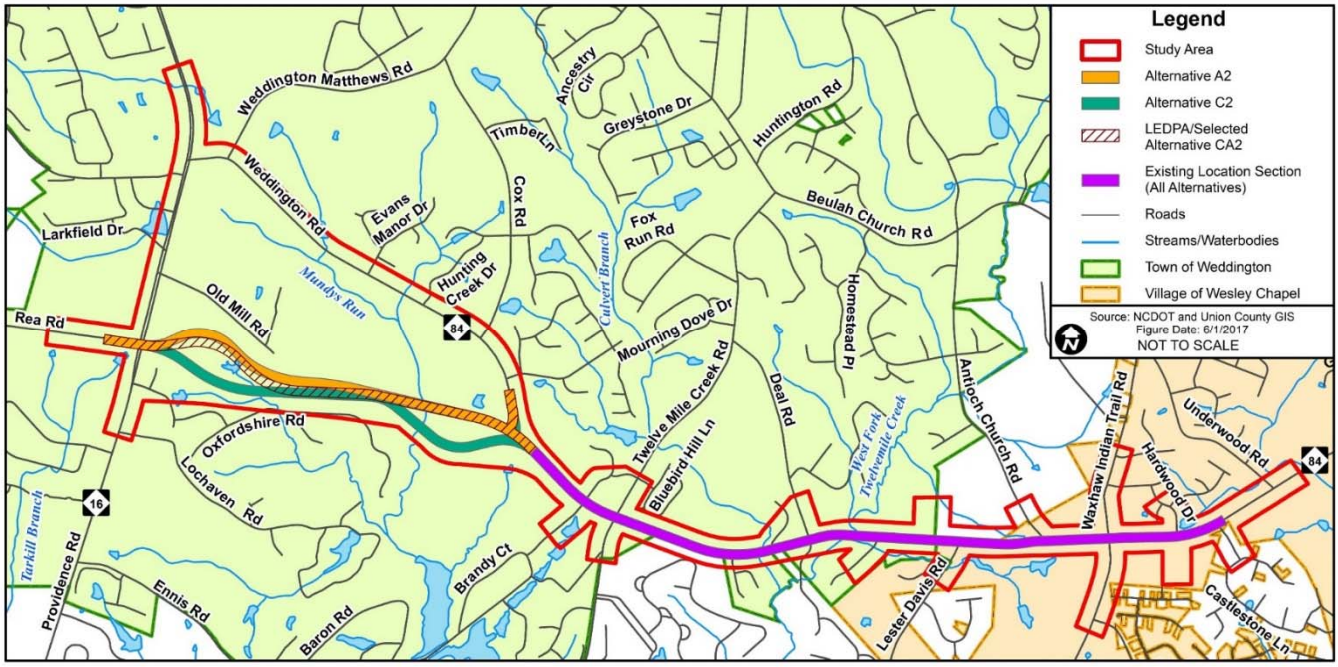

Exhibit C. U-3467 Detailed Study Alternatives A2, C2 and CA2

Alternative A2 begins just west of the existing Rea Road/NC 16 intersection. From NC 16, Alternative A2 extends on new location to the northeast and east to tie into existing NC 84 about 0.40 mile west of Twelve Mile Creek Road. Alternative A2 then follows existing NC 84 to just east of Waxhaw-Indian Trail Road. The total length of Alternative A2 is 4.35 miles.

Alternative C2 begins approximately 0.12 mile west of the existing Rea Road/NC 16 intersection. From NC 16, Alternative C2 extends on new location to the southeast and east to tie into existing NC 84 approximately 0.33 mile west of Twelve Mile Creek Road. Alternative C2 then follows existing NC 84 to just east of Waxhaw-Indian Trail Road. The total length of Alternative C2 is 4.34 miles.

NCDOT reviewed comments from the January 2016 public hearing that requested they evaluate a hybrid of the new location portions of Alternatives A2 and C2. The goals associated with the development of a "combination alternative" were to:

- Minimize impacts to existing properties, homes and areas proposed for development where practicable.
- Minimize impacts to the natural environment where practicable.

- Improve roadway geometry where practicable.

NCDOT evaluated the new location alignments of Alternatives A2 and C2 and developed Alternative CA2 with the above goals in mind (see Figure 2A-L in Appendix A). **Alternative CA2** begins just west of the existing Rea Road/NC 16 intersection. From NC 16, Alternative CA2 extends on new location to the northeast and east to tie into existing NC 84 about 0.40 mile west of Twelve Mile Creek Road. Alternative CA2 then follows existing NC 84 to just east of Waxhaw-Indian Trail Road. The total length of Alternative CA2 is approximately 4.7 miles.

The length of Alternative CA2 is approximately 0.35 mile longer than what is presented for Alternatives A2 and C2 in the EA and in this FONSI. This difference reflects changes in the design since Alternative CA2 was selected as the Preferred Alternative / Least Environmentally Damaging Practicable Alternative (LEDPA). Changes in the design that added length to Alternative CA2 occurred at the eastern end of the project and would have been applied to Alternative C2 or A2 had they been selected as the Preferred Alternative/LEDPA. Prior to these referenced design changes, Alternative CA2 was 4.36 miles long.

5.3 LEDPA / Preferred Alternative

NCDOT conducted an Alternative Selection Meeting on July 18, 2016 to select the Preferred Alternative for the proposed project. NCDOT and FHWA reviewed the Detailed Study Alternatives shown at the Combined Public Hearing (Alternatives A2 and C2), along with the "combination alternative," Alternative CA2. NCDOT and FHWA selected Alternative CA2 as the Preferred Alternative.

Information on the Preferred Alternative was provided to local officials in late summer 2016 and posted on the project's website. Meetings were held with state and federal regulatory and environmental resource agencies in December 2016 and March 2017 to review the evaluation of Alternatives A2, C2 and CA2. NCDOT, FHWA, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the N.C. Historic Preservation Office, the N.C. Division of Water Resources, the N.C. Wildlife Resources Commission, and the Charlotte Regional Transportation Planning Organization reached consensus on the LEDPA, Alternative CA2, on April 12, 2017 (see the NEPA/Section 404 Merger Concurrence Point 3 signature form in Appendix B). Alternative CA2 was presented at the U-3467 public meeting on June 20, 2017.

Changes to the preliminary design from the time the EA was published to the time Alternative CA2 was selected as the LEDPA include the following:

- Prior to the January 26, 2016 public hearing, existing NC 84 intersections with Lester Davis Road and Antioch Church Road were converted to a synchronized street design to provide consistency with the treatment of other intersections along the proposed project, enhancing safety and mobility. A signalized leftover to Lester Davis Road was added on westbound NC 84. A signalized leftover to Antioch Church Road was added on eastbound NC 84. U-turn bulbs were added along both eastbound and westbound NC 84 approximately midway between Lester David Road and Antioch Church Road. A U-turn bulb was also added along eastbound NC 84 near Optimist Park to accommodate westbound traffic U-turns. This information was shown in the preliminary design presented at the January 2016 public hearing.

- As a result of comments from the January 26, 2016 public hearing, NCDOT conducted an analysis of a shift in the proposed alignment to avoid impacts to Wesley Chapel Weddington Athletic Association's (WCWAA) Optimist Park ball fields and Southbrook Community Church parking. The preliminary design was revised to utilize a 75-foot setback area along existing NC 84 at Dogwood Park. Alternative CA2 as shown at the June 20, 2017 public meeting incorporated the shifted alignment to avoid impacts at WCWAA Optimist Park ball fields and Southbrook Church parking.

Table 2 provides a summary comparison of the Detailed Study Alternative impacts as presented at the NEPA / Section 404 LEDPA (Concurrence Point 3) meeting on April 12, 2017. Impacts reported for C2 and A2 that were revised from those reported in the EA as a result of changes to the preliminary design are followed by the EA impacts in *(italics)* in Table 2.

The NEPA / Section 404 Merger Team selected Alternative CA2 as the LEDPA at the April 12, 2017 meeting for the following reasons:

- Alternative CA2 provides a better geometric design and enhances safety by eliminating the tight curve (radius 926 feet) associated with Alternative A2 near the NC 16 intersection. With Alternative CA2, drivers traveling west toward NC 16 will encounter a smoother, flatter curve (radius 1,200 feet). This will:
  - Increase intersection site distance from 483 feet with Alternative A2 to 586 feet with Alternative CA2.
  - Increase driver awareness of the approaching signalized intersection and provide additional time to respond to a stop condition. The increased reaction time can be of particular benefit to both inexperienced drivers and the elderly.
  - Provide additional time to respond to turning vehicles and pedestrian traffic.
- Alternative CA2 provides a better geometric design and enhances safety by eliminating the tight curve (radius 950 feet) associated with Alternative C2 near the NC 84 intersection. With Alternative CA2, drivers traveling east toward existing NC 84 will encounter a smoother, flatter curve (radius 2,300 feet). This will:
  - Increase intersection site distance from 374 feet with Alternative C2 to 588 feet with Alternative CA2.
  - Increase driver awareness of the approaching intersection and provide additional time to respond to a stop condition. The increased reaction time can be of particular benefit to both inexperienced drivers and the elderly.
  - Provide additional time to respond to turning vehicles and pedestrian traffic.
  - The new location portion of Alternative CA2 avoids the relocation of two homes located just east of the intersection of NC 16 and Rea Road.
- Alternative CA2 minimizes impacts to two large properties just east of NC 16, including a tree farm.
- Alternative CA2 minimizes impacts to existing homes and properties in the Stratford on Providence subdivision by utilizing an alignment north of the Alternative C2 alignment in the vicinity of Oxfordshire Road.
- Alternative CA2 reduces the overall impact to 14 platted lots in a proposed subdivision by utilizing an alignment south of the Alternative A2 alignment in the vicinity of Oxfordshire Road.
- The Alternative CA2 Site 9 (Mundys Run) hydraulic structure avoids the confluence of Mundys Run and perennial stream SK. Alternative A2 hydraulic structure Site 7 (Mundys Run) encroaches into the confluence of Mundys Run and stream SK (using slope stakes plus 25 feet), impacting 76 linear feet of stream SK.

Table 2. Comparison of Impacts of Detailed Study Alternatives
(as presented at April 12, 2017 LEDPA Meeting)

Impact Category [1, 2]		Alternative		
		A2	C2	Preferred Alternative CA2
Natural Resources Impacts				
Federally-Listed Species Present in Study Area		No	No	No
100-Year Floodplain and Floodway Impacts (acres)		7.2	7.3	7.2
Delineated Wetland Impacts (crossings/acres)		3 / 0.10	4 / 0.12	4 / 0.22
Delineated Stream Impacts (crossings/linear feet)		8 / 1,488 *(1,397)*	11 / 3,024 *(2,933)*	8 / 1,640
Delineated Other Surface Water Impacts (acres)		0.25	0.00	0.06
Forest Impacts (acres)		41.6 *(39.9)*	44.9 *(43.2)*	43.7
Human Environment Impacts				
Relocations	Residential	5	7 *(5)*	5
	Business	1	1	1
	Non-Profit	1	1	1
	Total	7	9 *(7)*	7
Potentially Impacted Lots in Planned Development[3]		*18*	*14*	4
Low Income/Minority Populations Present		No	No	No
Schools[3]		1	1	1
Recreational Areas/Parks[4]		1	1	1
Churches		1*(2)*[5]	1*(2)*[5]	1
Cemeteries		0	0	0
Historic Sites[6]		2/No Adverse Effect	2/No Adverse Effect	2/No Adverse Effect
Section 4(f) Impacts[7]		1 Historic 1 Park	1 Historic 1 Park	1 Historic 1 Park
Traffic Noise Impacts (receptors)		8	7	8
Physical Environment Impacts				
Prime, Statewide, and Unique Farmland Soils (acres)		64.0 *(62.4)*	65.4 *(63.7)*	63.9
Underground Storage Tanks/HazMat Sites		3	3	3
Preliminary Cost Estimate				
Estimated Total Cost[8]		$47,626,000 *($48,481,000)*	$48,073,000 *($49,323,000)*	$47,717,000

[1] Impacts are calculated based on slope stake limits plus 25 feet.
[2] If impacts reported for C2 and A2 were different at the time of the April 2017 meeting from what was shown in the EA, the impacts from the EA are identified in the table in (italics).
[2] Lots potentially impacted for development in the Woods Development preliminary plat. This impact category was added since publication of the EA.
[3] Current access to Weddington High School will be changed as a result of the proposed project.
[4] Impacts presented in the EA were to Optimist Park which have since been avoided. The revised design in this area instead results in right-of-way impacts at Dogwood Park.
[5] Parking spaces that were impacted at Southbrook Community Church are no longer impacted with the Preferred Alternative.
[6] No Adverse Effect to Jacob Allen Deal Farm or Howard House with conditions identified in Section 5.2.1 of EA.
[7] *De minimis* impact determination made at Jacob Allen Deal Farm prior to LEDPA. FHWA has since made a d*e minimis* impact determination at Dogwood Park.
[8] Subject to change.

- Overall differences in the potential effects of Alternatives A2 and CA2 on the natural environment are marginal.
  - Alternative CA2 has 0.12 acre more potential wetland impacts than Alternative A2; however, Alternative A2 has 0.19 acre more potential impacts to ponds than Alternative CA2.
  - The difference in stream impacts between Alternative A2 and Alternative CA2 is less than 155 linear feet. This difference is due to variances in potential project impacts at five streams: three perennial streams (Mundys Run, SK and SS) and two intermittent streams (SP and SAD).
    - Although Alternative CA2 has 152 linear feet more potential stream impacts than Alternative A2, the majority of these impacts are to intermittent streams (SP and SAD).
    - Alternative A2 has 90 linear feet more potential impacts to perennial streams (SK and SS) than Alternative CA2.
    - Five streams (Mundys Run, SK, SP, SS and SAD) were evaluated by a qualified biologist during a field visit on March 10, 2017. All of these streams are located within the new location portion of the project and scored high using NCSAM, due in large part to the amount of existing riparian buffer. However, the two intermittent streams carried no water at the time of the investigation and supported no aquatic life. The perennial streams all had aquatic life and flowing water.

5.4 Avoidance and Minimization of Impacts within the Preferred Alternative Corridor at Merger Concurrence Point 4A

Avoidance and minimization measures incorporated into the proposed project prior to the selection of the Preferred Alternative were presented in Section 5.1.2.4 of the EA. The NEPA/Section 404 Merger Team concurred on the following Avoidance and Minimization measures for the LEDPA / Preferred Alternative at a meeting on April 12, 2017 (see Concurrence Point 4A signature form in Appendix B):

Section 404 Avoidance and Minimization

- Preliminary alternatives were developed to further avoid and minimize potential wetland impacts:
  - Detailed Study Alternative A2 was developed as a variation of preliminary Alternative A to minimize potential wetland impacts. Alternative A2 eliminated impacts to Wetland WP and reduced impacts to Wetland WN, resulting in approximately 0.39 acre fewer wetland impacts than Alternative A. Stream impacts were reduced by 351 linear feet and pond impacts increased by 0.16 acre with Detailed Study Alternative A2.
  - Detailed Study Alternative C2 was developed as a variation of preliminary Alternative C to minimize potential wetland impacts. Alternative C2 eliminated impacts to Wetlands WN and WP, reducing total potential wetland impacts by approximately 0.50 acre. Alternative C2 eliminated 0.10 acre of pond impacts but increased stream impacts by 710 linear feet.
- The new location alignments of Alternatives C2 and CA2 were designed to avoid the confluence of stream SK and Mundys Run.
- Intersection improvements at NC 84 and Lester Davis Road were designed to avoid a major hydraulic crossing of an unnamed tributary to West Fork Twelvemile Creek.
- Since its selection as NCDOT's Preferred Alternative, the preliminary design of Alternative CA2 has been modified to further avoid and minimize impacts to streams. Portions of the Alternative CA2

new location alignment were shifted and stream impacts were reduced by a total of 1,154 linear feet. Specific stream impact reductions are as follows:

- A more perpendicular crossing at stream SS reduced impacts from 838 linear feet to 389 linear feet (reduction of 449 linear feet).
- Impacts to stream SR were eliminated by shifting the CA2 alignment north of this stream, reducing total stream impacts by 344 linear feet.
- Impacts to stream SP were reduced from 230 linear feet to 156 linear feet by shifting the Alternative CA2 alignment to the north of pond PI (impact reduction of 74 linear feet).
- Alternative CA2 was shifted to the north of stream SV, eliminating impacts to this stream and reducing total stream impacts by 232 linear feet.
- As a result of Alternative CA2 shifting to the north, impacts to stream SAD were reduced from 266 linear feet to 246 linear feet (reduction of 20 linear feet) as slope stakes were slightly reduced and a bend in the stream is now avoided.
- Alternative CA2 was realigned and shifted to the north in the vicinity of hydraulic structure Site 9, reducing impacts to Mundys Run by 35 linear feet.

Additional Avoidance and Minimization

- The widening portion of the proposed alignment varies between symmetrical widening and widening north or south of the existing roadway, as needed, to minimize impacts to land use and important environmental features.
- Avoidance and minimization measures were incorporated into the design of all alternatives to avoid an adverse effect to historic properties.
- In response to input from the public and local officials, the preliminary design of all alternatives was shifted to utilize a 75-foot setback at Dogwood Park to avoid impacts to Southbrook Community Church parking and Wesley Chapel Weddington Athletic Association / Optimist Park facilities. This shift results in 94 linear feet of impacts to stream SB and 234 linear feet of impacts to West Fork Twelvemile Creek. The shift eliminates 237 linear feet of impacts to stream SA.

5.5 Cost Estimate for the Preferred Alternative

The current estimated cost for the proposed project is $57,599,000, which includes $22,542,000 for right-of-way acquisition, $800,000 for utility relocation, $648,000 for wetland/stream mitigation, and $33,309,000 for construction. Current estimated costs for U-3467 in the 2018-2027 STIP includes $15,250,000 for right-of-way acquisition, $800,000 for utility relocation and $32,500,000 for construction.

5.6 Anticipated Permit Requirements

The proposed action will require the following environmental regulatory permits pursuant to Section 401 and 404 of the Clean Water Act of 1977, as amended:

- A Section 404 Permit from USACE is required for any activity occurring in water or wetlands that would discharge dredged or fill material into Waters of the United States and adjacent wetlands. Due to the size of the project and potential impacts an Individual Permit (IP) may be required. The USACE holds the final discretion as to what permit will be required to authorize project construction.

- A Section 401 Water Quality Certification from NCDWR is required for activities that may result in discharge to Waters of the United States to certify the discharge will be conducted in compliance with applicable state water quality standards. The Section 401 Water Quality Certification will be required prior to issuance of the Section 404 permit.

6.0 PREFERRED ALTERNATIVE UPDATES/REVISIONS

6.1 Revisions to the Preliminary Design since the Selection of the LEDPA / Preferred Alternative

In response to comments from the January 2016 public hearing, NCDOT conducted additional detailed traffic operations studies at several locations along existing NC 84 including the intersection of NC 84 and Lester Davis Road, WCWAA Optimist Park access points, and NC 84 and Waxhaw-Indian Trail Road shopping center access points. As a result, a roundabout was added east of the NC 84 and Waxhaw-Indian Trail Road intersection at Hardwood Drive. The roundabout will aid westbound travel for vehicles exiting the shopping centers located at the intersection of NC 84 and Waxhaw-Indian Trail Road. The roundabout was presented at the public meeting on June 20, 2017. The addition of the roundabout resulted in the expansion of the study area approximately 0.44 mile to the east and extended the Alternative CA2 design approximately 0.32 mile east along NC 84.

NCDOT made the following post-public meeting resolutions on August 28, 2017 after reviewing all comments from the June 2017 public meeting:

1. NCDOT will conduct additional traffic counts at Optimist Park facilities during September or October, in coordination with WCWAA.
2. NCDOT will update the project's traffic analysis using the August 2017 traffic forecast.
3. Lane configurations and traffic control devices will be reviewed during final design to serve, to the extent practicable, peak traffic volumes in the area.

The following resulting revisions were made to the Preferred Alternative:

- A U-turn bulb was added along the new location portion of Alternative CA2 approximately 0.45 mile west of the proposed signalized NC 84 intersection with Weddington Road.
- The configuration of the NC 84 intersection with Weddington Road was revised to include a right turn lane from westbound NC 84 onto Weddington Road.
- The configuration of the NC 16 intersection with Rea Road was revised to include a second eastbound right-turn lane and a second westbound left-turn lane from Rea Road to NC 16.
- A signal was added at the intersection of NC 84 at Optimist Park West Entrance. The signal will provide traffic control on westbound NC 84 and left-turns from eastbound NC 84 into the park.
- A U-turn bulb was added along eastbound NC 84 just west of Shannon Woods Lane to accommodate westbound traffic U-turns.
- The configuration of the NC 84 intersection with Waxhaw-Indian Trail Road was revised to include additional storage in the NC 84 eastbound left-turn lane to northbound Waxhaw-Indian Trail Road and a second left-turn lane was added on southbound Waxhaw-Indian Trail Road to eastbound NC 84.
- A roundabout was added on Waxhaw-Indian Trail Road at the Village Commons Shopping Center central entrance at Harris Teeter (Village Commons Shopping Center west) / southern entrance at Target (Village Commons Shopping Center east).

The following additional changes were made to Alternative CA2 as a result of comments from the June 2017 public meeting:

- The design was revised to maintain Southbrook Community Church entrance drives at their current locations.
- Several modifications to the design were made to reduce impacts at Siler Presbyterian Church:
  - The alignment was shifted approximately six feet to the south along NC 84 adjacent to the church to reduce property impacts.
  - A right-in / right-out entrance to the church was added on Waxhaw-Indian Trail Road across from the Shops at Wesley Chapel entrance near Walgreens.
  - A right-in / right-out entrance to the church was added on NC 84 near the Church sanctuary.
  - The median opening provided at the northernmost entrance to the Shops at Wesley Chapel on Waxhaw-Indian Trail Road was shifted to the middle entrance and aligned with an entrance to Siler Presbyterian Church. A left-turn lane into the church is provided.

The proposed design has transitioned from preliminary plans based on aerial photography and GIS property data to the final design development phase based on detailed surveys.

6.2 Traffic Forecast / Capacity Analysis

The 2015 EA documents the results of the Traffic Capacity Analysis Report (VHB, October 2013) prepared for the EA's detailed study alternatives (No Build, A2, and C2). The traffic capacity analysis for the 2015 EA used 2012 and 2035 traffic forecasts prepared by NCDOT to evaluate project-area roadway segments and intersections for 2012 Existing Conditions, 2035 No Build Conditions, and 2035 Build Conditions for the detailed study alternatives. This section discusses the results of the updated Traffic Capacity Analysis Report (VHB, January 2018) prepared for the Preferred Alternative for 2040 Build Conditions for project-area intersections.

Future Traffic Volumes

The 2035 Build Conditions traffic forecast for the detailed study alternatives discussed in the 2015 EA was updated to year 2040 for the Preferred Alternative (see Figure 3 in Appendix A). The 2040 Build Conditions traffic forecast represents the future volumes with Preferred Alternative CA2 in place.

With the construction of the Preferred Alternative, the 2040 AADT on NC 84 between NC 16 and Waxhaw-Indian Trail Road ranges from 11,900 vpd (between Cox Road and Weddington-Matthews Road) to 33,100 vpd (between Antioch Church Road and Weddington Optimist Park East Drive). The 2035 Build Conditions AADT on NC 84 presented in the 2015 EA ranged from 13,400 vpd to 28,300 vpd.

