

3.11.3 Impacts to Streams, Lakes/Ponds, and Wetlands

All of the Detailed Study Alternatives have unavoidable impacts to streams, Lakes/Ponds, and wetlands.

Permanent impacts were estimated to occur from the new construction limits and in areas where stream relocations are proposed to direct streams into new culverts. Temporary impacts were estimated to occur in the construction easement areas and the permanent drainage easement areas. An extra area of 25 feet was added to the construction limits and easement boundaries in accordance with NCDOT procedures for calculating impacts to jurisdictional resources at the preliminary design stage to ensure that impacts would not be underestimated as the project moves to final design.

General areas where impacts occur are shown on **Exhibit 3.10**. Impacts are summarized below. Most impacts occur at existing crossings of streams, where road widening requires stream culverts to be lengthened.

Stream Impacts