The 2040 AADT on NC 16 with the Preferred Alternative ranges from 31,100 vpd between NC 84 and Rea Road, to 38,800 to the north of NC 84. The 2035 Build Conditions AADT on NC 16 presented in the 2015 EA ranged from 23,700 vpd to 34,800 vpd.

The 2040 AADT on Rea Road with the Preferred Alternative is 24,200 vpd to the west of NC 16 and 15,400 vpd to the east of NC 16. The 2035 Build Conditions AADT on Rea Road presented in the 2015 EA was 23,200 vpd to the west of NC 16 and 11,400 vpd to the east of NC 16.

The estimated 2040 truck percentage along NC 84 through the project area with the Preferred Alternative are the same as for 2035 Build Conditions for the detailed study alternatives discussed in the 2015 EA.

Existing and Future Intersection Levels of Service

Table 3 shows the delay and level of service (LOS) for AM and PM peak conditions at the 26 intersections (19 existing and seven future) analyzed in the project study area for the Preferred Alternative. Table 3 repeats the 2012 Existing Conditions and 2035 No Build Conditions results for the 12 intersections (11 existing and one future) analyzed in the 2015 EA. The table also provides the updated 2040 Build Conditions capacity analysis for these 12 intersections with the Preferred Alternative. The 14 additional intersections (eight existing and six future) analyzed for 2040 Build Conditions with the Preferred Alternative since the 2015 EA are shown in italicized text. The 2012 Existing Conditions and 2035 No Build Conditions scenarios were not analyzed for these additional intersections. For signalized intersections, the delay and LOS shown are for the overall intersection. For unsignalized intersections, the delay and LOS shown are for the intersection approaches under stop sign control.

As shown in Table 3, there are no signalized intersections operating below LOS D under 2012 existing conditions. However, there are five unsignalized intersections with at least one stop sign controlled approach operating below LOS D under existing conditions, three of them in both the AM and PM peak conditions. Under 2035 No Build Conditions, traffic operations degrade considerably without any improvements in place. All 11 existing intersections that were analyzed in the 2015 EA operate at unacceptable LOS E or F during at least one peak period.

Under 2040 Build Conditions, there would be substantial improvements at the nine existing intersections analyzed in the 2015 EA. All seven of the future intersections with the Preferred Alternative also operate at an acceptable LOS under 2040 Build Conditions. Currently unsignalized intersections that will require a traffic signal under 2040 Build Conditions with the Preferred Alternative for the intersection to operate at an acceptable LOS are highlighted. The delay and LOS shown for these future signalized intersections are for the overall intersection with a traffic signal in place.

The eight additional existing intersections analyzed for the Preferred Alternative since the 2015 EA also operate at an acceptable LOS, with the exception of two unsignalized driveways: Grace Baptist Church driveway would operate at LOS F in the PM peak and Optimist Park east driveway would operate and LOS F in the AM peak.

The LOS F reported in Table 3 under 2040 Build PM conditions at NC 84 and Grace Baptist Driveway is only for the left-turning movement crossing NC 84. Per forecasted traffic volumes, this level of delay only applies to five vehicles turning left onto the driveway, which translates to 95th percentile queue of only 28 feet. The design includes an exclusive left-turn lane to accommodate this queue. Since the volume is so low, this level of queuing and operations is considered acceptable and would not require signalization or other additional improvements. Eastbound vehicles travelling along NC 84 at this location operate freely with no delay.

The LOS F reported in Table 3 under 2040 Build AM conditions at the NC 84 and Optimist Park East Entrance is only for the left-turning movement crossing NC 84 at that location. Per forecasted traffic volumes, this level of delay only applies to six vehicles turning left onto the driveway, which translates to 95th percentile queue of only 38 feet. The design includes an exclusive left-turn lane to accommodate this queue. Since the volume is so low, this level of queuing and operations is considered acceptable and would not require signalization or other additional improvements. Westbound vehicles travelling along NC 84 at this location operate freely with no delay.

Table 3. Summary of Intersection Delay (seconds) and Level of Service

Intersection Name	Existing Intersection Control[1]		Existing Conditions (2012)		2035 No Build		2040 Preferred Alternative	
			Delay in seconds (LOS)					
			AM	PM	AM	PM	AM	PM
NC 16 / Rea Road	Signalized		27.6 (C)	35.8 (D)	42.7 (D)	96.4 (F)	36.5 (D)	45.1 (D)
NC 84 / NC 16 / Weddington United Methodist Church Drive	Signalized		36.5 (D)	29.7 (C)	62.9 (E)	32.6 (C)	23.8 (C)	23.8 (C)
NC 84 / Weddington-Matthews Road	Unsignalized / Roundabout[2]	SB	45.0 (E)	34.1 (D)	18.8 (C)	40.1 (E)	5.8 (A)	5.9 (A)
NC 84 / Cox Road	Unsignalized	SB	20.0 (C)	17.5 (C)	36.9 (E)	25.6 (D)	23.3 (C)	20.5 (C)
NC 84 / Twelve Mile Creek Road	Signalized		26.9 (C)	27.4 (C)	78.4 (E)	95.2 (F)	22.5 (C)	22.9 (C)
NC 84 / Weddington HS West Drive	Unsignalized	SB	27.0 (D)	* (F)	* (F)	* (F)	30.4 (C)[3]	43.0 (D)[3]
NC 84 (Westbound) / Weddington HS East Drive	*Unsignalized*	*SB*	--	--	--	--	*32.3 (C)[3]*	*13.1 (B)[3]*
NC 84 (Eastbound) / Grace Baptist Church Drive	*Unsignalized*	*NB*	--	--	--	--	*12.3 (B)*	*19.1 (C)*
		SB	--	--	--	--	*21.3 (C)*	*56.1 (F)*
NC 84 / Deal Road / Hollister Estates Drive	Unsignalized / Signalized	NB	57.4 (F)	54.1 (F)	* (F)	* (F)	16.3 (B)	16.1 (B)
		SB	* (F)	* (F)	* (F)	* (F)		
NC 84 (Westbound) / Optimist Park West Drive	*Unsignalized*	*NB*	--	--	--	--	*7.0 (A)[3]*	*13.9 (B)[3]*
		SB	--	--	--	--		
NC 84 (Westbound) / Optimist Park East Drive	*Unsignalized*	*NB*	--	--	--	--	*67.7 (F)*	*33.5 (D)*
		SB	--	--	--	--	*21.9 (C)*	*15.0 (C)*
NC 84/Southbrook Community Church West Drive	Unsignalized	SB	26.0 (D)	29.7 (D)	97.0 (F)	131.2 (F)	--[4]	--[4]
NC 84/Southbrook Community Church East Drive/Lester Davis Road	Unsignalized	NB	42.0 (E)	40.2 (E)	* (F)	* (F)	--[4]	--[4]
		SB	40.8 (E)	53.4 (F)	* (F)	* (F)		
NC 84 (Westbound) / Antioch Church Road[5]	Unsignalized	SB	156.3 (F)	103.1 (F)	* (F)	* (F)	7.4 (A)[3]	7.0 (A)[3]
NC 84/Waxhaw-Indian Trail Road	Signalized		40.3 (D)	31.8 (C)	96.8 (F)	53.9 (D)	43.3 (D)	37.4 (D)

Intersection Name	Existing Intersection Control[1]		Existing Conditions (2012)		2035 No Build		2040 Preferred Alternative	
			Delay in seconds (LOS)					
			AM	PM	AM	PM	AM	PM
NC 84/Hardwood Drive/ Village Commons Shopping Center Drive[6]	*Unsignalized*	*NB*	--	--	--	--	*4.6 (A)*	*4.8 (A)*
		SB	--	--	--	--		
Waxhaw-Indian Trail Road/ Shops at Wesley Chapel Drive	*Unsignalized*	*EB*	--	--	--	--	*29.2 (D)*	*26.6 (D)*
Waxhaw-Indian Trail Road/ Village Commons Shopping Center Drives[6]	*Unsignalized*	*EB*	--	--	--	--	*5.8 (A)*	*12.9 (B)*
		WB	--	--	--	--		
Lester Davis Road/Wirhall Drive	*Unsignalized*	*EB*	--	--	--	--	*10.5 (B)*	*11.3 (B)*
NC 84 (Westbound) / Southbrook Community Church East Drive	*Unsignalized*	*SB*	*NA*	*NA*	*NA*	*NA*	*23.7 (C)[4]*	*15.2 (C)[4]*
NC 84 (Eastbound) / Lester Davis Road	*Future Signalized*		*NA*	*NA*	*NA*	*NA*	*10.4 (B)*	*9.5 (A)*
NC 84 (Eastbound) / Optimist Park West U-Turn	*Future Unsignalized*	*SB*	*NA*	*NA*	*NA*	*NA*	*14.2 (B)*	*27.9 (D)*
NC 84 (Eastbound) / Optimist Park East U-Turn	*Future Unsignalized*	*SB*	*NA*	*NA*	*NA*	*NA*	*15.3 (C)*	*19.9 (C)*
NC 84 (Westbound)/Lester Davis Road U-Turn	*Future Unsignalized*	*NB*	*NA*	*NA*	*NA*	*NA*	*23.8 (C)*	*18.3 (C)*
NC 84 (Eastbound) / Antioch Church Road U-Turn	*Future Unsignalized*	*SB*	*NA*	*NA*	*NA*	*NA*	*15.6 (C)*	*19.0 (C)*
Rea Road Extension / NC 84	Future Signalized		NA	NA	NA	NA	13.9 (B)	16.4 (B)

[1] For signalized intersections, delay and LOS shown are for overall intersection. For unsignalized intersections, delay and LOS shown are for intersection approaches under stop sign control; SB – southbound approach, NB – northbound approach, EB – eastbound approach, WB – westbound approach.

[2] Roundabout was completed in September 2013 at Weddington Road (NC 84)/Weddington-Matthews Road intersection as part of Project U-5325. Design Year delay for No Build (2035) and Build (2040) conditions are for overall intersection with roundabout in place.

[3] Orange highlighting indicates that traffic signal (along with additional proposed intersection improvements) is required for 2040 Build Conditions for intersection to operate at an acceptable LOS with the Preferred Alternative. Delay and LOS shown are for overall intersection with signal in place.

[4] Southbrook Community Church has two existing driveways. For 2035 Build Conditions in the 2015 EA, the west driveway was analyzed as right-in/right-out only, and the east driveway was analyzed as a signalized intersection (with NC 84/Lester Davis Road). For 2040 Build Conditions with the Preferred Alternative, both driveways will be right-in/right-out only.

[5] For 2035 Build Conditions in the 2015 EA, the NC 84/Antioch Church Road intersection was analyzed as a full movement signalized intersection. For 2040 Build Conditions, a signal is still proposed at the intersection, but only right turns will be allowed from Antioch Church Road to NC 84 because of the proposed Synchronized Street design on NC 84. Left-turns will still be allowed from eastbound NC 84 to Antioch Church Road. With this design eastbound NC 84 traffic is not controlled by the proposed signal.

[6] For 2040 Build conditions, the NC 84/Hardwood Drive and Waxhaw-Indian Trail Road/Village Commons Shopping Center Drives intersections are proposed to be a roundabout with the Preferred Alternative. Delay for 2040 Build Conditions is for the overall intersection with a roundabout in place.

*Delay greater than 250 seconds.

Analysis of Proposed Superstreet Design at NC 84/Lester Davis Road Intersection

NCDOT conducted a traffic capacity analysis of the proposed superstreet, or synchronized street, design at the intersection of NC 84 and Lester Davis Road with the Preferred Alternative. The results of the analysis are documented in a memorandum titled "U-3467 Superstreet Design at the Intersection of NC 84 and Lester Davis Road" (NCDOT, February 2017).

The existing, four-leg NC 84/Lester Davis Road/Southbrook Church Drive intersection is two-way stop controlled. The intersection is proposed to operate with a synchronized street design. The proposed design includes two median openings for U-turns along NC 84. The purpose of the analysis was to determine if the proposed storage lengths for left turns and U-turns with the design of the Preferred Alternative would be adequate under 2035 Build Conditions. The analysis was performed using Synchro/SimTraffic version 9.1

The results of the analysis indicated all movements on the synchronized street intersection are expected to operate at LOS D or better under 2035 Build Conditions. In addition, all left turn and U-turn queue lengths are less than the storage lengths of the proposed turn lanes. Finally, the Lester Davis Road approach is expected to operate at LOS D or better, with less than 100 feet of queuing during 2035 peak hours. Based on the results of the analysis, it is expected that the geometric recommendations for the synchronized street intersections with the Preferred Alternative are adequate to accommodate 2035 traffic volumes. The results of the updated 2040 Build Conditions intersection capacity analysis discussed in the previous section of this FONSI also indicated the proposed synchronized street design at the NC 84/Lester Davis Road intersection will operate at an acceptable LOS under 2040 Build Conditions.

Analysis of Proposed Roundabout at NC 84/Hardwood Drive Intersection

NCDOT conducted a traffic capacity and operations analysis of the proposed roundabout at the intersection of NC 84 and Hardwood Drive with the Preferred Alternative. The results of the analysis are documented in a memorandum titled "Roundabout Analysis" (NCDOT, April 2017).

The purpose of the analysis was to determine if the proposed roundabout at the NC 84/Hardwood Drive intersection with the design of the Preferred Alternative would operate acceptably under 2035 Build Conditions. The analysis was performed using SIDRA 5. The results of the analysis indicated that if a roundabout is pursued, it is recommended that the roundabout have dual eastbound and westbound lanes on NC 84. However, the roundabout could initially be striped as a single lane roundabout until unacceptable traffic operations occur. The results of the updated 2040 Build Conditions intersection capacity analysis discussed previously in this FONSI also indicate the proposed roundabout at the NC 84/Hardwood Drive intersection will operate at an acceptable LOS under 2040 Build Conditions.

Analysis of NC 84/Waxhaw-Indian Trail Road Intersection and Shopping Center Access Analysis

NCDOT conducted a traffic capacity and operations analysis of the NC 84/Waxhaw-Indian Trail Road intersection, as well as an access analysis to the adjacent shopping centers, based on the proposed design of the Preferred Alternative. The results of the analysis are documented in a memorandum titled "NC 84 and Waxhaw Indian Trail Rd Intersection Analysis and Shopping Center Access Analysis" (NCDOT, March 2017).

The design of the Preferred Alternative proposes to add a median along NC 84 in the vicinity of the NC 84/Waxhaw-Indian Trail Road intersection. The purpose of this analysis was to determine whether the proposed geometric changes with the Preferred Alternative will have a substantial adverse effect on adjacent shopping center access points. The analysis was performed using Synchro/SimTraffic version 9. The results of the analysis focused on three main issues: NC 84/ Waxhaw-Indian Trail Road intersection operations; road network operations in the vicinity of the intersection; and, access to the shopping

center in the southwest quadrant of the intersection. The results of the analysis indicated the proposed geometry with the Preferred Alternative could be expected to improve peak hour delay and travel time per vehicle on average throughout the analysis network under 2035 Build Conditions. The results of the updated 2040 Build Conditions intersection capacity analysis discussed previously in this FONSI also indicated the NC 84/ Waxhaw-Indian Trail Road intersection, as well as the other intersections in the vicinity of the shopping centers, will operate at an acceptable LOS under 2040 Build Conditions.

6.3 Signals

The Preferred Alternative includes traffic signals at the following intersections:

- NC 16 and Rea Road – The existing three-way signalized intersection will be converted to a four-way signalized intersection, with two through lanes at all approaches. Eastbound Rea Road will have two left and two right turn lanes at NC 16. NC 84 will have dual lefts and a single right-turn lane at NC 16. NC 16 northbound will have Dual lefts and a dedicated right-turn lane. NC 16 southbound will have a one left-turn lane and one right-turn lane.
- Rea Road Extension (relocated NC 84) and existing NC 84 – The Preferred Alternative includes a new signalized "T" intersection where Rea Road Extension ties into existing NC 84 west of Twelve Mile Creek Road. Two through lanes will be provided on NC 84 in each direction. A left-turn lane will be provided from NC 84 eastbound to Weddington Road. A dedicated right-turn lane will be provided from NC 84 westbound to Weddington Road. Dual lefts and a single right turn lane will be provided on Weddington Road.
- Twelve Mile Creek Road and NC 84 – The existing signal will be retained with the Preferred Alternative. NC 84 will have two through lanes and dedicated left-turn and right-turn lanes on both approaches at this intersection. Both Twelve Mile Creek Road approaches will have dedicated right-turn and left-turn lanes and one through lane.
- Weddington High School western driveway and NC 84 – A signal will be installed at the western entrance to Weddington High School with the Preferred Alternative. The western entrance will be a full movement "T" intersection with left-turns permitted both into and out of the school. NC 84 will have two through lanes on both approaches at the western school driveway. A bulb-out will be located adjacent to eastbound NC 84 at the western school driveway signal for westbound NC 84 traffic wanting to make a U-turn. There will be a dedicated right-turn lane from westbound NC 84 to the school entrance. The western school entrance will have one right-turn and one left-turn lane exiting the school.
- Weddington High School eastern driveway, Grace Baptist Church driveway, and NC 84 – A signal will be installed at this intersection with the Preferred Alternative, but it will only control NC 84 westbound and left-turns from NC 84 eastbound to the school driveway. As a result of the synchronized street design, the NC 84 eastbound through lanes and the church driveway will not be controlled by the signal (the church driveway will remain stop sign controlled). The church driveway will be right-out only. The school driveway will also be right-out only at NC 84. Left turns will be permitted into the church from NC 84 westbound, but will be controlled by a stop sign in the median. There will be a dedicated right-turn lane into the school entrance from NC 84. The eastern school entrance will have dual right-turn lanes exiting the school with the Preferred Alternative.
- Deal Road, Hollister Estates Drive and NC 84 – A signal is proposed at this intersection. NC 84 will have two through lanes and dedicated left-turn lanes on both approaches. Westbound NC 84 will have a dedicated right-turn lane, whereas eastbound NC 84 will have a shared through-right-turn

lane. Northbound Hollister Estates Drive will be a one-lane approach, and southbound Deal Road will have a shared through-right-turn lane and a dedicated left-turn lane.

- Optimist Park western driveway and NC 84 – A signal will be installed at this intersection with the Preferred Alternative, but it will only control NC 84 westbound and left-turns from NC 84 eastbound to the park driveway. As a result of the synchronized street design, the NC 84 eastbound through lanes will not be controlled by the signal. The single lane park driveway exit will be right-out only onto NC 84. A bulb-out will be located adjacent to eastbound NC 84 for westbound NC 84 traffic wanting to make a U-turn. U-turning traffic will be controlled by a stop sign in the median. One westbound lane on NC 84 will be a shared through/right-turn lane at the park driveway with the Preferred Alternative.
- Lester Davis Road and NC 84 – The Preferred Alternative realigns the Lester Davis Road intersection with NC 84 slightly to the west to eliminate the skew in the existing intersection. A signal will be installed at this intersection, but it will only control NC 84 eastbound and left-turns from NC 84 westbound to Lester Davis Road. As a result of the synchronized street design, the NC 84 westbound through lanes will not be controlled by the signal. Lester Davis Road will be right-out only at NC 84.
- Antioch Church Road and NC 84 – the Preferred Alternative realigns Antioch Church Road slightly to the west at NC 84 to eliminate the skew in the existing intersection. A signal will be installed at this intersection with the Preferred Alternative, but it will only control NC 84 westbound and left-turns from NC 84 eastbound to Antioch Church Road. As a result of the synchronized street design, the NC 84 eastbound through lanes will not be controlled by the signal. Antioch Church Road will be right-out only.
- Waxhaw-Indian Trail Road and NC 84 – This intersection is currently signalized, and will remain signalized with the Preferred Alternative. Intersection improvements include an additional left-turn lane from northbound Waxhaw-Indian Trail Road onto westbound NC 84, an additional left-turn lane from southbound Waxhaw-Indian Trail Road onto eastbound NC 84 and an additional through lane on westbound NC 84.

6.4 Structures

The *Preliminary Hydraulics Study for Environmental Impact* prepared in September 2013 was updated on April 24, 2017. Preferred Alternative CA2 includes two existing crossings and one new location crossing.

Site 3 is a crossing of Culvert Branch under NC 84. The stream crossing is in a FEMA limited detailed flood study area in a Special Flood Hazard Zone AE.

Site 4 is a crossing of West Fork Twelvemile Creek under NC 84. The stream crossing is in a FEMA detailed flood study area in a Special Flood Hazard Zone AE. This is the only proposed crossing over a stream with a published floodway, and a floodway modification may be required at this site. NC 84 is proposed to be widened from two lanes to a four-lane divided facility at this stream crossing.

Site 9 is a crossing of Mundys Run. The stream crossing is in a FEMA limited detailed flood study area in a Special Flood Hazard Zone AE.

Hydraulic Recommendations

Drainage structures recommendations at the Preferred Alternative's major hydraulic crossings are presented in Table 4. The NEPA / Section 404 Merger Team concurred on major hydraulic structures and sizes at a meeting on March 15, 2017 (See Appendix B). Since that meeting, the following changes have occurred:

- The Merger Team concurred on "an appropriately sized culvert" at Site 3 on March 15, 2017. The recommended structure at Site 3 for the Preferred Alternative, as presented to the Merger team at a meeting on December 13, 2017, is a 145-foot long three-barrel 12-foot by 7-foot reinforced concrete box culvert (RCBC).
- A single bridge rather than previously noted dual bridges is proposed at Site 4. A revised bridge length of 110 feet was presented to the Merger team at a meeting on December 13, 2017.
- NCDOT revised the Alternative CA2 alignment in the vicinity of Site 9 to reduce impacts to Mundys Run. As a result of the alignment shift, the recommended structure length for Site 9 has been revised from 169 feet to 150 feet and the recommended structure type has been revised from a three-barrel 9- foot by 8- foot RCBC to a two-barrel 11-foot by 8-foot RCBC. This information was presented to the Merger team at meetings on April 12, 2017 and December 13, 2017.

Table 4. Major Drainage Structures Recommendations

Site	Stream ID / Wetland ID[1] (Stream Type[2])	Drainage Area (sq. mi.)	Existing Structure	Recommended Structure	Stream Impact[3] (linear ft.) / Wetland Impact (acres)	Structure Cost[4]
			Number, Size, Structure Type (length)	Number, Size, Structure Type (length)		Recommended (vs. Bridge)
3	Culvert Branch (P)	2.10	1@12'x7' RCBC (47 ft.)	3@12'x7' RCBC (145 ft.)	189 ft./0.0 ac.	$384,400 ($838,400)
4	West Fork Twelve-mile Creek (P)	10.60	3@11'x12' RCBC (40 ft.)	Concrete Girder Bridge[5] (110 ft.)	0.0 ft.[8]/0.0 ac.	$1,138,500
9	Mundys Run (P)	1.40	New Location	2@11' x 8' RCBC (150 ft.)[9]	222 ft./0.0 ac.	$376,500 ($838,400)

Note: Major drainage structures are defined as 72 inches in diameter or greater. Final structure sizes will be determined during final design. All of the proposed major culvert crossings are buried one foot to provide for aquatic passage.
[1] No wetlands impacted by proposed structures.
[2] P= Perennial, I= Intermittent
[3] Stream impacts calculated based on slope stake (ss) limits plus 25 feet (minus existing structures).
[4] Cost estimates are preliminary and will be updated during final design. Structure costs (non-bridge) include estimated mitigation costs.
[5] Bridge reduces West Fork Twelvemile Creek stream impacts by 210 linear feet. Impacts to West Fork Twelvemile Creek (ss+25 feet) where it parallels NC 84 are 250 linear feet and will require a relocation of the stream.

7.0 ENVIRONMENTAL EFFECTS OF THE PREFERRED ALTERNATIVE UPDATES AND REVISIONS

Table 5 summarizes the potential environmental impacts of Preferred Alternative CA2 and provides a comparison of the impacts to those shown at the NEPA / Section 404 LEDPA meeting on April 12, 2017. The sections following the table summarize the changes in environmental effects as a result of updates and revisions to Alternative CA2 as described in Section 6.1 of this FONSI.

Table 5. Summary of Potential Environmental Effects of the Preferred Alternative

Impact Category		Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
Natural Resources Impacts[1]			
Federally-Listed Species Present in Study Area		No	1 Unresolved
100-Year Floodplain and Floodway Impacts (acres)		7.2	7.3
Delineated Wetland Impacts (crossings/acres)		4 / 0.22	4 / 0.20
Delineated Stream Impacts (crossings/linear feet)		8 / 1,640	8 / 1,622
Delineated Other Surface Water Impacts (acres)		0.06	0.07
Forest Impacts (acres)		43.7	44.3
Human Environment Impacts			
Relocations	Residential	5	5
	Business	1	0
	Non-Profit	1	0
	Total	7	5
Potentially Impacted Lots in Planned Development[2]		4	4
Low Income/Minority Populations Present		No	No
Schools[3]		1	1
Recreational Areas/Parks[4]		1	1
Churches[5]		1	1
Cemeteries		0	0
Historic Sites		2/No Adverse Effect[6]	2/No Adverse Effect[6]
Section 4(f) Impacts[7]		1 Historic, 1 Park	1 Historic, 1 Park
Traffic Noise Impacts (receptors)		8	5
Physical Environment Impacts			
Prime, Statewide, and Unique Farmland Soils (acres)		63.9	63.0
Underground Storage Tanks/HazMat Sites		3	3
Preliminary Cost Estimate			
Estimated Total Cost[8]		$47,717,000	$57,599,000

[1] Impacts are calculated based on slope stake limits plus 25 feet.
[2] Lots potentially impacted for development in the Woods Development preliminary plat.
[3] Current access to Weddington High School will be changed as a result of the proposed project.
[4] Right-of-way impacts occur at Dogwood Park.
[5] Revised access and parking spaces impacted at Siler Presbyterian Church.
[6] No Adverse Effect to Jacob Allen Deal Farm or Howard House with conditions identified in Project Commitments.
[7] *De minimis* impact determinations at Jacob Allen Deal Farm and Dogwood Park.
[8] Subject to change. Current Alternative CA2 includes updated right-of-way costs, updated bridge, roundabout and mitigation estimates.

7.1 Natural Resources

A Natural Resources Technical Report (NRTR) was originally completed for this project in October 2013. Since the selection of the Preferred Alternative the project limits have expanded to the east. An NRTR Update reflecting the revised study area was prepared in February 2018 (CALYX, 2018). Original field work was conducted between May 28 and September 24, 2013 with additional field work conducted on June 1, October 11-12, and December 21, 2017. Jurisdictional areas identified in the original study area were initially verified by the U.S. Army Corps of Engineers (USACE) and North Carolina Division of Water Resources (NCDWR) on April 14, 2014. Additional delineations were conducted as a result of the field

verification meeting and were verified during a second site review on June 19, 2014. Additional delineations conducted in the extended study area have not been reviewed by the regulatory agencies at the time of this FONSI. NCDOT will coordinate with the US Army Corps of Engineers and North Carolina Division of Water Resources to verify additional delineations conducted in the extended study area prior to permitting.

7.1.1 Terrestrial Communities

The project study area increased from 1,127.9 acres to 1,188.3 acres. Two primary terrestrial communities were observed in the study area: dry-mesic oak-hickory forest and man-dominated maintained/disturbed land. These communities cover approximately 981 acres, which include approximately 393 acres of dry-mesic oak-hickory forest and 588 acres of maintained/disturbed land. Anticipated impacts of the Preferred Alternative to terrestrial communities and forests are summarized in Table 6 and Table 7, respectively.

Table 6. Terrestrial Community Types and Anticipated Impacts for the Preferred Alternative

Community Type	Total Acres in Study Area	Percentage of Study Area	Anticipated Impacts (acres)
			Preferred Alternative CA2
Maintained/Disturbed Land	588.3	49.5	77.5
Dry-Mesic Oak-Hickory Forest	393.3	33.1	31.0
Mesic Mixed Hardwood Forest	78.6	6.6	13.3
Cutover/Early Successional	62.6	5.3	6.1
Agriculture/Pasture	37.4	3.1	4.3
Pine Plantation	18.8	1.6	0.0
Piedmont/Low Mountain Alluvial Forest	9.3	0.8	0.0
Total	**1,188.3**	**100.0**	**132.2**

Table 7. Anticipated Forest Impacts

	Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
Forest Impacts (acres)[1]	43.7	44.3

[1] Forest impacts include the following terrestrial communities: Dry-Mesic Oak-Hickory Forest, Mesic Mixed Hardwood Forest, Pine Plantation, and Piedmont/Low Mountain Alluvial Forest.

7.1.2 Streams and Other Surface Waters

A total of 30 jurisdictional streams, including 16 intermittent streams, 10 perennial streams, and four streams with both perennial and intermittent reaches, were delineated in the project study area. Table 8 summarizes the physical characteristics of study area streams, as well as the anticipated impacts to these streams for the Preferred Alternative.

Table 8. Characteristics and Anticipated Impacts for Study Area Streams

Stream Name, ID	Figure	DWR Index No.	Best Use Class	Bank Height (ft.)	Bankfull Width (ft.)	Water Depth (in.)	Channel Substrate[1]	Velocity	Clarity	Stream Type[2]	Length in Study Area (linear ft.)	Anticipated Impacts[3] (linear ft.)	
												Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
UT to West Fork Twelvemile Creek, SA	2I, 2J	11-138-1	C	1	1-2	1	Sand	Slow	Clear	I	1,099	0	0
UT to West Fork Twelvemile Creek, SB	2I	11-138-1	C	3-5	4-6	4-12	S/S/B	Moderate	Slightly Turbid	P	1,356	94	60
West Fork Twelvemile Creek	2I	11-138-1	C	7-10	12-15	6-24	Cobble	Moderate	Clear	P	1,362	234	250
UT to West Fork Twelvemile Creek, SD	2I	11-138-1	C	1-2	3	1-2	Silt	Slow	Slightly Turbid	I	75	0	0
Culvert Branch	2H	11-138-1-1	C	3-4	6-14	1-3	S/S/G/C	Slow	Slightly Turbid	P	966	189	201
UT to Culvert Branch, SF	2H	11-138-1-1	C	0.2-1	1-2	1-2	Sand	Moderate	Clear	I	123	0	0
UT to Mundys Run, SG	2D, 2F	11-138-1-2	C	3-4	8-12	12-24	S/S/G/C	Moderate	Clear	P	1,262	0	0
Mundys Run	2D, 2F, 2G	11-138-1-2	C	1-4	2-12	2-24	S/S/G/C/B	Moderate	Clear	I	691	0	0
										P	5,311	222	224
UT to Mundys Run, SI	2C, 2D	11-138-1-2	C	6-7	4-6	3-6	Sand	Slow	Clear	P	4,560	0	0
UT to Mundys Run, SJ	2D	11-138-1-2	C	1-3	2	1-2	Sand	Slow	Slightly Turbid	I	68	0	0
UT to Mundys Run, SK	2F, 2G	11-138-1-2	C	3-4	3-5	4-10	S/S/G/C	Slow	Clear	P	2,441	0	0
UT to Mundys Run, SL	2F	11-138-1-2	C	3-4	3	0-1	Sand	N/A	N/A	I	54	0	0
UT to Mundys Run, SM	2D	11-138-1-2	C	3	3-4	2-6	Sand	Moderate	Clear	I	654	0	0
										P	1,172	0	0
UT to Mundys Run, SN	2F, 2G	11-138-1-2	C	0.5-1	2-3	3-4	Sand	Slow	Clear	I	195	0	0
UT to Mundys Run, SO	2D	11-138-1-2	C	5-6	3-4	2-5	Silt	Slow	Clear	I	453	0	0
UT to Mundys Run, SP	2E, 2F	11-138-1-2	C	2-3	2-3	2-5	Sand	Slow	Slightly Turbid	I	1,251	156	156
UT to Mundys Run, SQ	2C, 2D	11-138-1-2	C	3-5	2-3	4-10	S/S/C	Slow	Slightly Turbid	P	1,399	0	0
UT to Mundys Run, SR	2E	11-138-1-2	C	2-4	3-4	3-6	Sand	Slow	Slightly Turbid	P	659	0	0
UT to Mundys Run, SS	2C, 2E	11-138-1-2	C	2-4	3-5	3-5	Sand	Slow	Clear	P	3,005	389	411
UT to Mundys Run, ST	2B	11-138-1-2	C	4	4	3-6	Sand	Moderate	Slightly Turbid	I	446	0	0
UT to Mundys Run, SU	2B	11-138-1-2	C	2	2-3	3-6	Sand	Slow	Slightly Turbid	I	776	0	0
UT to Mundys Run, SV	2E	11-138-1-2	C	3-5	4-5	6-10	S/G/C/B	Moderate	Slightly Turbid	I	571	0	0
										P	899	0	0
UT to Mundys Run, SW	2F, 2G	11-138-1-2	C	3-4	4-5	0-1	S/G/C/B	Moderate	Slightly Turbid	I	1,163	0	0
UT to West Fork Twelvemile Creek, SX	2J	11-138-1	C	0.5-1	2	3-5	Sand	Moderate	Clear	I	396	0	0
UT to West Fork Twelvemile Creek, SZ	2J	11-138-1	C	1	2	4-6	Sand	Moderate	Clear	I	305	110	112
UT to Mundys Run, SAA	2F, 2G	11-138-1-2	C	1	1-1.5	2-3	Sand	Slow	Clear	I	896	0	0
UT to Mundys Run, SAB	2G	11-138-1-2	C	1	1	2-3	Sand	Slow	Clear	I	117	0	0
UT to Mundys Run, SAD	2F	11-138-1-2	C	3-5	3-4	2-3	Sand	Slow	Clear	I	622	246	208
UT to Price Mill Creek, SAE	2L	11-138-2-2	C	2-4	2-4	6-8	S/S/G/C	Moderate	Slightly Turbid	I	316	N/A	0
										P	432	N/A	0
Price Mill Creek	2L	11-138-2-2	C	4-6	2-4	8-15	S/G/C	Moderate	Slightly Turbid	P	183	N/A	0
										Total Intermittent	17,775	**512**	**476**
										Total Perennial	17,503	**1,128**	**1,146**
										Total	35,278	**1,640**	**1,622**

[1] S/S/B – silt/sand/bedrock, S/S/G/C/B – silt/sand/gravel/cobble/bedrock, S/S/G/C – silt/sand/gravel/cobble, S/S/C – silt/sand/cobble, S/G/C/B – sand/gravel/cobble/bedrock [2] P-Perennial, I-Intermittent [3] Impacts are calculated based on slope stake limits plus 25 feet.

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Sixteen ponds were identified within the study area. All of the ponds appear to be man-made. Table 9 summarizes the approximate size of each pond, as well as the anticipated impacts of the Preferred Alternative. If the pond is directly connected to a jurisdictional stream or wetland, the name of that feature is also indicated in Table 9.

Table 9. Characteristics and Anticipated Impacts for Other Surface Waters

Pond ID	Figure	Appearance	Connected Feature Map ID[1]	Area (acres)	Preferred Alternative CA2 at LEDPA [2]	Preferred Alternative CA2 Current Design[2]
PA	2J	Manmade	N/A	1.50	0.00	0.00
PB	2I	Manmade	SB/WB	0.62	0.00	0.00
PC	2G, 2H	Manmade	N/A	0.38	0.00	0.00
PD	2G, 2H	Manmade	N/A	1.81	0.00	0.00
PE	2F, 2G	Manmade	SN/WM	1.15	0.00	0.00
Varda Lake	2C	Manmade	N/A	1.58	0.00	0.00
PG	2E	Manmade	N/A	0.35	0.00	0.00
PH	2E	Manmade	WN	0.27	0.00	0.00
PI	2E	Manmade	SP	0.83	0.06	0.07
PJ	2D	Manmade	SG	0.87	0.00	0.00
PK	2B	Manmade	ST	0.27	0.00	0.00
PL	2J	Manmade	N/A	0.09	0.00	0.00
PN	2E	Manmade	SV	2.14	0.00	0.00
PO	2E	Manmade	SV	1.05	0.00	0.00
PP	2G	Manmade	N/A	0.20	0.00	0.00
PQ	2L	Manmade	WEE	0.05	N/A	0.00
			Total	**13.16**	**0.06**	**0.07**

[1] N/A indicates connection to a jurisdictional feature located outside of the study area.
[2] Impacts are calculated based on slope stake limits plus 25 feet.

7.1.3 Wetlands

A total of 28 jurisdictional wetlands were identified within the study area. USACE wetland delineation forms and NCDWR wetland rating forms for each site are included in the NRTR Update. Table 10 summarizes wetland classification and quality rating data, as well as the anticipated impacts to study area wetlands for Preferred Alternative CA2. Impacts are compared to Alternative CA2 as presented at the April 2017 LEDPA meeting.

Table 10. Characteristics and Anticipated Impacts for Jurisdictional Wetlands

Wetland ID	Figure	NCDWR Wetland Rating	NCWAM Classification	Hydrologic Classification	Acres in Study Area	Preferred Alternative CA2 at LEDPA [1]	Preferred Alternative CA2 Current Design[1]
WA	2I, 2J	12	Headwater Forest	Riparian	0.05	0.00	0.00
WB	2I	12	Headwater Forest	Riparian	0.08	0.00	0.00
WC	2I	18	Headwater Forest	Riparian	0.17	0.00	0.00
WD	2I	10	Headwater Forest	Riparian	0.08	0.00	0.00
WE	2I	18	Non-Tidal Freshwater Marsh	Riparian	0.01	0.01	0.01
WF	2H	49	Bottomland Hardwood Forest	Riparian	0.62	0.00	0.00
WG	2D	18	Headwater Forest	Riparian	0.10	0.00	0.00
WI	2D	45	Bottomland Hardwood Forest	Riparian	0.55	0.00	0.00
WJ	2F	8	Seep	Riparian	0.02	0.00	0.00
WL	2F, 2G	8	Headwater Forest	Riparian	0.02	0.00	0.00
WM	2F, 2G	16	Headwater Forest	Riparian	0.23	0.00	0.00
WN	2E	18	Headwater Forest	Riparian	0.46	0.15	0.15
WO	2F	12	Headwater Forest	Riparian	0.02	<0.01	<0.01
WP	2E	24	Headwater Forest	Riparian	0.46	0.05	0.03
WQ	2D	20	Headwater Forest	Riparian	0.35	0.00	0.00
WR	2C	23	Headwater Forest	Riparian	0.17	0.00	0.00
WS	2B	22	Headwater Forest	Riparian	0.13	0.00	0.00
WT	2E	12	Headwater Forest	Riparian	0.01	0.00	0.00
WU	2J	10	Headwater Forest	Riparian	0.10	0.00	0.00
WV	2E	14	Headwater Forest	Riparian	0.06	0.00	0.00
WY	2F, 2G	14	Headwater Forest	Riparian	0.30	0.00	0.01
WZ	2C	28	Headwater Forest	Riparian	0.31	0.00	0.00
WAA	2C	4	Headwater Forest	Riparian	0.23	0.00	0.00
WBB	2L	28	Bottomland Hardwood Forest	Riparian	0.09	N/A	0.00
WCC	2L	12	Headwater Forest	Non-Riparian	0.01	N/A	0.00
WDD	2L	24	Bottomland Hardwood Forest	Riparian	0.06	N/A	0.00
WEE	2L	16	Seep	Non-Riparian	0.10	N/A	0.00
WZZ	2F, 2G	23	Headwater Forest	Riparian	0.11	0.00	0.00
				Total Riparian	**4.79**	**0.22**	**0.20**
				Total Non-Riparian	**0.11**	**0.00**	**0.00**
				Total	**4.90**	**0.22**	**0.20**

[1] Impacts are calculated based on slope stake limits plus 25 feet.

7.1.4 Federally Protected Species

As of June 1, 2017, the USFWS lists three federally-protected species for Union County (Table 11). A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on survey results in the study area. Habitat requirements for each species are based on the current best available information from referenced literature and/or USFWS.

Table 11. Federally-Protected Species for Union County

Scientific Name	Common Name	Federal Status[1]	Habitat Present	Biological Conclusion	
				Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
Lasmigona decorata	Carolina heelsplitter	E	Yes	No Effect	Unresolved
Rhus michauxii	Michaux's sumac	E	Yes	No Effect	No Effect
Helianthus schweinitzii	Schweinitz's sunflower	E	Yes	No Effect	No Effect

[1] E – Endangered

Carolina heelsplitter

Biological Conclusion: Unresolved

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

Mussel surveys were conducted for the project between August 6 and August 28, 2013 by qualified biologists. Nine stream reaches were surveyed, including multiple sections of West Fork Twelvemile Creek, Mundys Run, and Culvert Branch. Only three freshwater mussel species were documented. An updated mussel survey was conducted for the project on August 23 and October 6, 2017 by NCDOT consultant Alderman Environmental Services, Inc. A full copy of the mussel survey report is included in Appendix E of the 2018 NRTR Update. Five stream reaches were surveyed, including multiple stretches of West Fork Twelvemile Creek and Mundys Run.

Only two freshwater mussel species were documented. Based on relatively poor habitat quality, extremely low mussel taxa diversity and abundances, and isolation of the surveyed stream reaches from known occurrences, the mussel surveys determined that the project will have no effect on Carolina heelsplitter. However, an additional survey will be needed to incorporate Price Mill Creek due to the project study area extension and a final biological conclusion will be rendered per findings. Additionally, a review of North Carolina Natural Heritage Program (NCNHP) records, updated October 2017 indicates no known Carolina heelsplitter occurrence within one mile of the study area.

Michaux's sumac

Biological Conclusion: No Effect

Michaux's sumac, endemic to the inner Coastal Plain and lower Piedmont, grows in sandy or rocky, open, upland woods on acidic or circumneutral, well-drained sands or sandy loam soils with low cation exchange capacities. The species is also found on sandy or submesic loamy swales and depressions in the fall line Sandhills region, as well as in openings along the rim of Carolina bays; maintained railroad, roadside, power line, and utility rights-of-way; areas where forest canopies have been opened up by blowdowns and/or storm damage; small wildlife food plots; abandoned building sites; under sparse to moderately dense pine or pine/hardwood canopies; and in and along edges of other artificially maintained clearings undergoing natural succession. In the central Piedmont, it occurs on clayey soils derived from mafic rocks. The plant is shade intolerant and, therefore, grows best where disturbance (e.g., mowing, clearing, grazing, periodic fire) maintains its open habitat.

Suitable habitat for Michaux's sumac consisting of open, sandy or rocky upland woods is present in the western half of the project study area in the form of a large cutover and a long power line right-of-way paralleling NC 84. Additionally, maintained open roadsides are located throughout the study area. Surveys were conducted by CALYX personnel throughout areas of suitable habitat on October 11-12, 2017. No individuals of Michaux's sumac were observed. A review of NCNHP records, updated October 2017 indicates one historic record of Michaux's sumac within one mile of the study area, EO_ID 15141. The survey date of this occurrence is unknown however the species was not found; it was noted that little suitable habitat remains.

Schweinitz's sunflower

Biological Conclusion: No Effect

Schweinitz's sunflower is 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, blowdowns, 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.

Suitable habitat for Schweinitz's sunflower consisting of field edges, edges of upland oak-pine-hickory woods, and utility rights-of-way are present in the western portion of the study area in the form of agricultural field edges, a long power line right-of-way paralleling NC 84, and cutover areas of oak-pine-hickory woods created by forestry activities. Additionally, maintained open roadsides are located throughout the study area. Surveys were conducted by Calyx personnel throughout areas of suitable habitat on October 11-12, 2017. No individuals of Schweinitz's sunflower were observed. A review of NCNHP records, updated October 2017 indicates one current Schweinitz's sunflower occurrence within 1.0 mile of the study area known as the Marvin-Weddington Road Sunflower Site (EO_ID 13345). The site was last surveyed October 16, 2016 with 191 stems total counted.

Endangered Species Act Candidate Species

As of June 1, 2017, Georgia aster (*Symphyotrichum georgianum*) is the only Candidate species listed by USFWS for Union County. Although suitable habitat for this species is present within the study area, a review of NCNHP records, updated October 2017, indicates no known occurrence of Georgia aster within one mile of the study area.

Bald and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are used for nesting sites, typically within one mile of open water.

A desktop-GIS assessment of the project study area, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed prior to field investigations in May 2013 using 2013 color aerials. Numerous water bodies, including large ponds, impoundments, and a named lake, were identified. A survey of the project study area and the area within 660 feet of the project limits was conducted during field investigations with no occurrence of bald eagle observed. Additionally, a review of NCNHP records, updated October 2017, revealed no known occurrences of this species within one mile of the project study area. Due to the lack of observed nests, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species.

Essential Fish Habitat

The National Marine Fisheries Service has not identified any streams within the project study area as an Essential Fish Habitat.

7.1.5 Soils

The *Union County Soil Survey* identifies 18 soil types within the study area for Preferred Alternative CA2 as shown in Table 12.

Table 12. Soils in the Study Area

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Appling sandy loam, 2-8 percent slopes	ApB	Well drained	Non-hydric
Badin channery silt loam, 8-15 percent slopes	BaC	Well drained	Non-hydric
Badin channery silty clay loam, 2-8 percent slopes, eroded	BdB2	Well drained	Non-hydric
Badin channery silty clay loam, 8-15 percent slopes, mod. eroded	BdC2	Well drained	Non-hydric
Cecil gravelly sandy clay loam, 2-8 percent slopes, eroded	CeB2	Well drained	Non-hydric
Cecil gravelly sandy clay loam, 8-15 percent slopes, eroded	CeC2	Well drained	Non-hydric
Chewacla silt loam, 0-2 percent slopes, frequently flooded	ChA	Somewhat poorly drained	Hydric*
Cid channery silt loam, 1-5 percent slopes	CmB	Moderately well and somewhat poorly drained	Non-hydric

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Colfax sandy loam, 0-3 percent slopes	CoA	Somewhat poorly drained	Hydric*
Georgeville silty clay loam, 2-8 percent slopes, eroded	GfB2	Well drained	Non-hydric
Goldston-Badin complex, 2-8 percent slopes	GsB	Well drained to excessively drained	Non-hydric
Helena fine sandy loam, 2-8 percent slopes	HeB	Moderately well drained	Hydric*
Secrest-Cid complex, 0-3 percent slopes	ScA	Moderately well and somewhat poorly drained	Hydric*
Tarrus gravelly silt loam, 2-8 percent slopes	TaB	Well drained	Non-hydric
Tarrus gravelly silt loam, 8-15 percent slopes	TaC	Well drained	Non-hydric
Tarrus gravelly silty clay loam, 2-8 percent slopes, eroded	TbB2	Well drained	Non-hydric
Tarrus gravelly silty clay loam, 8-15 percent slopes, eroded	TbC2	Well drained	Non-hydric
Wynott gravelly loam, 2-8 percent slopes	WyB	Well drained	Non-hydric

* Soils which are primarily non-hydric, but which may contain hydric inclusions.

7.2 Historical Architectural Resources

As reported in EA Section 5.2.1, the potential effect of the proposed project on historic architectural resources was evaluated in accordance with Section 106 of the Historic Preservation Act at meetings on September 2, 2014 and September 30, 2014, with the NC Historic Preservation Office (HPO) finding:

- Alternatives A2 and C2 would have No Effect on the John Walker Matthews House.
- Alternatives A2 and C2 would have No Adverse Effect to Howard House with the condition that construction fencing shall be erected at the back of the ditch line. No work shall take place in, and no utilities shall encroach into, the historic boundary.
- Alternatives A2 and C2 would have No Adverse Effect to Jacob Allen Deal Farm with the condition of a 25-foot buffer from the historic boundary, delineated by construction fencing erected at the back of the ditch line. The fencing shall extend 500 feet from each access drive, or to the property boundary, whichever is closer.

Preferred Alternative CA2 follows the same general alignment as Alternative A2 in the vicinity of the John Walker Matthews House, Howard House and Jacob Allen Deal Farm. The potential effect of the Alternative CA2 on historic architectural resources was evaluated in accordance with Section 106 of the Historic Preservation Act at a meeting on March 20, 2018, with the NC HPO finding:

- Alternative CA2 would have No Effect on the John Walker Matthews House.
- Alternative CA2 would have No Adverse Effect to Howard House with the condition that construction fencing shall be erected at the back of the ditch line. No work shall take place in, and no utilities shall encroach into, the historic boundary.

- Alternative CA2 would have No Adverse Effect to Jacob Allen Deal Farm with the condition of a 25-foot buffer from the historic boundary, delineated by construction fencing erected at the back of the ditch line. The fencing shall extend 500 feet from each access drive, or to the property boundary, whichever is closer.

Determinations regarding Alternative CA2 are summarized in HPO's March 20, 2018 concurrence form (Appendix B). No additional historic sites on or eligible for the NRHP were identified in the expanded study area.

The Union County Historic Preservation Commission designated Siler Presbyterian Church and the 5.06-acre parcel it is located on at the intersection of NC 84 and Waxhaw-Indian Trail Road as a local Historic Landmark in February 2018. In accordance with North Carolina General Statute 160A-400.9, the Union County Historic Preservation Commission requires that the property owner obtain a Certificate of Appropriateness prior to alterations to exterior features. NCDOT will coordinate with Siler Presbyterian Church to verify a Certificate of Appropriateness for the proposed project's effects on the property has been obtained from the Union County Historic Preservation Commission prior to construction adjacent to the designated parcel.

7.3 Archaeological Resources

An archaeological survey and evaluation of the proposed improvements was conducted from March 20 to June 14, 2017, by qualified archaeologists. As a result of the investigations, 43 new archaeological sites were recorded within the project's area of potential effects (APE). Three of the archaeological sites (31UN400, 31UN402, and 31UN405**) are located within the Preferred Corridor; however, all three sites are recommended Not Eligible for the National Register of Historic Places (NRHP). No further work is recommended at these locations. Two sites recorded were cemeteries (31UN382** and 31UN383**). Both cemeteries (neither of which are recommended eligible for the NRHP) are located well outside of the Preferred Corridor and will not be affected by the project. None of the remaining archaeological sites recorded during the investigation are recommended eligible for the NRHP.

A map review of the extended project study area at the eastern project terminus was conducted on February 27, 2017. A small area east of Wesley Chapel Town Hall was outside of the limits of the initial survey. Based on the existing archaeological site profile produced from the original survey, the amount of disturbance within the added project area, and the diminutive nature of the proposed construction impacts at this location, no further archaeological consultation or work is advocated. Intact, NRHP eligible archaeological resources are unlikely to be present or preserved in the eastern project area addition.

There are no National Register listed archaeological sites within the project's APE. Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register. All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project. No additional archaeological work is recommended.

7.4 Parks and Recreation Trust Fund (PARTF) Conversion

The NC Parks and Recreation Authority oversees the Parks and Recreation Trust Fund (PARTF) and annually allocates funds from PARTF to local government projects in the form of grants. The matching grants are used to acquire land and/or develop park and recreation facilities for the general public. The NC Department of Natural and Cultural Resources (DNCR) is the state agency responsible for PARTF program administration. Within DNCR, program responsibilities have been assigned to the Division of

Parks and Recreation. North Carolina State University Recreation Resources Service (RRS) assists with the implementation of the PARTF program.

When PARTF funding is used by a local government to acquire land via fee simple title or permanent easement, PARTF rules require the land to be used only for public recreation. Rules governing PARTF allow for a conversion of grant-assisted land and/or facilities if certain criteria are met and approval is given from DNCR. A conversion is the use of property acquired or facilities built with PARTF assistance for a purpose other than public recreation.

The proposed project includes the widening of NC 84 from two lanes to four lanes along the northern Dogwood Park boundary. The original alignment proposed by NCDOT avoided impacts to Dogwood Park but resulted in impacts to Wesley Chapel Weddington Athletic Association's (WCWAA) Optimist Park ball fields and Southbrook Community Church parking.

In response to community input from NCDOT's U-3467 January 2016 public hearing, and in an effort to identify a solution which will most effectively serve the community, the Village of Wesley Chapel asked NCDOT to investigate an alignment option that would utilize a portion of Dogwood Park in an effort to save the WCWAA fields and church parking. NCDOT revised the preliminary design to use a portion of the 75-foot setback area within Dogwood Park along NC 84.

Notice of the proposed PARTF Conversion at Dogwood Park was provided to the public in a newsletter and meeting materials associated with NCDOT's U-3467 June 2017 public meeting. Community input received during the subsequent public comment period overwhelmingly favored the proposed conversion of PARTF-assisted land at Dogwood Park to save WCWAA Optimist Park ball fields and Southbrook Church parking.

The Village of Wesley Chapel submitted an initial proposal to DNCR for a partial conversion of 0.73+/- of an acre of land at Dogwood Park. Approximately 97 percent, or 21.78 +/- acres, of Dogwood Park will remain unconverted and available for outdoor recreation use. The proposed conversion shall be mitigated to DNCR satisfaction and the preferred mitigation is replacement with facilities of similar monetary value and recreational usefulness. NCDOT has been working with the Village of Wesley Chapel to satisfy the elements required for the conversion, including the identification of suitable replacement property. Several potential options have been investigated; however, no appropriate replacement property has been identified to date.

The Village of Wesley Chapel will continue to evaluate other potential options for mitigation via suitable replacement property in the coming months. If no suitable replacement property can be found, the Village of Wesley Chapel will provide mitigation to the PARTF in the form of cash repayment based on the DNCR-approved value of the 0.73+/- of an acre proposed for conversion.

NCDOT will continue coordination with the Village of Wesley Chapel and DNCR to satisfy the elements required for the PARTF conversion.

7.5 Section 4(f) *De Minimis* Impact Finding

Section 4(f) of the US Department of Transportation Act of 1966 specifies that publicly owned land from a public park, recreation area, wildlife and waterfowl refuge, and all historic sites of national, state, and local significance may be used for federal projects only if there is no feasible and prudent alternative to the use of such land (23 CFR 774.3(a)(1)) and the project includes all possible planning to minimize impacts to 4(f) lands resulting from such use (23 CFR 774.3(a)(2)).

Federal law (SAFETEA-LU Section 6009(a)) amended Section 4(f) to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). Under the new provisions, once the US Department of Transportation (USDOT) determines that a transportation use of Section 4(f) property results in a *de minimis* impact, analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete (FHWA, 2014).

John Walker Matthews House, Howard House and Jacob Allen Deal Farm are subject to Section 4(f) requirements because they have been determined Eligible for the NRHP. No work will be performed in the vicinity of John Walker Matthews House. The HPO found Alternatives A2 and C2 would have No Effect on the property on October 28, 2014. Preferred Alternative CA2 follows the same alignment as Alternative A2 in the vicinity of John Walker Matthews House. The HPO found Alternative CA2 would have No Effect on the property on March 20, 2018.

The preliminary designs for Detailed Study Alternatives A2 and C2 were revised to avoid impacts to Howard House. Construction of the proposed project would result in no impacts to the property. The HPO determined Alternatives A2 and C2 would have No Adverse Effect on Howard House on October 28, 2014 with conditions. Preferred Alternative CA2 follows the same alignment as Alternative A2 in the vicinity of Howard House. The HPO found Alternative CA2 would have No Adverse Effect on the property, with the previously identified conditions, on March 20, 2018.

The preliminary designs for Detailed Study Alternatives A2 and C2 were revised to minimize impacts to Jacob Allen Deal Farm. Alternative A2 would impact 0.2 acre of the property and Alternative C2 would impact 0.56 acre of the property. On October 28, 2014, NCHPO determined Alternatives A2 and C2 would have No Adverse Effect on Jacob Allen Deal Farm with conditions. Preferred Alternative CA2 generally follows the same alignment as Alternative A2 in the vicinity of Jacob Allen Deal Farm. The HPO found Alternative CA2 would have No Adverse Effect on the property, with the previously identified conditions, on March 20, 2018.

As noted above, under Section 4(f) historic sites of national, state, and local significance cannot, in most cases, be disrupted by highway projects unless it can be shown there are no feasible and prudent alternatives to doing so. FHWA may make a *de minimis* impact determination in cases where a Section 106 finding of "no adverse effect" or "no historic properties affected" on historic properties is made with the concurrence of the HPO and other parties participating in the consultation.

As identified on the October 28, 2014 Concurrence Form for Assessment of Effects (see Appendix B), FHWA indicated its intent to use HPO's concurrence as a basis for a *de minimis* finding for Jacob Allen Deal Farm, pursuant to Section 4(f). The FHWA and NCDOT provided notice of a proposed *de minimis* impact determination under Section 4(f) for the proposed project's potential effect on Jacob Allen Deal Farm to the public in a newsletter and meeting materials associated with NCDOT's U-3467 January 2016 public hearing. FHWA has determined the proposed project's use of Jacob Allen Deal Farm results in a *de minimis* impact, thus completing Section 4(f) evaluation process.

Dogwood Park is located on the southeast corner of the NC 84/Lester Davis Road intersection in the Village of Wesley Chapel (see Figure 2I). The park is a Section 4(f) resource because the property is owned by the Village of Wesley Chapel and operated as a public park. By shifting the roadway alignment to avoid impacts to WCWAA ballfields and church parking, the proposed project will, to some extent, affect public park resources at Dogwood Park.

As noted above, Section 4(f) of the Department of Transportation Act of 1966 gives special protection to public parks and recreational resources. Under Section 4(f), these resources cannot, in most cases, be disrupted by highway projects unless it can be shown there are no feasible and prudent alternatives to doing so. The FHWA may make a *de minimis* impact determination in cases where the official with

jurisdiction over the park or recreational property concurs that the project would not adversely affect the property. FHWA also considers public comments when evaluating a *de minimis* impact determination under Section 4(f).

Notice of the proposed PARTF Conversion and potential Section 4(f) impact at Dogwood Park was provided to the public in a newsletter and meeting materials associated with NCDOT's U-3467 June 2017 public meeting. Community input received during the subsequent public comment period overwhelmingly favored the proposed conversion of PARTF-assisted land at Dogwood Park to save WCWAA Optimist Park ball fields and Southbrook Church parking.

The Village of Wesley Chapel was notified of the FHWA's intent to make a *de minimis* impact finding regarding the effect the proposed NC 84 – Rea Road Extension project will have on a portion of Dogwood Park. In a February 12, 2018 letter to the RRS, the Mayor of the Village of Wesley Chapel, as the official with jurisdiction over Dogwood Park, concurred with the determination the proposed project will not adversely affect the activities, features or attributes that qualify Dogwood Park for protection under Section 4(f) of the Department of Transportation Act, as amended. Based on this concurrence, FHWA makes a *de minimis* finding regarding impacts to Dogwood Park, thus satisfying the requirements of Section 4(f).

7.6 Relocations

Construction of the Preferred Alternative is expected to result in the displacement of five residences (Table 13). Alternative CA2 design was revised to avoid impacts to a business and a non-profit in the Village Commons Shopping Center.

Table 13. Anticipated Residential, Business, and Non-Profit Relocations

	Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
Residential Relocation	5	5
Business Relocations	1	0
Non-Profit Relocations	1	0
Total	7	5

7.7 Traffic Noise Analysis

Introduction

In accordance with Title 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (Title 23 CFR 772) and the North Carolina Department of Transportation Traffic Noise Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed State or Federal highway projects for construction of a highway or interchange on new location, improvements of an existing highway which substantially change the horizontal or vertical alignment or add new through lanes, or projects that involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM®) approved by the Federal Highway Administration (FHWA) and by following procedures detailed in Title 23 CFR 772, the NCDOT Traffic Noise Policy and the NCDOT Traffic Noise Manual. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Construction noise impacts may occur if noise-sensitive receptors are in close proximity to project construction activities. All reasonable efforts should be made to minimize exposure of noise sensitive areas to construction noise impacts.

The source of this traffic noise information can be found the following reports: The *U-3467 Traffic Noise Analysis* (Kimley Horn, 2015) was originally completed in to analyze potential traffic noise impacts for the project alternatives under consideration at that time; the *U-3467 Traffic Noise Report Addendum* (Kimley Horn, 2017) was completed to analyze the Least Environmentally Damaging Practicable Alternative (LEDPA) and to comply with the 2016 NCDOT Traffic Noise Policy; and, the *U-3467 Traffic Noise Report Addendum #2* (Kimley Horn, 2018) was prepared to include the proposed roundabout at NC 84 and Hardwood Drive in the noise analysis.

Traffic Noise Impacts and Noise Contours

The maximum number of receptors predicted to be impacted by future traffic noise from the LEDPA is shown in Table 14. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria (NAC) or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Policy.

The maximum extent of the 71- and 66- dB(A) hourly-equivalent noise level contours measured from the center of the proposed NC 84 roadway is 50 feet and 100 feet. Along the proposed Rea Road extension, the 71 dB(A) hourly-equivalent noise level contour is anticipated to be immediately adjacent to the roadway and the 66 dB(A) noise level contour is predicted to be 60 feet from the center of the proposed alignment.

Table 14. Predicted Traffic Noise Impacts*

Alternative	**Traffic Noise Impacts**			
Preferred Alternative CA2 / LEDPA	Residential (NAC B)	Places of Worship/Parks/Schools, etc. (NAC C & D)	Businesses (NAC E)	Total
	4	1	0	5

*Per TNM®2.5 and in accordance with 23 CFR Part 772

Traffic Noise Abatement Measures

Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors in each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, establishment of buffer zones, noise barriers and noise insulation (NAC D only). For each of these measures, benefits versus allowable abatement measure quantity (reasonableness), engineering feasibility, effectiveness and practicability and other factors were included in the noise abatement considerations.

Substantially changing the highway alignment to minimize noise impacts is not considered to be a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT base dollar value of $22,500 per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Manual, causing this abatement measure to be unreasonable.

Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb, and reflect highway traffic noise.

Potential noise abatement measures for the predicted traffic noise impacts were considered for the proposed project. The traffic noise analysis determined that three of the five predicted traffic noise impacts were isolated impacts. As defined by the noise abatement feasibility criteria of the NCDOT Traffic Noise Policy, at least two impacted receptors must be benefitted from noise abatement measures. Therefore, abatement for those three predicted impacts would not be feasible. Additionally, this project will maintain partially-controlled right-of-way access, meaning that most noise-sensitive land uses will have direct access connections to the proposed project, and most intersections will adjoin the project at grade. The traffic noise study confirmed that the physical breaks in potential noise barriers that would occur due to the partially-controlled right-of-way access would prohibit any noise barrier from providing the minimum required traffic noise level reductions at the other two predicted traffic noise impacts, rendering noise abatement not feasible.

Summary

Based on this preliminary study, traffic noise abatement is not recommended and no noise abatement measures are proposed. This evaluation completes the highway traffic noise requirements of Title 23 CFR Part 772. No additional noise analysis will be performed for this project unless warranted by a significant change in the project's design concept or scope.

In accordance with NCDOT Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the Finding of No Significant Impact (FONSI). NCDOT strongly advocates the planning, design and construction of noise-compatible development and encourages its practice among planners, building officials, developers and others.

7.8 Air Quality Analysis

The project is located in Union County, which is within the Charlotte maintenance area for the 2008 ozone (O3) standard as defined by EPA. This area was designated marginal nonattainment under the 2008 eight-hour ozone standard on July 20, 2012. Due to improved air quality in the region, this area was re-designated as a maintenance area on August 27, 2015. Section 176(c) of the CAAA requires that transportation plans, programs, and projects conform to the intent of the state air quality implementation plan (SIP). The current SIP does not contain any transportation control measures for Union County.

The Charlotte Region Transportation Planning Organization (CRTPO) 2040 Metropolitan Transportation Plan (MTP) and NCDOT's 2016-2025 State Transportation Improvement Program (STIP) conform to the intent of the SIP. USDOT made a conformity determination on the MTP on April 20, 2016, and the STIP

on April 20, 2016. The current conformity determination is consistent with the final conformity rule, found in 40 CFR Parts 51and 93. There are no significant changes in the project design concept or scope, as used in the project conformity analyses in June 2014.

FHWA published an Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents on October 18, 2016. A project-level qualitative air quality analysis was prepared for this project (Air Quality Analysis for U-3467, June 2014) and summarized for inclusion in the 2015 EA. The following discussion of Air Quality conforms to the FHWA guidance of October 18, 2016.

Introduction

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), particulate matter, sulfur dioxide (SO2), and lead (Pb) (listed in order of decreasing emission rate).

The Federal Clean Air Act of 1970 established the National Ambient Air Quality Standards (NAAQS). These were established in order to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The NAAQS contain criteria for SO2, particulate matter (PM10, 10-micron and smaller, PM2.5, 2.5-micron and smaller), CO, nitrogen dioxide (NO2), ozone (O3), and lead (Pb).

The primary pollutants from motor vehicles are unburned HC, NO, CO, and particulates. HC and NO can combine in a complex series of reactions catalyzed by sunlight, to produce photochemical oxidants such as O3 and NO2. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems.

Mobile Source Air Toxics (MSAT)

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that EPA regulate 188 air toxics, also known as hazardous air pollutants. EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (see https://www.epa.gov/iris). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk-drivers from their 2011 National Air Toxics Assessment (NATA) (see https://www.epa.gov/national-air-toxics-assessment). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

According to EPA, the latest air quality model, MOVES2014, is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data.

MOVES2014 incorporates the effects of three new Federal emissions standard rules, not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards, starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light-duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015, MOVES2014a Questions and Answers Guide (see https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves), EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using the EPA MOVES2014a model, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth, compared to historical trends.

MSAT analyses are intended to capture the net change in emissions within an affected environment, defined as the transportation network affected by the project. The affected environment for MSATs may be different than the affected environment defined in the NEPA document for other environmental effects, such as noise or wetlands. Analyzing MSATs only within a geographically-defined “study area” will not capture the emissions effects of changes in traffic on roadways outside of that area, which is particularly important where the project creates an alternative route or diverts traffic from one roadway class to another. At the other extreme, analyzing the entire roadway network of a metropolitan area will result in emissions estimates for many roadway links not affected by the project, diluting the results of the analysis.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

Per FHWA, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation, rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects” (EPA, https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects

for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of the FHWA Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (see HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature- exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and the exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (see Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure- and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by EPA as provided by the Clean Air Act, to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million.

Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million, due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld the EPA approach to addressing risk in its two-step decision

framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (see https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-120274.pdf).

Because of the limitations in the methodologies for forecasting the health impacts described, any predicted difference in health impacts between project alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

MSAT Conclusion

There may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new location roadway section between the existing NC 16/Rea Road intersection and NC 84. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations. In summary, under the Preferred Alternative in the design year, it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to EPA's MSAT reduction programs.

Summary

Vehicles are a major contributor to decreased air quality because they emit a variety of pollutants into the surrounding environment. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. New highways or the widening of existing highways increase localized levels of vehicle emissions, but these increases could be offset due to reductions in traffic congestion and vehicle emissions in areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly in the United States.

This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the FHWA NEPA process. No additional reports are necessary.

7.9 Hazardous Materials

An updated review of Geographic Information Systems (GIS) data in February 2018 identified one additional known site of concern in the project study area (Site 8 in Table 15). A search of the appropriate environmental agencies' databases was also performed to assist in evaluating identified sites.

The Preferred Alternative may impact Sites 5 and 6, as well as one site identified as a hazardous waste generator. Preliminary site assessments to identify the nature and extent of any contamination will be performed on these sites prior to right-of-way acquisition.

Section 5.12 of the EA identified CVS Pharmacy, located in the southeast quadrant of the NC 84 and Waxhaw-Indian Trail Road intersection, regulated by RCRA as a conditionally exempt small quantity generator of hazardous waste. A February 2018 search of EPA's Envirofacts website (https://www3.epa.gov/enviro/) shows that CVS Pharmacy is now classified as a large quantity generator of hazardous waste. Based on the preliminary design for the Preferred Alternatives, a small

amount of property along NC 84 at this site is located within the proposed right-of-way. It is anticipated that this site would have a low impact to the proposed project.

Table 15. Underground Storage Tanks in the Project Area

Site	Type	Location	UST Facility ID No.	Property	UST/Property Owner	Anticipated Impact[1] / Risk	Comments
1	UST	206 Providence Rd. (NC 16)	N/A	Matthews Property	Mary Matthews	PCS / Low	Heating oil UST, GWI 36104
2	UST	13801 Providence Rd.	0-034467	Weddington Center	Jerry Pressley, Pressley Stores, Inc.	PCS / Low	Active gas station & convenience store, GWI 8505 and 9945
3	UST	13633 Providence Rd.	0-008145	Weddington Shops	Weddington Associates	PCS / Low	Former gas Station / Current shopping center, GWI 6551
4	UST	13601 Providence Rd.	N/A	Weddington Activity Center	M Squared Holdings, LLC	PCS / Low	Former BCS Ferrari Tractor / Current clubhouse, GWI 27343
5	UST	5900 block of Weddington Monroe Rd.	N/A	Wesley Chapel Retail Investors, LLC	Earnhardt-Price Family, LLC	PCGW / Low	Site now Walgreens, GWI 27933, closed out 2007
6	UST	6320 Weddington Monroe Rd.	0-036876	Market Express	Village Commons Branch II, LLC	PCS / Low	Active gas station and convenience store, GWI 36733
7	UST	213 Waxhaw-Indian Trail Rd.	0-002276	Doug Plyler	Plyler Family LLC	PCS / Low	Registered farm tank, closed 1990
8	UST	6711 Weddington Rd.	0-008709	Former Sunset at Wesley Chapel	Ammons Investments, LLC	PCS, PCGW / Low	Vacant building, former gas station & convenience store. Five tanks removed in 1990, five current tanks, GWI 27715 still active

[1] Petroleum Contaminated Soils (PCS), Petroleum Contaminated Groundwater (PCGW)

7.10 Farmland

It is anticipated the proposed project will impact soils that are recognized as important farmlands by the US Department of Agriculture, Natural Resources Conservation Service (NRCS) (www.nc.nrcs.usda.gov/programs/soilsurvey/primefarmland.html). Table 16 shows the anticipated prime, statewide, and unique farmland soils impacts with the Preferred Alternative. State construction projects that receive funding from federal sources are directed to consider impacts to important farmlands under the Farmland Protection Policy Act (FPPA). State agencies are directed to consider impacts to farmlands under North Carolina Executive Order 96, Preservation of Prime Agricultural and Forest Lands.

As required by the FPPA, a preliminary screening of farmland conversion impacts in the project area was completed. Part VI of the NRCS-CPA-106 form was updated for the Preferred Alternative and a total score of 9 out of 160 points was calculated for the Preferred Alternative (see Appendix B). Since the

total site assessment score does not exceed the 60-point threshold established by NRCS, farmland conversion impacts may be anticipated, but are not considered notable.

Table 16. Prime, Statewide, and Unique Farmland Soils Anticipated Impacts

	Preferred Alternative CA2 at LEDPA [1]	Preferred Alternative CA2 Current Design[1]
Prime, Statewide, and Unique Farmland Soils (acres)	63.9	63.0

7.11 Flood Hazard Evaluation

The *Preliminary Hydraulics Study for Environmental Impact* prepared in September 2013 was updated on April 24, 2017. Preferred Alternative CA2 includes two existing crossings and one new location crossing.

Site 3 is an existing crossing of Culvert Branch under NC 84. The stream crossing is in a FEMA limited detailed flood study area in a Special Flood Hazard Zone AE.

Site 4 is an existing crossing of West Fork Twelvemile Creek under NC 84. The stream crossing is in a FEMA detailed flood study area in a Special Flood Hazard Zone AE. This is the only proposed crossing over a stream with a published floodway, and a floodway modification may be required at this site. NC 84 is proposed to be widened from two lanes to a four-lane divided facility at this stream crossing. Based on the preliminary hydraulic analysis of this site, it is recommended that the existing culvert be replaced with a 110-foot-long concrete girder bridge.

Site 9 is a crossing of Mundys Run. The stream crossing is in a FEMA limited detailed flood study area in a Special Flood Hazard Zone AE.

In accordance with Executive Order 11988, the Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement with FMP (dated April 22, 2013), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

This project involves construction activities on or adjacent to FEMA-regulated streams. Therefore, NCDOT Division 10 shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying the drainage structure(s) and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Further detailed analysis will be required during final design to adequately address all of the impacts associated with the floodplain at each site. Table 17 shows the anticipated floodplain impacts with the detailed study alternatives. There are no properties that have been acquired with FEMA funds in the project study area.

Table 17. Floodplain/Floodway Impacts

	Preferred Alternative CA2 at LEDPA	Preferred Alternative CA2 Current Design
100-Year Floodplain and Floodway Impacts (acres)	7.2	7.3

7.12 Updates to the Avoidance and Minimization of Impacts within the Preferred Alternative Corridor

Revisions to the preliminary design since the selection of the LEDPA/Preferred Alternative are detailed in Section 6.1 of this FONSI. These design revisions result in changes to some avoidance and minimization details presented at Merger Concurrence Point 4A (see Section 5.4 of this FONSI) as shown in *italics* below:

Section 404 Avoidance and Minimization

- Since its selection as NCDOT's Preferred Alternative, the preliminary design of Alternative CA2 has been modified to further avoid and minimize impacts to streams. Portions of the Alternative CA2 new location alignment were shifted and stream impacts were reduced by a total of ~~1,154~~ *1,172* linear feet. Specific stream impact reductions are as follows:

Table 8 in Section 7.1.2 of this FONSI *compares stream impacts of Alternative CA2 at Merger Concurrence Point 3 (LEDPA) and stream impacts of the revised Alternative CA2 design. The revised design reduces overall stream impacts by 18 linear feet.*

  - A more perpendicular crossing at stream SS reduced impacts from 838 linear feet to ~~389~~ *411* linear feet (reduction of ~~449~~ *427* linear feet).
  - Impacts to stream SR were eliminated by shifting the CA2 alignment north of this stream, reducing total stream impacts by 344 linear feet.
  - Impacts to stream SP were reduced from 230 linear feet to 156 linear feet by shifting the Alternative CA2 alignment to the north of pond PI (impact reduction of 74 linear feet).
  - Alternative CA2 was shifted to the north of stream SV, eliminating impacts to this stream and reducing total stream impacts by 232 linear feet.
  - As a result of Alternative CA2 shifting to the north, impacts to stream SAD were reduced from 266 linear feet to ~~246~~ *208* linear feet (reduction of ~~20~~ *58* linear feet) as slope stakes were slightly reduced and a bend in the stream is now avoided.
  - Alternative CA2 was realigned and shifted to the north in the vicinity of hydraulic structure Site 9, reducing impacts to Mundys Run by ~~35~~ *33* linear feet.

Additional Avoidance and Minimization

- In response to input from the public and local officials, the preliminary design of all alternatives was shifted to utilize a 75-foot setback at Dogwood Park to avoid impacts to Southbrook Community Church parking and Wesley Chapel Weddington Athletic Association / Optimist Park facilities. This shift results in ~~94~~ *60* linear feet of impacts to stream SB and ~~234~~ *250* linear feet of impacts to West Fork Twelvemile Creek. The shift eliminates 237 linear feet of impacts to stream SA.

- *The design was modified along Waxhaw-Indian Trail Road to avoid the relocation of a business and non-profit at the Village Commons Shopping Center (west).*
- *A retaining wall was added along NC 84 to reduce parking impacts at Village Commons Shopping Center (west).*
- *Guard rail and steeper slopes were incorporated at the U-turn bulb added along eastbound NC 84 just west of Shannon Woods Lane to avoid impacts to a tributary to West Fork Twelvemile Creek.*

7.13 Validity of Merger Team LEDPA Decision

Section 5.3 of this FONSI notes the reasons the NEPA/Section 404 Merger Team selected Alternative CA2 as the LEDPA/Preferred Alternative at their meeting on April 12, 2017. Revisions to the Alternative CA2 design since that meeting result in the following updates to the last bullet in Section 5.3 of this FONSI, shown in *italics*, with all other listed factors remaining unchanged.

- Overall differences in the potential effects of Alternatives A2 and CA2 on the natural environment are marginal.
  - Alternative CA2 has ~~0.12~~ *0.10* acre more potential wetland impacts than Alternative A2; however, Alternative A2 has ~~0.19~~ *0.18* acre more potential impacts to ponds than Alternative CA2.
  - The difference in stream impacts between Alternative A2 and Alternative CA2 is less than ~~155~~ *135* linear feet. This difference is due to variances in potential project impacts at ~~five~~ *nine* streams: ~~three~~ *six* perennial streams (*SB, West Fork Twelvemile Creek, Culvert Branch,* Mundys Run, SK and SS) and ~~two~~ *three* intermittent streams (*SZ,* SP and SAD).
    - Although Alternative CA2 has ~~152~~ *134* linear feet more potential stream impacts than Alternative A2, the majority of these impacts are to intermittent streams (SP and SAD).
    - Alternative A2 has ~~90~~ *72* linear feet more potential impacts to perennial streams ~~(SK and SS)~~ than Alternative CA2.
    - Five streams (Mundys Run, SK, SP, SS and SAD) were evaluated by a qualified biologist during a field visit on March 10, 2017. All of these streams are located within the new location portion of the project and scored high using NCSAM, due in large part to the amount of existing riparian buffer. However, the two intermittent streams carried no water at the time of the investigation and supported no aquatic life. The perennial streams all had aquatic life and flowing water.

As shown in Table 5 in Section 7.0 of this FONSI, there are limited changes in potential environmental effects between Alternative CA2 at LEDPA and the revised Alternative CA2 design. An additional mussel survey will be needed to incorporate Price Mill Creek due to the project area extension and a final biological conclusion will be rendered per findings. There is a slight increase in impacts to forests, ponds and floodplains. However, impacts to wetlands, streams, and relocations decreased.

8.0 BASIS OF FINDING OF NO SIGNIFICANT IMPACT

Based upon the environmental studies and coordination with appropriate federal, state and local agencies, it is the finding of the Federal Highway Administration and the North Carolina Department of Transportation that the proposed action will not have a significant adverse impact on the human or natural environment.

The recommended alternative for the proposed project is not controversial from an environmental standpoint. No significant impacts to natural, social, ecological, cultural, economic or scenic resources are expected. The proposed action is consistent with local plans and is based on public involvement and comments received on the Environmental Assessment. Based on this evaluation, neither an Environmental Impact Statement nor further environmental analysis is required.

The following persons may be contacted for additional information concerning this proposal and statement:

John F. Sullivan, PE
Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 140
Raleigh, NC 27601

Beverly G. Robinson, CPM
Senior Project Manager, Central Project Delivery
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Appendix A

Figures

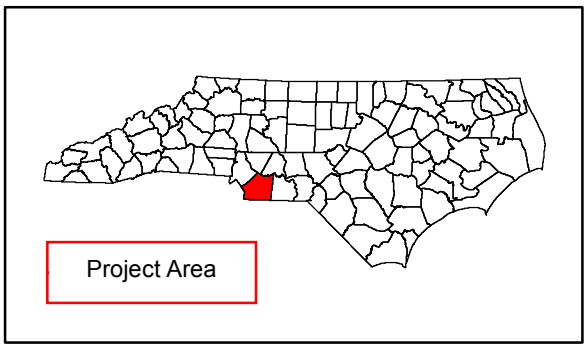
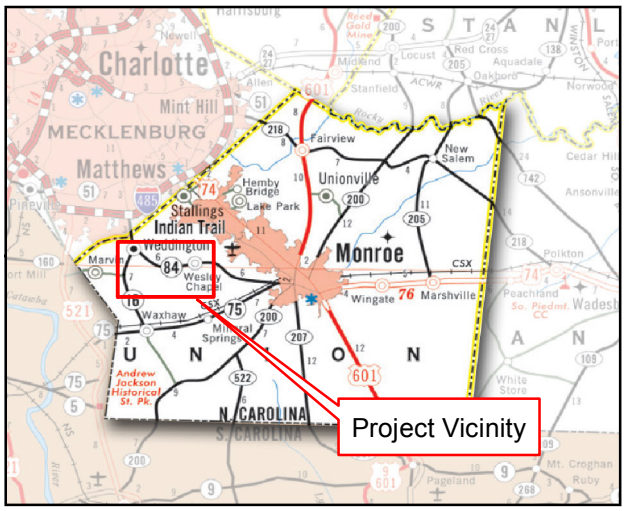


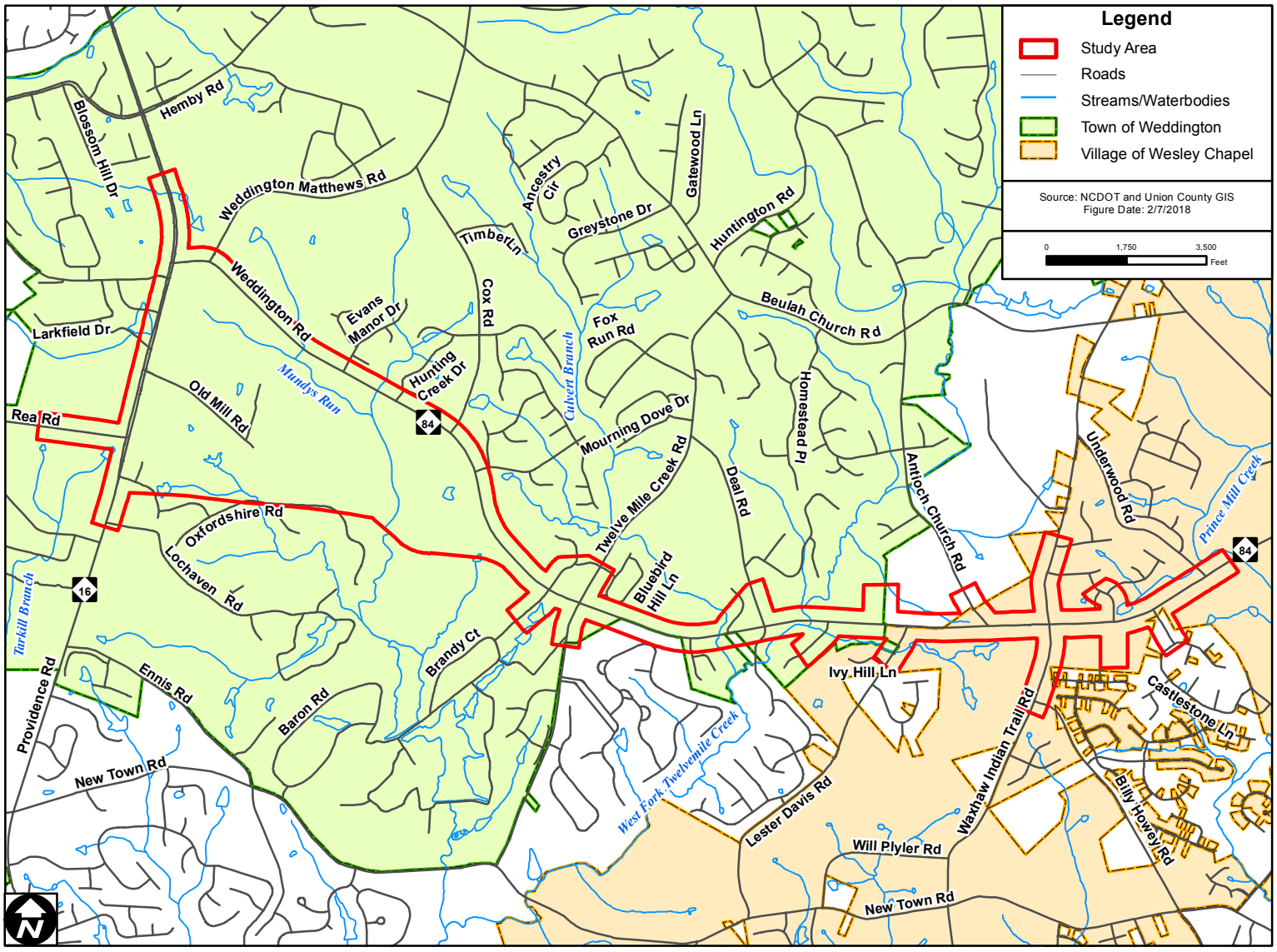
Figure 1

Project Vicinity

NC 84
NC 16 to SR 1008 (Waxhaw-Indian Trail Road)
in Wesley Chapel
NCDOT STIP Project No. U-3467



North Carolina
Department of Transportation



Environmental Features

NCDOT STIP Project No. U-3467

Union County, NC

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
- Map Book Grid

Preferred Alternative CA2

- Edge of Travel
- Cut/Fill Limit
- Concrete Median/Island
- Grass Median
- Town of Weddington
- Village of Wesley Chapel
- Parcel
- Existing Traffic Signal
- Proposed Traffic Signal
- Natural Heritage Element Occurrence
- Significant Natural Heritage Area & Managed Area
- Proposed Development
- Floodplain
- Delineated Wetland
- Delineated Waterbody
- Delineated Stream
- Underground Storage Tank
- Hazardous Waste
- Government Facility
- Impacted Noise Receptor
- Privately Owned Park
- Publicly Owned Park
- Business
- School
- Subdivision
- Emergency Facility
- Church
- Cemetery
- Historic Boundary
- Historic Property
- Hydraulic Site
- Hydraulic Structure

0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 2,000 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Figure - 2A

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

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- Map Book Grid

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0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Blossom Hill Dr

S Providence Rd NC HWY 16

Catawba Lands Conservancy Easement and Preserve

ST

WS

SU

PK

Harris Teeter

Weddington Corners

Fairway Independent Mortgage

Park Sterling Bank

Liberty Family Physicians

Weddington Town Hall

Multiple Businesses

Shell Gas Station

Weddington United Methodist Church

Weddington United Methodist Church

Weddington United Methodist Church

Weddington Matthews Rd SR-1344

Atherton Estates (Under Construction)

Steeple Chase Cir

Map 2B
Map 2C

Map 2B
Map 2D

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2B

Map 2B
Map 2C

Weddington Church Rd SR-1317

The Retreat

Weddington Estates

Weddington Christian Academy K-7

Weddington United Methodist Church

Lenny Stadler Way

Larkfield Dr

Bluebird Ln

Varda Lake

WZ

SI

WR

Weddington

Rea View Elementary School

S.Providence Rd/NC/HWY 16

John Walker Matthews House

WAA

SQ

Old Mill Rd SR-1392

16

Proposed Church

SS

Map 2C
Map 2E

Map 2C
Map 2D

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
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0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2C

Map 2B
Map 2D

Map 2C
Map 2D

Map 2D
Map 2F

Weddington Rd NC HWY 84

Shadowmere Ln SR-2849

Evans Manor Dr SR-2842

Hunting Creek Rd SR-1482

Country Club Dr

Abellia Dr

Muddy's Run

Shaver Farms

Hunting Creek

Abellia Estates

PJ

WG

SQ

SI

SJ

WQ

SM

SO

WI

SG

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

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0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2D

Map 2C
Map 2E
Map 2E
Map 2F
Rea Rd SR-1316
Old Mill Rd SR-1392
S Providence Rd NC HWY 16
Belle Forest Ct
Stratford on Providence
Chamberlayne Way
Hathaway Ln
Lochaven Road SR-1318
Cottonfield Cir SR-2547
First Baptist Church
Howard House
Providence Acres
PG
PH
WP
WT
WN
SS
SR
PI
SP
PO
SV
WV
PN

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

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- Hydraulic Structure

0 75 150 300 450 600 Feet
1 inch = 300 feet

Map Prepared: 3/9/2018
Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2E

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

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0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Map 2D

Map 2F

Map 2E

Map 2F

Map 2F

Map 2G

Abelia Dr

Old Mill Rd SR 1392

Oxfordshire Rd

Shippon Ln

Munly's Run

The Woods (Proposed)

Stratford on Providence

Crown Estates at Lochaven (Proposed)

Site 9

SP

WO

SV

SAD

SW

SK

SN

WM

WL

WY

SAA

WY

Environmental Features

NCDOT STIP Project No. U-3467

Union County, NC

Figure - 2F

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
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- Hydraulic Site
- Hydraulic Structure

0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Chesterbrook Academy
Cox Rd SR-1343
Ridgelake Dr
Lake Forest Dr SR-3675
Lake Forest Preserve
Weddington Rd NC HWY 84
Sugar Magnolia (Proposed)
Weddington Hills
Weddington Hills Dr SR-2932
Map 2H
Map 2G
Map 2F
Map 2G
SN
SK
WM
WL
PE
WY
SAB
WY
WY
SAA
SW
Mundy's Run
Site 9
PP
Jacob Allen Deal Farm
Aero Plantation
Baron Rd
PD
PC

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2G

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
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- Emergency Facility
- Church
- Cemetery
- Historic Boundary
- Historic Property
- Hydraulic Site
- Hydraulic Structure

0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Map 2G

Map 2H

Map 2I

Bluebird Hill Ln SR-2933

N Twelve Mile Creek Rd SR-1341

Weddington Hills

Weddington Hills Dr SR-2932

Weddington Rd NC HWY 84

Aero Plantation

Baron Rd

PD

PC

Weddington

S Twelve Mile Creek Rd SR-1341

Skytop Rd

Skye Lochs Dr

Skyecroft Commons

Weddington High School

Camden Forest

SF

WF

Culvert Branch

Camden Dr SR-2561

Site 3

Weddington Brook

Weddington Brook Dr SR-2913

Brook View Ct SR-2914

Grace Baptist Church South Charlotte

84

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2H

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

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- Historic Property
- Hydraulic Site
- Hydraulic Structure

0 75 150 300 450 600 Feet

1 inch = 300 feet

Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Wedgewood
Wedgewood Dr SR-2539
Whisperwood Ct SR-2569
Deal Rd SR-1340
Map 2H
Map 2I
SF
Camden Dr SR-2561
Weddington Optimist Park
Crossroads Church
WE
WC
Weddington Rd NC HWY 84
84
Southbrook Community Church
(Under
West Fork Twelvemile Creek
Site 4
SB
Hollister
Shannon Woods Ln SR-2574
WD
Hollister Estates Dr
Shannon Woods
Ivy Hill
Ivy Hill Ln SR-1497
Lester Davis Rd SR-1339
SD
WB
PB
Dogwood Park
Map 2J
Weddington
Wesley Chapel
Wesley Chapel
Union County
Berkley Pointe

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2I

Map 2K
Map 2J
Map 2I
Map 2L
Scotch Meadows (Under Construction)
Antioch Church Rd SR-1338
201 Central
Shops at Wesley Chapel
Waxhaw Indian Trail Rd SR-1008
Siler Presbyterian Recreational Park
Hardwood Dr SR-3607
Golden Rain Dr SR-3610
Lindenwood
PA
WA
SA
Bank of America
Walgreens
McDonalds
Siler Presbyterian Church
Weddington Rd NC HWY 84
Wells Fargo Bank
Village Commons
CVS
Shell Gas Station
TCBY
Radio Shack
Chick-fil-a
Multiple Shops
Hickory Tavern
PQ
Wesley Chapel Town Hall
WEE
SZ
PL
WU
SX
AT&T Wireless
Harris Teeter
YMCA
BB&T Bank
Rack Room Shoes
Target
Village Commons
PetSmart
Wesley Chapel
Blackwood Ln
Wesley Oaks
Crosshall Pl
Billy Howey Rd SR-1329
Siler Cemetery
Wesley Chapel Volunteer Fire Department

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
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- Emergency Facility
- Church
- Cemetery
- Historic Boundary
- Historic Property
- Hydraulic Site
- Hydraulic Structure

0 75 150 300 450 600 Feet
1 inch = 300 feet

Map Prepared: 3/9/2018
Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Figure - 2J

NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel. STIP No. U-3467

- Study Area
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- Hydraulic Structure

0 75 150 300 450 600 Feet

1 inch = 300 feet

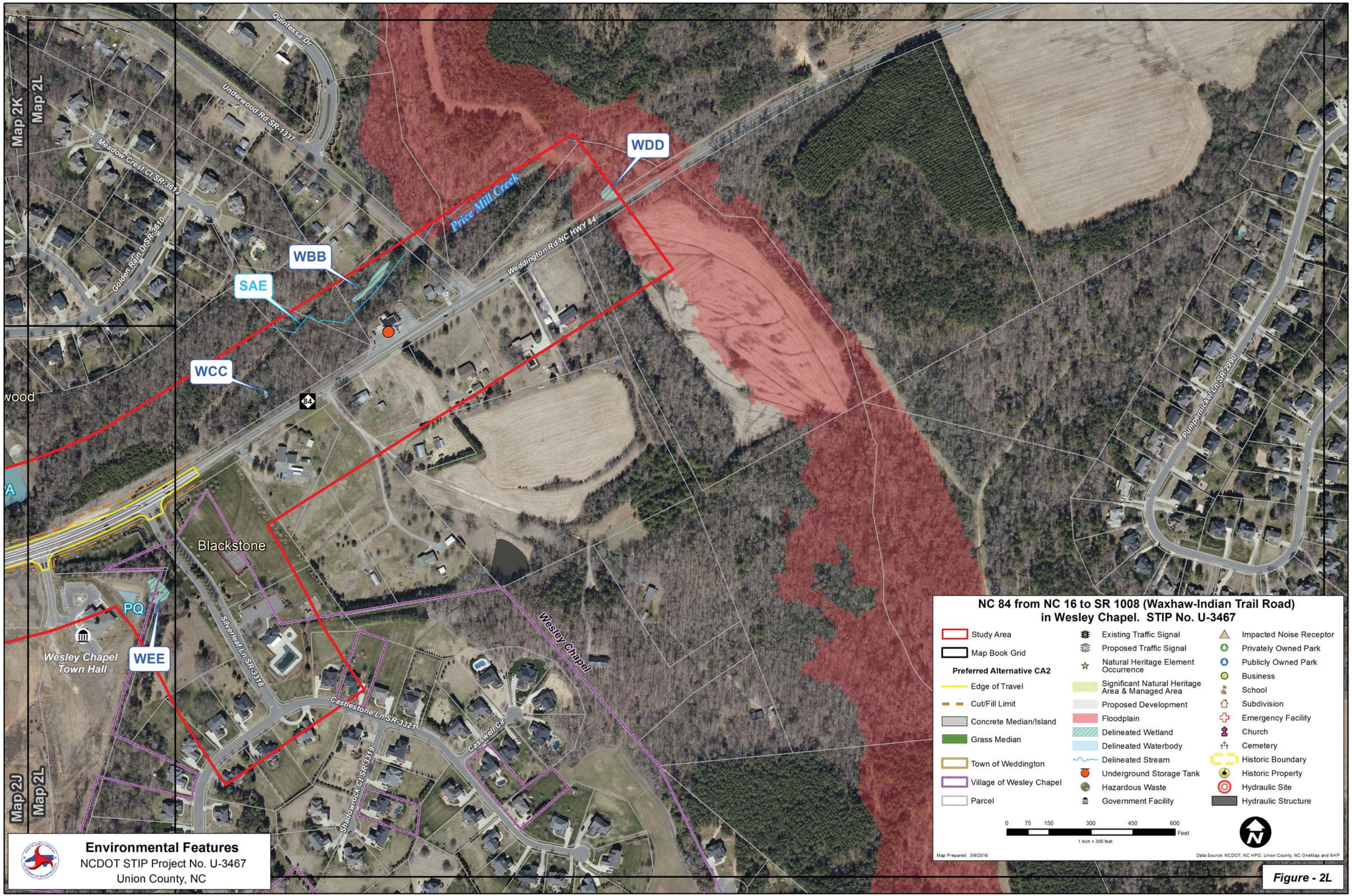
Map Prepared: 3/9/2018

Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP

Waxhaw Indian Trail Rd SR-1008
Chaucer Ln
Underwood Rd SR-1337
Princesa Dr
Quintessa Dr
Garden Rose Ct SR-3810
Wesley Chapel
Spring Rose Ln SR-3809
Wesley Chase
Linden Glen Dr SR-3608
Meadow Crest Ct SR-3612
Golden Rain Dr SR-3610
Map 2I
Map 2K
Map 2J
Map 2L

Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC

Figure - 2K


Map 2K
Map 2L
Quintessa Dr
Underwood Rd SR-1337
Meadow Crest Ct SR-3612
Golden Rain Dr SR-3610
Price Mill Creek
WDD
WBB
SAE
WCC
Weddington Rd NC HWY 84
84
Pumpernickel Ln SR-2390
Blackstone
PQ
Wesley Chapel Town Hall
WEE
Silverleaf Ln SR-3318
Castlestone Ln SR-3321
Shadowrock Ct SR-3319
Wesley Chapel
Map 2J
Map 2L
Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC
NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road)
in Wesley Chapel. STIP No. U-3467
Study Area
Map Book Grid
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Concrete Median/Island
Grass Median
Town of Weddington
Village of Wesley Chapel
Parcel
Existing Traffic Signal
Proposed Traffic Signal
Natural Heritage Element Occurrence
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Delineated Waterbody
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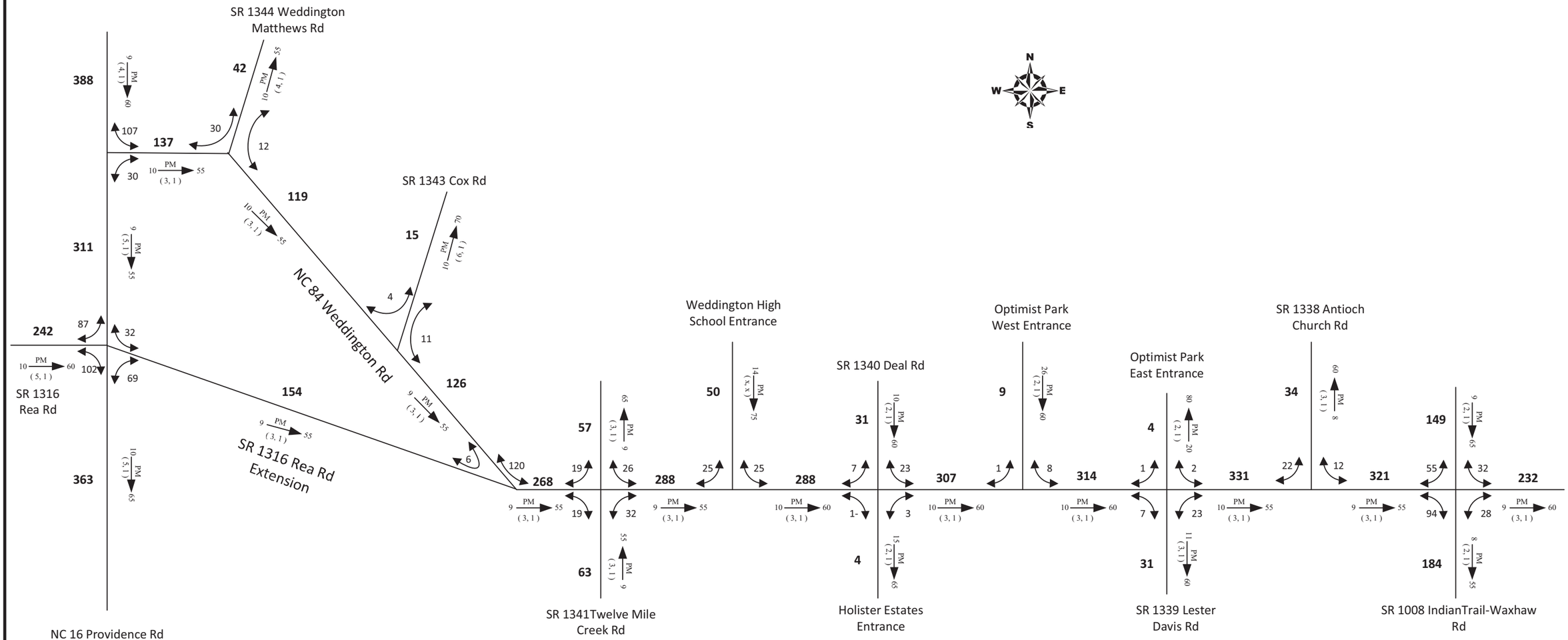
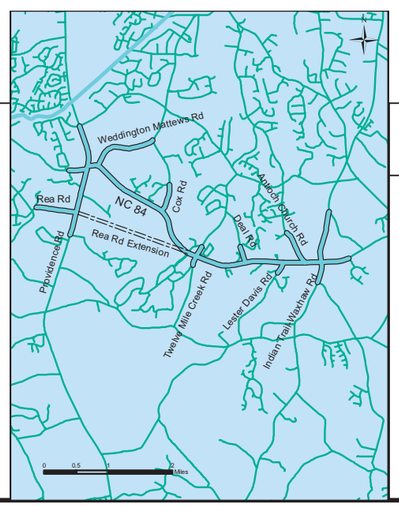
Privately Owned Park
Publicly Owned Park
Business
School
Subdivision
Emergency Facility
Church
Cemetery
Historic Boundary
Historic Property
Hydraulic Site
Hydraulic Structure
0 75 150 300 450 600
Feet
1 inch = 300 feet
Map Prepared: 3/9/2018
Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP
Figure - 2L





Note: Forecast Update using MRM 15v1.2

2040

AVERAGE ANNUAL DAILY TRAFFIC

Figure 3

L E G E N D

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
x	Movement Prohibited	D	Peak Hour Directional Split
.....	Proposed Roadway	→	Indicates Direction of D
		(d, t)	Duals, TT-STs (%)

TIP: U-3467	**WBS:** 39019.1.1
COUNTY: Union	**DIVISION:** 10
DATE: August 11, 2017	
PREPARED BY: Kimley-Horn & Associates	
LOCATION: NC 84 Weddington Road southeast of Charlotte	
PROJECT: SR 1316 Rea Road extension from NC 16 to SR 1008 Indian Trail-Waxhaw Road	

Appendix B

Federal, State, and Local Correspondence and Coordination

Section 404/NEPA Interagency Agreement
Concurrence Point No. 2A
Bridging Decisions and Alignment Review

Project Title and Project Numbers: NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel, Union County; NCDOT STIP Project No. U-3467; Federal-Aid Project No. STP-1316(10); State Project No. 39019.1.1.

Project Purpose: The purpose of the proposed project is to improve the mobility and connectivity of Weddington Road (NC 84) in the project study area.

Hydraulic Recommendations:

Site	Alternative	Stream / Wetland I.D.	Hydraulic Structure
3	A2, C2, CA2	Culvert Branch	Replace Existing with Appropriately Sized Culvert
4	A2, C2, CA2	West Fork Twelvemile Creek	Replace Existing with 90' Dual Concrete Girder Bridges
7	A2	Mundys Run	3@9' x 8' RCBC (128 ft.)
8	C2	Mundys Run	3@9' x 8' RCBC (117 ft.)
9	CA2	Mundys Run	3@9' x 8' RCBC (169 ft.)

The project team has concurred on the major hydraulic structures and sizes for the proposed project as listed above.

Name	Agency	Date
DocuSigned by: Crystal Amschler 66C05A077D234BC...	USACE	3/17/2017
Cynthia F. Van Der Wiele	USEPA	3.15.2017
Marella Buncick	USFWS	3/15/17
Felix Davila	FHWA	3/15/17
Donna Hood	NCDWR	3/15/17
DocuSigned by: Renee Gledhill-Earley C26A1556A275464...	NCHPO	4/13/2017
Marla Chambers	NCWRC	3-15-2017
Tracey Wheeler	NCDOT	3/15/17
DocuSigned by: Robert Cook 95B1DADFB9DD4D0...	CRTPO	3/16/2017

Section 404/NEPA Interagency Agreement
Concurrence Point No. 3
Least Environmentally Damaging Practicable Alternative (LEDPA)

Project Title and Project Numbers: NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel, Union County; NCDOT STIP Project No. U-3467; Federal-Aid Project No. STP-1316(10); State Project No. 39019.1.1.

Project Description: The proposed project would extend Rea Road (SR 1316) from NC 16 (Providence Road) east to Twelve Mile Creek Road (SR 1341)/NC 84 (Weddington Road) on new location (relocate NC 84), and widen existing NC 84 to Waxhaw-Indian Trail Road (SR 1008) in Wesley Chapel. The proposed project is approximately 4.5 miles long.

Least Environmentally Damaging Practicable Alternative (LEDPA):

Alternative A2	☐ Yes	☒ No
Alternative C2	☐ Yes	☒ No
Alternative CA2	☒ Yes	☐ No

The project team has concurred on the LEDPA for the proposed project as listed above.

Name	Agency	Date
DocuSigned by: Crystal Amschler	USACE	4/14/2017
DocuSigned by: Cynthia F. Van Der Wiele	USEPA	4/17/2017
DocuSigned by: Marella Buncick	USFWS	4/17/2017
Felix Davila	FHWA	4/12/17
DocuSigned by: Donna Hood	NCDWR	4/17/2017
DocuSigned by: Renee Gledhill-Earley	NCHPO	4/17/2017
Marla Chambers	NCWRC	4/12/2017
Tracy Walker	NCDOT	4/12/17
DocuSigned by: Robert Cook	CRTPO	

Section 404/NEPA Interagency Agreement
Concurrence Point No. 4A
Avoidance and Minimization

Project Title and Project Numbers: NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel, Union County; NCDOT STIP Project No. U-3467; Federal-Aid Project No. STP-1316(10); State Project No. 39019.1.1.

Avoidance and Minimization

The project alternatives minimize impacts to resources. However, it is not feasible for the proposed project to completely avoid impacts to the Waters of the US and still meet the purpose and need of the project. The following avoidance and minimization efforts have been incorporated into the proposed project:

Section 404 Avoidance and Minimization Measures

- The new location alignment Alternative CA2 was designed to avoid the confluence of stream SK and Mundys Run.
- Intersection improvements at NC 84 and Lester Davis Road were designed to avoid a major hydraulic crossing (Site 6) of an unnamed tributary to West Fork Twelvemile Creek.
- Since its selection as NCDOT's Preferred Alternative, Alternative CA2 has been modified to further avoid and minimize impacts to streams. Portions of the Alternative CA2 new location alignment were shifted and stream impacts were reduced by a total of 1,154 linear feet. Specific stream impact reductions are as follows:
    - A more perpendicular crossing at stream SS reduced impacts from 838 linear feet to 389 linear feet (reduction of 449 linear feet).
    - Impacts to stream SR were eliminated by shifting the CA2 alignment north of this stream, reducing total stream impacts by 344 linear feet.
    - Impacts to stream SP were reduced from 230 linear feet to 156 linear feet by shifting the Alternative CA2 alignment to the north of pond PI (impact reduction of 74 linear feet).
    - Alternative CA2 was shifted to the north of stream SV, eliminating impacts to this stream and reducing total stream impacts by 232 linear feet.
    - As a result of Alternative CA2 shifting to the north, impacts to stream SAD were reduced from 266 linear feet to 246 linear feet (reduction of 20 linear feet) as slope stakes were slightly reduced and a bend in the stream is now avoided.
    - Alternative CA2 was realigned and shifted to the north in the vicinity of hydraulic Site 9, reducing impacts to Mundys Run by 35 linear feet.

Additional Avoidance and Minimization

- In response to input from the public and local officials, the preliminary design of all alternatives was shifted to utilize a 75-foot setback at Dogwood Park to avoid impacts to Southbrook Community Church parking and Wesley Chapel Weddington Athletic Association / Optimist Park facilities. This shift results in 94 linear feet of impacts to stream SB and 234 linear feet of impacts to West Fork Twelvemile Creek. The shift eliminates 237 linear feet of impacts to stream SA.
- Avoidance and minimization measures were incorporated into the design of all alternatives to avoid an adverse effect to historic properties.
- The widening portion of the proposed alignment varies between symmetrical widening and widening north or south of the existing roadway, as needed, to minimize impacts to land use and important environmental features.

The project team has concurred on the Avoidance and Minimization for the proposed project as listed above.

Name	Agency	Date
DocuSigned by: Crystal Amschler	USACE	4/14/2017
DocuSigned by: Cynthia F. Van Der Wiele	USEPA	4/17/2017
DocuSigned by: Marella Buncick	USFWS	4/17/2017
	FHWA	4/12/17
DocuSigned by: Donna Hood	NCDWR	4/17/2017
DocuSigned by: Renee Gledhill-Earley	NCHPO	4/17/2017
	NCWRC	4/12/2017
	NCDOT	4/12/17
DocuSigned by: Robert Cook	CRTPO	4/17/2017

From: Van Der Wiele, Cynthia [mailto:VanDerWiele.Cynthia@epa.gov]
Sent: Monday, March 13, 2017 4:02 PM
To: Walter, Tracy A <twalter@ncdot.gov>
Cc: Militscher, Chris <Militscher.Chris@epa.gov>; Clarence Coleman <clarence.coleman@dot.gov>; Marella Buncick <marella_buncick@fws.gov>; Chambers, Marla J <marla.chambers@ncwildlife.org>; Hood, Donna <donna.hood@ncdenr.gov>; Crystal Amschler <Crystal.C.Amschler@usace.army.mil>
Subject: US EPA Comments on the Federal EA for NCDOT STIP Project U-3467 - NC84 from NC16 to SR 1008 (Waxhaw-Indian Trail Road) in Wesley Chapel in Union County (aka Rea Road Extension)
Importance: High

Dear Walter:

The U.S. Environmental Protection Agency (EPA) has reviewed the federal Environmental Assessment (EA) and is providing comments consistent with §309 of the Clean Air Act and §102(2)(C) of the National Environmental Policy Act (NEPA). The North Carolina Department of Transportation (NCDOT) and the Federal Highway Administration (FHWA) proposes to extend Rea Road (SR 1316) from NC 16 (Providence Road) east to Twelve Mile Road (SR 1341)/NC 84 (Weddington Road) on new location (relocate NC 84), and widen existing NC 84 to Waxhaw-Indian Trail Road (SR 1008) in Wesley Chapel, Union County for a 4.3-mile project length.

The project is currently included as a *modified Merger Project* of the NCDOT 404/NEPA Merger Process.

The primary purpose of the U-3467 project is to improve the mobility and connectivity of Weddington Road (NC 84) in the project study area. The proposed project would provide a more direct link between western Union County and Charlotte/Mecklenburg County as well as an alternative route to I-485 and Charlotte, enhancing regional travel options. The proposed project would also provide additional capacity on NC 84 in the project area.

Two new location alternatives were assessed and carried forward for detailed study: Alternative A2 and Alternative C2 were developed to minimize potential jurisdictional stream and wetland impacts to the initial alternatives A and C. Both alternatives have a typical section consisting of a 4-lane roadway with a 23-fiit raised grass median. The NCDOT does not have a preferred alternative noted in the EA; however, alternative A2 appears to have fewer impacts to the natural environment.

The EPA offers the following technical comments:

Table S-1 on page vi provides a summary of the impacts.
Impacts to the natural environment include:

- 1,397 linear feet of jurisdictional stream impacts at 8 crossings through culvert extensions for Alternative A2; 2,933 linear feet at 11 crossings for Alternative C2. All hydraulic structures are proposed as reinforced concrete box culverts (RCBCs).
- 0.10 acres of jurisdictional wetland impacts from three (3) wetlands for A2 vs 0.12 acres at four locations for C2.
- 0.11 acres of surface waters (pond).
- 7.2 acres of 100-year floodplains for A2 vs 7.3 acres for Alternative C2.

Impacts to the human environment include:

- 5 residential displacements
- 1 business relocation
- 1 non-profit relocation

- No impacts to environmental justice populations or communities
- No adverse effects to the two historic sites—Howard House and Jacob Allen Deal Farm—provided that there is no encroachment of utilities and the addition of a 25-foot buffer from the historic boundary to the Deal Farm property.
- 1 *de minimis* impact to Weddington Optimist Park, a Section 4(f) resource.
- 62.4 acres of impacts to farmland soils for A2 vs 63.7 acres of impacts for alternative C2.

A variety of utility lines will need to be relocated due to the widening. If the impacts from these utility relocations were not included in the table of impacts, the EPA requests that these be accounted for during NCDOT NEPA/404 Merger meetings as well as the Finding of No Significant Impact (FONSI) document.

Three federally-listed species are located within the project study area: *Lasmigona decorata* (Carolina heelsplitter), *Rhus michauxii* (Michaux's sumac), and *Helianthus schweinitzii* (Schweinitz's sunflower). The Biological Conclusion is that the proposed project will have "no effect."

An *Indirect and Cumulative Effects Screening* was completed in July 2012. Six of the nine categories in the screening matrix (Table 5-11, page 5-31) indicate a moderate to high level of concern for indirect and cumulative effects potential as a consequence of the proposed project. Of most concern is the increase in population growth rate, water and sewer extensions into this part of the county, and the market for development (e.g., commercial and residential development).

With respect to ozone, the project is within the Charlotte-Gastonia-Rock Hill [SC] area, as defined by the EPA. The area was originally designated *non-attainment for* O3 under the 2008 8-hour ozone standard on July 20, 2012; however, the NC portion of the area was re-designated as *maintenance* for the standard on July 28, 2015. While NCDOT anticipates that the proposed project will not create any adverse effects on the attainment status of the NAAQS, the proposed speed limit would be posted at 45 mph. With speeds expected to increase, there would also be an expected increase in increased emissions of VOCs and other pollutants that contribute to form ground-level ozone. EPA notes that the section on Mobile Source Air Toxics (MSAT), pages 5-39 to 5-47 does not use the latest FHWA guidance, which represents an update to the 2012 Guidance [see https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/]. As a result, the EPA requests that this newer guidance be used prior to issuing the FONSI.

The EPA appreciates the opportunity to provide comments on this project and requests a copy of the FONSI when it becomes available. The EPA anticipates continuing to be an active participant in the 404/NEPA Merger process.

Sincerely,
Cynthia Van Der Wiele

Cynthia F. Van Der Wiele, Ph.D.
US EPA Region 4 NEPA Program Office
c/o USEPA-RTP
109 T.W. Alexander Drive
Mail Code: E143-08
Research Triangle Park, NC 27709
Phone: 919.450.6811

STATE OF NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION

ROY COOPER
GOVERNOR

MACHELLE SANDERS
SECRETARY

April 5, 2017

Mr. Tracy Walter
North Carolina Department of Transportation
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Re: SCH File # 17-E-4220-0385; EA; Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel.

Dear Mr. Walter:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are comments made by the agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

Crystal Best
State Environmental Review Clearinghouse

Attachments
cc: Region F

Mailing Address:
NC DEPARTMENT OF ADMINISTRATION
1301 MAIL SERVICE CENTER
RALEIGH, NC 27699-1301

Telephone: (919) 807-2425
Fax: (919) 733-9571
COURIER #51-01-00
Email: state.clearinghouse@doa.nc.gov
Website: www.ncadmin.nc.gov

Location:
116 WEST JONES STREET
RALEIGH, NORTH CAROLINA

Environmental Quality

ROY COOPER
Governor

MEMORANDUM

To: Crystal Best
State Clearinghouse Coordinator
Department of Administration

FROM: Lyn Hardison LBH
Division of Environmental Assistance and Customer Service
Permit Assistance & Project Review Coordinator
Washington Regional Office

RE: 17-0385
Environmental Assessment
Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel
Union County

Date: March 31, 2017

The Department of Environmental Quality has reviewed the proposal for the referenced project. Based on the information provided, several of our agencies have identified permits that may be required and offered some guidance to minimize impacts to the natural resources within the project area. The comments are attached for the applicant's review.

The Department encourages the applicant to continue to work with our agencies during the NEPA Merger Process and as this project moves forward.

Thank you for the opportunity to respond.

Attachment

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

March 31, 2017

MEMORANDUM

TO: Lyn Hardison, Environmental Assistance and SEPA Coordinator
Division of Environmental Assistance & Customer Services, NCDENR

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

SUBJECT: Review of the Environmental Assessment document for NCDOT's proposal to improve NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road), including the extension of NC 1316 (Rea Road), Union County. TIP No. U-3467. Project No. 17-0385, due 03/29/2017, extended.

The North Carolina Department of Transportation has submitted for review an Environmental Assessment document for the subject project. Staff biologists with the North Carolina Wildlife Resources Commission have reviewed the information provided and are participating in the Merger process for the development of the project. These comments are provided in accordance with the provisions of the state and federal Environmental Policy Acts (G.S. 113A-1through 113-10; 1 NCAC 25 and 42 U.S.C. 4332(2)(c), respectively), the Clean Water Act of 1977 (33 U.S.C. 466 et seq.), the Endangered Species Act (16 U. S. C. 1531-1543; 87 Stat 884) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d), as applicable.

The NCDOT proposes to extend Rea Road (SR 1316) from NC 16 (Providence Road) east to Twelve Mile Creek Road (SR 1341)/NC 84 (Weddington Road) on new location (relocate NC 84), and widen existing NC 84 to Waxhaw-Indian Trail Road (SR 1008). Sidewalks and wide outside lanes are proposed for pedestrians and bicyclists. The project length is approximately 4.3 miles. Streams likely to be impacted include Mundys Run, Culvert Branch, and West Fork Twelvemile Creek. We do concur with plans to replace the three-barrel culvert carrying West Fork Twelvemile Creek with dual bridges. As we indicated at the scoping meeting, West Fork Twelvemile Creek may support protected mussel species, including the Carolina Creekshell

Mailing Address: Habitat Conservation • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

(*Villosa vaughaniana*), Federal Species of Concern and State Endangered, and other State listed species. These vulnerable species were not addressed in the Environmental Assessment.

As the EA indicated, the project is in an urbanizing area where growth and infill development are planned for and anticipated by local governments. Population growth is high and several housing developments are either under construction or are being planned in the project area and vicinity. No access control is proposed; however, we agree with the Village of Wesley Chapel Land Use Plan that indicated driveway access onto NC 84 should be limited. We are concerned that with the growth rate, the new access to developable land, and the amount of planned development, access management may be needed to better manage traffic and prolong an acceptable level of service for the roadway so that the need for additional widening can be avoided or delayed.

Indirect and cumulative effects of the project are a significant concern. Increased impervious coverage and habitat fragmentation and loss will negatively impact water quality and area wildlife. Already, 340 of the 845 acres of land available for development in the study area have plans for development. The EA indicated that six of nine screening categories in the indirect land use effects analysis reflect a moderate to high level of concern. We, therefore do not understand the conclusion that "there is a lower level of concern for indirect and cumulative effects potential as a result of the proposed project". Cumulative effects were not discussed at all, but seem to be an important consideration for this project. Cumulative effects should be analyzed and percentage of impervious coverage should be provided for current and future build-out conditions.

The conversion of the culvert crossing of West Fork Twelvemile Creek to a bridge may provide an important wildlife crossing, reconnecting once fragmented habitat. Steps should be taken to maximize the wildlife use of this connection by maintaining or restoring the natural habitat on either side and under the bridges and along the stream corridor. Use of this crossing by wildlife may reduce or minimize vehicle collisions with wildlife and therefore enhance safety.

In developed settings, we recommend strategies that minimize impervious surface and maximize stormwater treatment to protect water quality and aquatic life. We encourage NCDOT and local officials to work together and to use low impact development techniques to maximize the management of storm water quantity and quality in the project area. Information on LID measures can be found at www.lowimpactdevelopment.org, http://www.epa.gov/owow/nps/lid/lidnatl.pdf and http://www.stormwatercenter.net/. Other important protective measures can be found in the Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality at http://www.ncwildlife.org/portals/0/Conserving/documents/2002_GuidanceMemorandumforSecondaryandCumulativeImpacts.pdf

Thank you for the opportunity to review and comment on this project. If you have any questions regarding these comments, please contact me at marla.chambers@ncwildlife.org or (704) 982-9181.

Cc: Marella Buncick, USFWS
Cynthia Van Der Wiele, USEPA
Donna Hood, NCDWR
Crystal Amschler, USACE

Waste Management
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MICHAEL SCOTT
Director

Date: March 9, 2017

To: Michael Scott, Director
Division of Waste Management

Through: Qu Qi, LG
Inactive Hazardous Sites Branch – Central Unit

From: Katie Tatum
Inactive Hazardous Sites Branch

Subject: NEPA Project #17-0385, NC Department of Transportation, Union County, North Carolina

The Superfund Section has reviewed the proximity of the NC Department of Transportation project.

No sites under Superfund jurisdiction were identified within a 1-mile radius of any of the individual projects.

Please contact Qu Qi at 919.707.8213 if you have any questions.

State of North Carolina | Environmental Quality | Waste Management
1646 Mail Service Center | 217 West Jones Street | Raleigh, NC 27699-1646
919 707 8200 Telephone

Superfund Section SEPA Review

March 9, 2017

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Waste Management
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MICHAEL SCOTT
Director

DATE: March 9, 2017

TO: Michael Scott, Division Director through Sharon Brinkley

FROM: Deb Aja, Western District Supervisor - Solid Waste Section

RE: NEPA Project 17-0385, Union County, N.C.
NCDOT Road Improvement Project

The Solid Waste Section has reviewed the Environmental Assessment document for the NCDOT proposed project to extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw Indian Trail Road in Wesley Chapel, Union County, North Carolina. The review has been completed and has seen no adverse impact on the surrounding community and likewise knows of no situations in the community, which would affect this project from a solid waste perspective.

During construction and demolition, every feasible effort should be made to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this project where suitable. Any waste generated by this project that cannot be beneficially reused or recycled must be disposed of at a solid waste management facility approved to manage the respective waste type. The Section strongly recommends that any contractors are required to provide proof of proper disposal for all waste generated as part of the project.

A list of permitted solid waste management facilities is available on the Solid Waste Section portal site at: http://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/solid-waste-management-annual-reports/solid-waste-permitted-facility-list

Please contact Teresa Bradford, Environmental Senior Specialist, with any questions regarding solid waste management. Ms. Bradford may be reached at (704) 235-160 or by email at teresa.bradford@ncdenr.gov.

Cc: Jason Watkins, Field Operations Branch Head
Teresa Bradford, Environmental Senior Specialist

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 17-0385 Due Date: 03/29/2017
County: Union

After review of this project it has been determined that the DEQ permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Processing Time (statutory time limit)
☒	Permit to construct & operate wastewater treatment facilities, non-standard sewer system extensions & sewer systems that do not discharge into state surface waters.	Application 90 days before begins construction or award of construction contracts. On-site inspection may be required. Post-application technical conference usual.	30 days (90 days)
☒	Permit to construct & operate, sewer extensions involving gravity sewers, pump stations and force mains discharging into a sewer collection system	Fast-Track Permitting program consists of the submittal of an application and an engineer's certification that the project meets all applicable State rules and Division Minimum Design Criteria.	30 days (N/A)
☒	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begins activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
☐	Water Use Permit	Pre-application technical conference usually necessary.	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a groundwater monitoring well located on property not owned by the applicant, and for a large capacity (>100,000 gallons per day) water supply well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☐	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
☐	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
☐	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950	Please Note - The Health Hazards Control Unit (HHCU) of the N.C. Department of Health and Human Services, must be notified of plans to demolish a building, including residences for commercial or industrial expansion, even if no asbestos is present in the building.	60 days (90 days)
☐	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres are to be disturbed. Plan must be filed with and approved by applicable Regional Office (Land Quality Section) at least 30 days before beginning activity. A NPDES Construction Stormwater permit (NCG010000) is also usually issued should design features meet minimum requirements. A fee of $65 for the first acre or any part of an acre. An express review option is available with additional fees.		20 days (30 days)
☐	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		(30 days)
☐	Sedimentation and erosion control must be addressed in accordance with _____ Local Government's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		Based on Local Program
☐	Compliance with 15A NCAC 2H .0126 - NPDES Stormwater Program which regulates three types of activities: Industrial, Municipal Separate Storm Sewer System & Construction activities that disturb ≥1 acre.		30-60 days (90 days)
☐	Compliance with 15A NCAC 2H 1000 -State Stormwater Permitting Programs regulate site development and post-construction stormwater runoff control. Areas subject to these permit programs include all 20 coastal counties, and various other counties and watersheds throughout the state.		45 days (90 days)

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 17-0385 Due Date: 03/29/2017
County: Union

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Processing Time (statutory time limit)
☐	Mining Permit	On-site inspection usual. Surety bond filed with DEQ Bond amount varies with type mine and number of acres of affected land. Affected area greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
☐	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, and certify construction is according to DEQ approved plans. May also require a permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)
☐	Oil Refining Facilities	N/A	90-120 days (N/A)
☐	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with DEQ running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DEQ rules and regulations.	10 days N/A
☐	Geophysical Exploration Permit	Application filed with DEQ at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
☐	State Lakes Construction Permit	Application fee based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property	15-20 days N/A
☒	401 Water Quality Certification	Compliance with the T15A 02H .0500 Certifications are required whenever construction or operation of facilities will result in a discharge into navigable water as described in 33 CFR part 323.	60 days (130 days)
☐	Compliance with Catawba, Goose Creek, Jordan Lake, Randleman, Tar Pamlico or Neuse Riparian Buffer Rules is required. Buffer requirements: http://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-riparian-buffer-protection-program		
☐	Nutrient Offset: Loading requirements for nitrogen and phosphorus in the Neuse and Tar-Pamlico River basins, and in the Jordan and Falls Lake watersheds, as part of the nutrient-management strategies in these areas. DWR nutrient offset information: http://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information		
☐	CAMA Permit for MAJOR development	$250.00 - $475.00 fee must accompany application	75 days (150 days)
☐	CAMA Permit for MINOR development	$100.00 fee must accompany application	22 days (25 days)
☒	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
☒	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
☒	Plans and specifications for the construction, expansion, or alteration of a public water system must be approved by the Division of Water Resources/Public Water Supply Section prior to the award of a contract or the initiation of construction as per 15A NCAC 18C .0300 et. seq., Plans and specifications should be submitted to 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. All public water supply systems must comply with state and federal drinking water monitoring requirements. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
☒	If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Water Resources/Public Water Supply Section at 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
☐	Plans and specifications for the construction, expansion, or alteration of the _____ water system must be approved through the _____ delegated plan approval authority. Please contact them at _____ for further information.		

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Reviewing Regional Office: MRO
Project Number: 17-0385 Due Date: 03/29/2017
County: Union

Other Comments (attach additional pages as necessary, being certain to comment authority)

Division	Initials	No comment	Comments	Date Review
DAQ	CA	☐	There do not appear to be any applicable air quality regulations. If landclearing is necessary and disposed of by burning, the open burning regulations shall be followed.	3/9/17
DWR-WQROS (Aquifer & Surface)	JB &	☐	MRO WQROS defers to the DWR Transportation Permitting Unit for all commentary specifically related to transportation planning and permitting issues. • In reference to the maps provided, it appears that a Section 401 Water Quality Certification/Section 404 Permit will be necessary (box checked). Potential stream impacts should be determined prior to construction. • Modification to NPDES Wastewater, and Wastewater Collection System Permits may be necessary if existing facilities are modified as a result of the project (boxes checked); • NPDES Stormwater Permitting may be required through DEMLR. • If located, wells should be properly abandoned (box checked). **&** Please provide the species of mollusks found during development of the NRTR, no species were listed.	3/21/17 3/29/17
DWR-PWS	JHW	☐	See above comments	3/8/17
DEMLR (LQ & SW)	ZSK	☐	Erosion and sediment control permit along with Stormwater permit is required.	3/10/17
DWM – UST	RHT	☐	RE: Project Review Form: 17-0385 I have reviewed the scoping document for the proposed project. A search of the proposed area revealed one open Underground Storage Tank (UST) incident at 206 South Providence Road in Weddington. This site may be inside of the project area. The risk is classified as Low. The incident number is 36104. The UST Section project manager for this incident is Ed Leach. He can be reached at 704 235 2171 or at Edward.Leach@ncdenr.gov. The following are general comments and are pertinent to my review: 1. The Mooresville Regional Office (MRO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum above ground storage tanks (ASTs) within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs. We may be reached at 704-663-1699. 2. Any petroleum spills must be contained and the area of impact must be properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environmental Quality – Division of Waste Management Underground Storage Tank Section in the Mooresville Regional Office at 704-663-1699. 3. Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosion or inhalation hazards exist. Also, notify the UST Section of the Mooresville Regional Office at 704-663-1699. Petroleum contaminated soils must be handled in accordance with all applicable regulations. If you have any questions or need additional information, please contact me at Ron.Taraban@ncdenr.gov or by phone at 704-235-2167.	3/9/17
Other Comments		☐		/ /

REGIONAL OFFICES

State of North Carolina Department of Environmental Quality
INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

Questions regarding these permits should be addressed to the Regional Office marked below.

☐ **Asheville Regional Office**
2090 U.S. 70 Highway
Swannanoa, NC 28778-8211
Phone: 828-296-4500
Fax: 828-299-7043

☐ **Fayetteville Regional Office**
225 Green Street, Suite 714,
Fayetteville, NC 28301-5043
Phone: 910-433-3300
Fax: 910-486-0707

☒ **Mooresville Regional Office**
610 East Center Avenue, Suite 301,
Mooresville, NC 28115
Phone: 704-663-1699
Fax: 704-663-6040

☐ **Raleigh Regional Office**
3800 Barrett Drive,
Raleigh, NC 27609
Phone: 919-791-4200
Fax: 919-571-4718

☐ **Washington Regional Office**
943 Washington Square Mall,
Washington, NC 27889
Phone: 252-946-6481
Fax: 252-975-3716

☐ **Wilmington Regional Office**
127 Cardinal Drive Ext.,
Wilmington, NC 28405
Phone: 910-796-7215
Fax: 910-350-2004

☐ **Winston-Salem Regional Office**
450 Hanes Mill Road, Suite 300,
Winston-Salem, NC 27105
Phone: 336-776-9800
Fax: 336-776-9797

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: UNION

F02: HIGHWAYS AND ROADS

STATE NUMBER: 17-E-4220-0385
DATE RECEIVED: 03/02/2017
AGENCY RESPONSE: 03/29/2017
REVIEW CLOSED: 04/03/2017

MS DEIRDRE HAMAN
CLEARINGHOUSE COORDINATOR
DPS - DIV OF EMERGENCY MANAGEMENT
FLOODPLAIN MANAGEMENT PROGRAM
4218 MAIL SERVICE CENTER
RALEIGH NC

MAR 0 3 2017

REVIEW DISTRIBUTION

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DEPT OF ENVIRONMENTAL QUALITY
DEPT OF NATURAL & CULTURAL RESOURCE
DEPT OF TRANSPORTATION
DNCR - NATURAL HERITAGE PROGRAM
DPS - DIV OF EMERGENCY MANAGEMENT

PROJECT INFORMATION

APPLICANT: N.C. Department of Transportation
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: [X] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: John D Burbaker DATE: 21 March 2017

RECEIVED
Secretary's
MAR 29 2017
Office
DOA

NORTH CA NA STATE CLEARINGHOUSE
DEPA T OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: UNION

F02: HIGHWAYS AND ROADS

STATE NUMBER: 17-E-4220-0385
DATE RECEIVED: 03/02/2017
AGENCY RESPONSE: 03/29/2017
REVIEW CLOSED: 04/03/2017

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORDINATOR
DEPT OF NATURAL & CULTURAL RESOURCE
STATE HISTORIC PRESERVATION OFFICE
MSC 4617 - ARCHIVES BUILDING
RALEIGH NC

ER 12-2134

Due 3/13/17 A RTB 3/8/17

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DPS - DIV OF EMERGENCY MANAGEMENT

Due 3/17/17 + Rec'd 3/15/17

PROJECT INFORMATION

APPLICANT: N.C. Department of Transportation
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel. U-3467

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☐ NO COMMENT ☒ COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley DATE: 3.15.17

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

March 16, 2017

MEMORANDUM

TO: Crystal Best
North Carolina State Clearinghouse
Department of Administration

FROM: Ramona M. Bartos RMB for Ramona M. Bartos

SUBJECT: Environmental Assessment for theRea Road Extension from NC 16 to SR 1008, Weddington, U-3467, Union County, ER 12-2134

Thank you for your submission of March 2, 2017, concerning the above project.

The Environmental Commitments state that once an alternative is chosen, NCDOT will coordinate with the NC State Historic Preservation office concerning archaeological resources. We will offer comments once that consultation is complete.

The Environmental Commitments in the EA contain the conditions agreed on to avoid adversely affecting the Howard House (UN 0831) and Jacob Allen Deal Farm, (UN 0097).

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

NORTH CARO[illegible] STATE CLEARINGHOUSE
DEPART[illegible] OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: UNION

F02: HIGHWAYS AND ROADS

STATE NUMBER: 17-E-4220-0385
DATE RECEIVED: 03/02/2017
AGENCY RESPONSE: 03/29/2017
REVIEW CLOSED: 04/03/2017

MR JOSEPH HUDYNCIA
CLEARINGHOUSE COORDINATOR
DEPT OF AGRICULTURE
1001 MSC - AGRICULTURE BLDG
RALEIGH NC

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DPS - DIV OF EMERGENCY MANAGEMENT

PROJECT INFORMATION

APPLICANT: N.C. Department of Transportation
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: [✓] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: [signature] DATE: 3/16/2017

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Office
DOA

Michael Orr

NORTH CAROLI[illegible]TATE CLEARINGHOUSE
DEPARTME[illegible] ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: UNION

F02: HIGHWAYS AND ROADS

STATE NUMBER: 17-E-4220-0385
DATE RECEIVED: 03/02/2017
AGENCY RESPONSE: 03/29/2017
REVIEW CLOSED: 04/03/2017

MS CARRIE ATKINSON
CLEARINGHOUSE COORDINATOR
DEPT OF TRANSPORTATION
STATEWIDE PLANNING - MSC #1554
RALEIGH NC

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PROJECT INFORMATION

APPLICANT: N.C. Department of Transportation
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Proposed project will extend Rea Road from NC 16 East to Twelve Mile Creek Road/NC 84 on new location and widen existing NC 84 to Waxhaw-Indian Trail Road in Wesley Chapel.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: [✓] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: John B Bailey DATE: 3/7/2017

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request	4. Sheet 1 of _____
1. Name of Project **U-3467 Rea Road (SR 1316) Extension**	5. Federal Agency Involved **FHWA**	
2. Type of Project **Corridor on new location**	6. County and State **Union County, NC**	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☐	4. Acres Irrigated	Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Maximum Points	Alternative Corridor For Segment _____ Corridor CA2	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		93.7			
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		93.7			
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value					
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*					
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	4			
2. Perimeter in Nonurban Use	10	2			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	0			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	0			
8. On-Farm Investments	20	1			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	2			
TOTAL CORRIDOR ASSESSMENT POINTS	160	9	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	9	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	9	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: _____ DATE 03/20/18

NOTE: Complete a form for each segment with more than one Alternate Corridor

Project Tracking No.:

17-01-0009

ARCHAEOLOGICAL SURVEY REQUIRED FORM

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

PROJECT INFORMATION

Project No:	**U-3467**	*County:*	**Union**
WBS No:	**39019.1.1**	*Document:*	**State EA**
F.A. No:		*Funding:*	☐ State ☒ Federal

Federal Permit Required? ☒ Yes ☐ No *Permit Type:* **Section 404**

Project Description: U-3467 encompasses the SR 1316 (Rea Road) Extension from NC 16 to SR 1008 (Waxhaw- Indian Trail Road) in Union County, North Carolina. The archaeological Area of Potential Effects (APE) measures 4.30 miles in length and subsumes the entire project study area.

SUMMARY OF ARCHAEOLOGICAL RESOURCES REVIEW: *SURVEY REQUIRED*

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

Permitting and funding information was reviewed for determining the level of archaeological input required by state and federal laws. Section 106 of the National Historic Preservation Act will apply because the project is federally-funded and requires United States Army Corp of Engineers (USACE) permits. The Federal Highway Administration (FHwA) will serve as the lead federal agency. Next, construction design and other data was examined (when applicable) to define the character and extent of potential impacts to the ground surfaces embracing the improvement work. At this time, a preferred alternative has been chosen. However, in consultation with the project engineer, wetland and other impacts may result in the reconsideration of the preferred alternative. For this reason and for purposes of cultural resource compliance, the entire project study area will be reviewed for archaeological investigation.

Once an APE was defined, a map review and site file search was conducted at the Office of State Archaeology. One previously documented archaeological site (31UN135) is located within the APE. 31UN135 is an unassessed prehistoric archaeological site that requires survey, delineation, and a National Register of Historic Places evaluation. Next, the APE was referenced on topographic, geologic, flood boundary, lidar and NRCS soil survey maps for the evaluation of environmental, geomorphological, hydrological, and other correlatives that may have resulted in past occupation in the project corridor. Finally, aerial photographs (NCDOT Spatial Data Viewer & other on-line sources) were examined and the Google Street View map application was utilized (when amenable) for gaining a virtual, first-hand perspective of the overall study area and for assessing disturbances, both natural and human induced, which compromise the integrity of archaeological sites/deposits.

The defined APE corridor contains one previously documented archaeological site that necessitates a compliance investigation. In addition, environmental determinants including pedeological and hydrological factors, as well as the local archaeological site profile, suggest an elevated potential for the recovery of archaeological remains within the project study area. For this reason, an archaeological survey of the APE is recommended prior to construction activities. This work will seek to determine if archaeological features, artifacts, or deposits are contained within the project area. All documented sites will be evaluated for NRHP eligibility.

Project Tracking No.:

17-01-0009

SUPPORT DOCUMENTATION

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

FINDING BY NCDOT ARCHAEOLOGIST – *SURVEY REQUIRED*

Scott Eric Halvorsen 1-13-2017

NCDOT ARCHAEOLOGIST **Date**

Feb - Mar 2017

Proposed fieldwork completion date

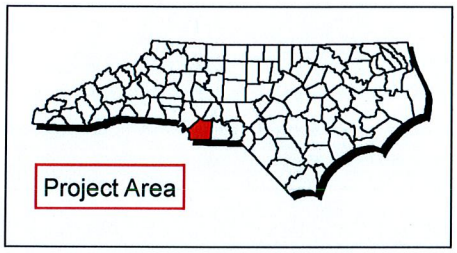
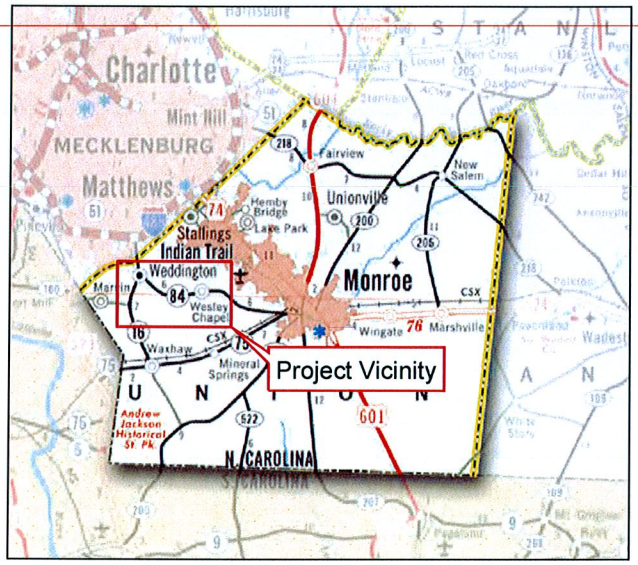


Figure S-1

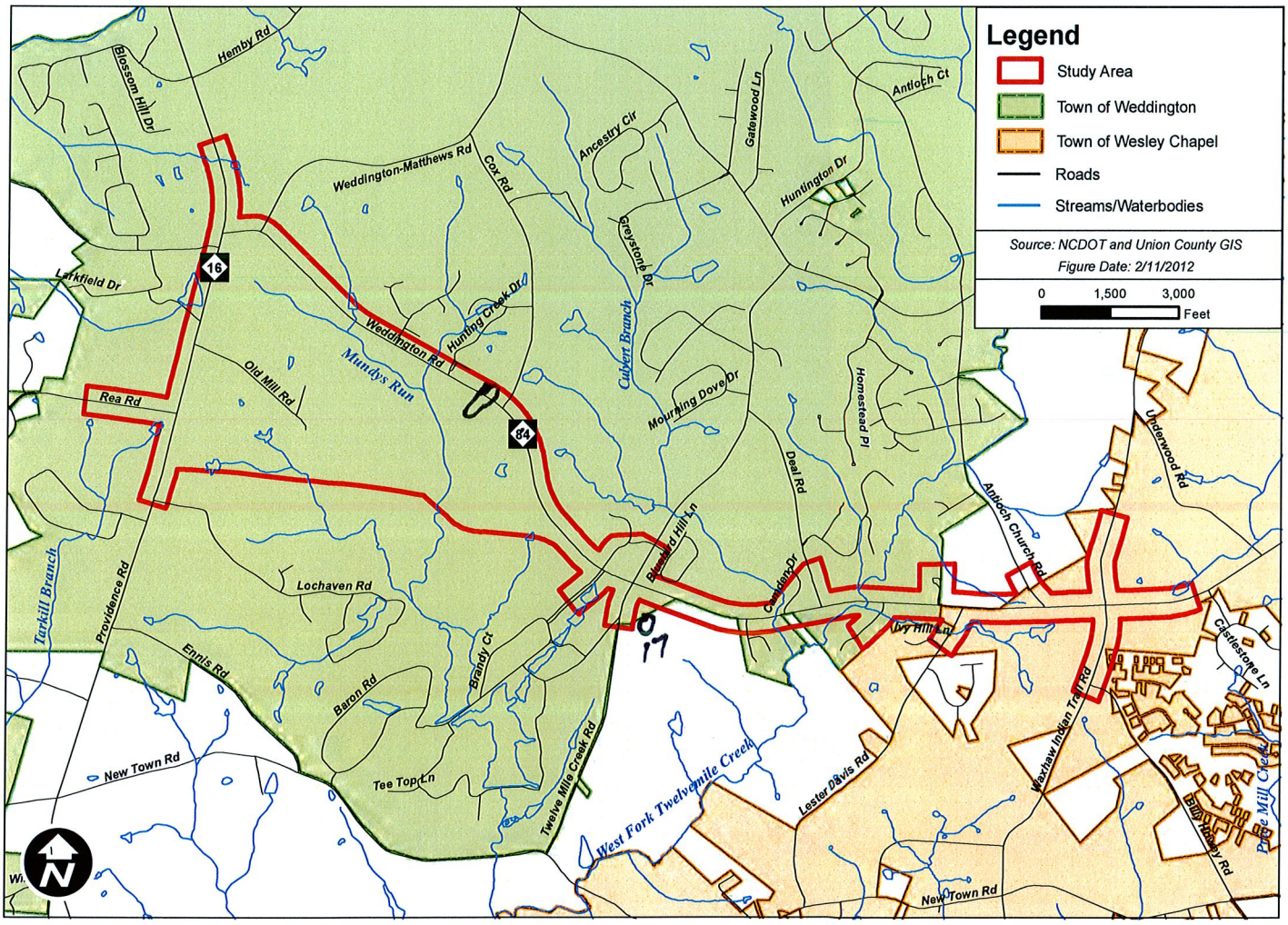
Project Vicinity

SR 1316 (Rea Road) Extension, NC 16 to SR 1008
(Waxhaw-Indian Trail Road)
NCDOT STIP Project No. U-3467

Union County, North Carolina



North Carolina
Department of Transportation



NO NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE OR LISTED ARCHAEOLOGICAL SITES AFFECTED FORM

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

PROJECT INFORMATION

Project No:	**U-3467**	*County:*	**Union**
WBS No:	**39019.1.1**	*Document:*	**State EA**
F.A. No:	**N/A**	*Funding:*	☐ State ☒ Federal

Federal Permit Required? ☒ Yes ☐ No *Permit Type:* **404**

Project Description: The NCDOT proposes to extend SR 1316 (Rea Road) from NC 16 (Providence Road) east to NC 84 (Weddington Road) on new location, then widen existing NC 84 to SR 1008 (Indian Trail-Waxhaw Road). The proposed project length measures 4.30 miles (6.92 km) and the Area of Potential Effects (APE) encompasses approximately 1,140.68 acres.

SUMMARY OF ARCHAEOLOGICAL FINDINGS

An archaeological survey and evaluation of the proposed improvements was conducted from March 20 to June 14, 2017, by Terri Russ, Melissa McKay, William Vaughan, Marianne McGlinn, Carolyn Gimbal, and Angela McArdle of Environmental Services, Inc. (ESI). As a result of the investigations, 43 new archaeological sites were recorded within the project's APE. Three of the archaeological sites (31UN400, 31UN402, and 31UN405**) are located within the Preferred Corridor; however, all three sites are recommended *Not Eligible* for the *National Register of Historic Places* (NRHP). No further work is recommended at these locations. Two sites recorded were cemeteries (31UN382** and 31UN383**). Both cemeteries (neither of which are recommended eligible for the NRHP) are located well outside of the Preferred Corridor and will not be affected by the project, as currently proposed. None of the remaining archaeological sites recorded during the current investigation are recommended eligible for the NRHP. No additional archaeological work is recommended with regards to the current improvement project; however, if the current study area should be expanded or moved, additional consultation with SHPO and NCDOT archaeologists will be necessary.

The North Carolina Department of Transportation (NCDOT) Archaeology Group reviewed the subject project and determined:

☒ There are no National Register listed ARCHAEOLOGICAL SITES within the project's area of potential effects. (Attach any notes or documents as needed)
☐ No subsurface archaeological investigations were required for this project.
☐ Subsurface investigations did not reveal the presence of any archaeological resources.
☒ Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.
☒ All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

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

SUPPORT DOCUMENTATION

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

Scott Eric Halvorsen 9-25-2017

NCDOT ARCHAEOLOGIST **Date**

Federal Aid #: STP-1316(10) *TIP #:* **U-3467** *County*: Union

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Rea Road Extension from Providence Road (NC 16) to Waxhaw-Indian Trail Road (SR 1008).

On September 2, and September 30, 2014, representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☒ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (HPO)
- ☐ Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

Katherine Husband — 10/28/2014

Representative, NCDOT — Date

[signature] — 10-28-14

FHWA, for the Division Administrator, or other Federal Agency — Date

Renee Gledhill-Earley — 10.28.14

Representative, HPO — Date

Property and Status	Alternative	Effect Finding	Reasons
Property No. 5 **John Walker Matthews House** Determined Eligible 1996, Remains Eligible	**Alternative A/A2**	No Effect	It was determined there would be no effect on the property at the September 2, 2014 effects meeting. Although the property falls within the Area of Potential Effects, there will be no work performed within the vicinity of the property.
Property No. 5 **John Walker Matthews House** Determined Eligible 1996, Remains Eligible	**Alternative B**	No Effect	It was determined there would be no effect on the property at the September 2, 2014 effects meeting. Although the property falls within the Area of Potential Effects, there will be no work performed within the vicinity of the property.
Property No. 5 **John Walker Matthews House** Determined Eligible 1996, Remains Eligible	**Alternative C/C2**	No Effect	It was determined there would be no effect on the property at the September 2, 2014 effects meeting. Although the property falls within the Area of Potential Effects, there will be no work performed within the vicinity of the property.
Property No. 8 **Howard House** Determined Eligible 1996, Remains Eligible	**Alternative A/A2** Original Avoidance Option	Adverse Effect No Adverse Effect	The original design had potential issues with the impact of hydro, utilities, and drainage work, as well as access to the property, which could create an adverse effect. The alternative impacts 0.25 acres of 5.904 acres. There will be no adverse effect with the minimized footprint and improved access. Construction fencing shall be erected at the back of the ditch line. No work shall take place in, and no utilities shall encroach into, the historic boundary. There will be 0.0 acres of the 5.904 acres impacted.
Property No. 8 **Howard House** Determined Eligible 1996, Remains Eligible	**Alternative B**	No Effect	It was determined there would be no effect on the property at the September 2, 2014 effects meeting. Although the property falls within the Area of Potential Effects, there will be no work performed within the vicinity of the property for this alternative.
Property No. 8 **Howard House** Determined Eligible 1996, Remains Eligible	**Alternative C/C2** Original Avoidance Option	Adverse Effect No Adverse Effect	The original design had potential issues with the impact of hydro, utilities, and drainage work, as well as access to the property, which could create an adverse effect. The alternative impacts 0.25 acres of 5.904 acres. There will be no adverse effect with the minimized footprint and improved access. Construction fencing shall be erected at the back of the ditch line. No work shall take place in, and no utilities shall encroach into, the historic boundary. There will be 0.0 acres of the 5.904 acres impacted.

Federal Aid #: STP-1316(10) *TIP #:* **U-3467** *County*: Union

Property and Status	Alternative	Effect Finding	Reasons
Property No. 15 **Jacob Allen Deal Farm** Determined Eligible	**Alternative A/A2** Original Option Avoidance Option Minimization Option	Adverse Effect No Adverse Effect No Adverse Effect	The original design of Alternative A would impact 3.02 acres of 39.79 acres and is an adverse effect on the property. There will be no adverse effect with the condition of a 25' buffer from the historic boundary, delineated by construction fencing erected at the back of the ditch line. The fencing shall extend 500' from each access drive, or to the property boundary, whichever is closer. Minimization option will impact 0.2 acres of 39.79 acres, which will have no adverse effect on the property.
Property No. 15 **Jacob Allen Deal Farm** Determined Eligible	**Alternative B** Original Avoidance Option	Adverse Effect No Adverse Effect	The original design of Alternative B would impact 2.78 of 39.79 acres and is an adverse effect on the property. There will be no adverse effect with the condition of a 25' buffer from the historic boundary, delineated by construction fencing erected at the back of the ditch line. The fencing shall extend 500' from each access drive, or to the property boundary, whichever is closer. Minimization option will impact 0.0 acres of 39.79 acres, which will have no adverse effect on the property.
Property No. 15 **Jacob Allen Deal Farm** Determined Eligible	**Alternative C/C2** Avoidance Option Avoidance Option Minimization Option	Adverse Effect No Adverse Effect No Adverse Effect	The original design of Alternative C would impact 6.34 acres of 39.79 acres and is an adverse effect on the property. There will be no adverse effect with the condition of a 25' buffer from the historic boundary, delineated by construction fencing erected at the back of the ditch line). The fencing shall extend 500' from each access drive, or to the property boundary, whichever is closer. Minimization option will impact 0.56 acres of 39.79 acres, which will have no adverse effect on the property.

Initialed: NCDOT KH FHWA DB HPO RyB

FHWA Intends to use the SHPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

Alternatives A and C Minimization for the Jacob Allen Deal Farm

Federal Aid #: **STP-1316(10)** *TIP#:* **U-3467** *County*: **Union**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Rea Road Extension from Providence Road (NC 16) to Waxhaw-Indian Trail Road (SR 1008) - addresses alternative CA2

On *3/20/2018* representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

Mary Pope Furr — 3/20/2018
Representative, NCDOT — Date

Renee Gledhill Mitchell C Dean — 3/27/18
FHWA, for the Division Administrator, or other Federal Agency — Date

Renee Gledhill-Earley — 3.20.18
Representative, HPO — Date

Federal Aid #: **STP-1316(10)** *TIP#:* **U-3467** *County*: **Union**

Property and Status	Alternative	Effect Finding	Reasons
John Walker Matthews House (UN0249)- DE Criterion C	CA2	No effect	No constuction activities in vicinity of historic property.
Howard House (UN0831)- DE Criterion C	CA2	No adverse effect	Constuction fencing shall be erected @ the back of the ditch line. No work shall take place in, and no utilities shall encroach into the historic boundary. There are 0acres impacted of 5.904 a
Jacob Allen Deal Farm (UN1147)- DE Criteria A&C	CA2	No adverse effect	Condition of 25' buffer from historic boundary, delineated by constuction fencing erected @ back of ditch. Fencing shall extend 500' from each access drive, or to property boundary, whichever is closer. Alternative will impact 0.13 acres of 39.79 acres

Initialed: NCDOT MPJ FHWA _____ HPO RJH

FHWA Intends to use the HPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

Jacob Allen Deal Farm

VILLAGE OF WESLEY CHAPEL

February 12, 2018

Mr. Kyle Smith
Recreation Resources Service
NCSU Box 8004
Raleigh, NC 27695-8004

RE: PARTF Conversion Mitigation, Village of Wesley Chapel Dogwood Park, Project No. 2011-674, Grant No. 4024

Dear Mr. Smith,

North Carolina Department of Transportation (NCDOT) project U-3467, NC 84 – Rea Road Extension, includes the widening of NC 84 from two lanes to four lanes along the northern Dogwood Park boundary. The original alignment proposed by NCDOT avoided impacts to Dogwood Park but resulted in impacts to Wesley Chapel Weddington Athletic Association's (WCWAA) Optimist Park ball fields and Southbrook Church parking. In response to community input from NCDOT's U-3467 January 2016 public hearing, and in an effort to identify a solution which will most effectively serve the community, the Village of Wesley Chapel asked NCDOT to investigate an alignment option that would utilize a portion of Dogwood Park in an effort to save the WCWAA fields and Southbrook Community Church parking. In response, NCDOT redesigned the proposed widening to use a portion of the 75-foot setback area within Dogwood Park along NC 84 (see attached figure).

In our May 1, 2017 letter to the Recreation Resources Service (RRS), the Village of Wesley Chapel submitted an initial proposal for a partial conversion of 0.73+/- of an acre of land at Dogwood Park. Dogwood Park received Parks and Recreation Trust Fund (PARTF) development assistance under contract number 4024 for the period between July 1, 2011 and June 30, 2014. The Village of Wesley Chapel is committed to providing outdoor recreational opportunities to its citizens. We believe a partial conversion of Dogwood Park land along NC 84 to maintain use of WCWAA Optimist Park ball fields and Southbrook Community Church parking is the right approach to achieve this commitment. Approximately 97 percent, or 21.78 +/- acres, of Dogwood Park will remain unconverted and available for outdoor recreation use.

Notice of the proposed PARTF Conversion and potential Section 4(f) impact at Dogwood Park was provided to the public in a newsletter and meeting materials associated with NCDOT's U-3467 June 2017 public meeting. Community input received during the subsequent public comment period overwhelmingly favored the proposed conversion of PARTF-assisted land at Dogwood Park to save WCWAA Optimist Park ball fields and Southbrook Church parking.

The Village of Wesley Chapel understands the proposed conversion shall be mitigated to North Carolina Department of Cultural and Natural Resources' (DNCR) satisfaction and the preferred mitigation is replacement with facilities of similar monetary value and recreational usefulness. The North Carolina Department of Transportation has been working with the Village of Wesley Chapel to satisfy the elements required for the conversion, including the identification of suitable

replacement property. Several potential options have been investigated; however, no appropriate replacement property has been identified to date.

The Village of Wesley Chapel has been notified of the Federal Highway Administration's intent to make a *de minimis* impact finding regarding the effect the proposed NC 84 – Rea Road Extension project will have on a portion of Dogwood Park. As Mayor of the Village of Wesley Chapel and the official with jurisdiction over Dogwood Park, I concur with the determination the proposed NC 84 – Rea Road Extension project (U-3467), as described in this letter and shown on the accompanying attachment, will not adversely affect the activities, features or attributes that qualify Dogwood Park for protection under Section 4(f) of the Department of Transportation Act, as amended. I understand that based on my concurrence, the FHWA intends to make the *de minimis* finding regarding impacts to Dogwood Park, thus satisfying the requirements of Section 4(f).

The Village of Wesley Chapel will continue to evaluate other potential options for mitigation via suitable replacement property in the coming months. If no suitable replacement property can be found, the Village of Wesley Chapel will provide mitigation to the PARTF in the form of cash repayment based on the DNCR-approved value of the 0.73+/- of an acre proposed for conversion. A copy of the appraisal valuing the land at $50,500 has been submitted to your office. The Village of Wesley Chapel will provide your office with an update of our evaluation and proposed mitigation as soon as possible, but no later than May 1, 2018.

Thank you for the assistance you have provided regarding this important matter.

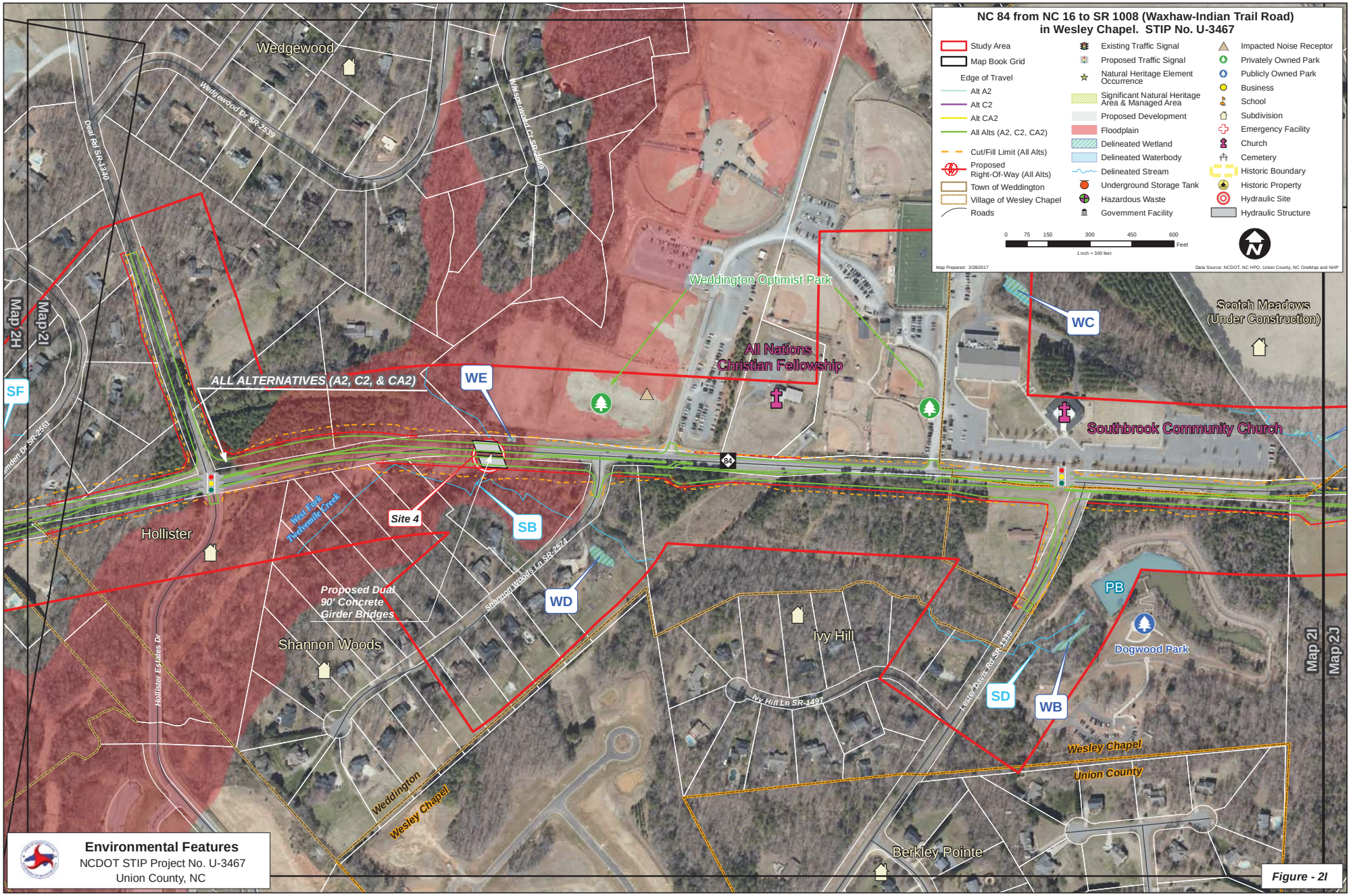
Sincerely,

Brad S Horvath

Mr. Brad Horvath, Mayor
Village of Wesley Chapel

Attachment

cc: Nate Halubka, NC Division of Parks and Recreation
Brendan Adams, NC Division of Parks and Recreation
Cheryl Bennett, Village of Wesley Chapel
Mr. Felix Davila, Federal Highway Administration, NC Division
Laura Sutton, NCDOT Central Project Delivery
Beverly Robinson, NCDOT Central Project Delivery
Bryan Key, NCDOT Central Project Delivery
Stuart Basham, NCDOT Division 10
✓Liz Kovasckitz, CALYX Engineers and Consultants


NC 84 from NC 16 to SR 1008 (Waxhaw-Indian Trail Road)
in Wesley Chapel. STIP No. U-3467
Study Area
Map Book Grid
Edge of Travel
Alt A2
Alt C2
Alt CA2
All Alts (A2, C2, CA2)
Cut/Fill Limit (All Alts)
Proposed Right-Of-Way (All Alts)
Town of Weddington
Village of Wesley Chapel
Roads
Existing Traffic Signal
Proposed Traffic Signal
Natural Heritage Element Occurrence
Significant Natural Heritage Area & Managed Area
Proposed Development
Floodplain
Delineated Wetland
Delineated Waterbody
Delineated Stream
Underground Storage Tank
Hazardous Waste
Government Facility
Impacted Noise Receptor
Privately Owned Park
Publicly Owned Park
Business
School
Subdivision
Emergency Facility
Church
Cemetery
Historic Boundary
Historic Property
Hydraulic Site
Hydraulic Structure
0 75 150 300 450 600 Feet
1 inch = 300 feet
Map Prepared: 3/28/2017
Data Source: NCDOT, NC HPO, Union County, NC OneMap and NHP
Wedgewood
Wedgewood Dr SR-2539
Deal Rd SR-1340
Whisperwood Ct SR-1689
Weddington Optimist Park
All Nations Christian Fellowship
Scotch Meadows (Under Construction)
Southbrook Community Church
Map 2H
Map 2I
Map 2J
SF
WE
WC
ALL ALTERNATIVES (A2, C2, & CA2)
Site 4
SB
WD
SD
WB
PB
Dogwood Park
Hollister
West Fork Twelvemile Creek
Proposed Dual 90' Concrete Girder Bridges
Shannon Woods Ln SR-2574
Shannon Woods
Hollister Estates Dr
Ivy Hill
Ivy Hill Ln SR-1497
Lester Davis Rd SR-1339
Wesley Chapel
Union County
Weddington
Wesley Chapel
Berkley Pointe
Environmental Features
NCDOT STIP Project No. U-3467
Union County, NC
Figure - 2I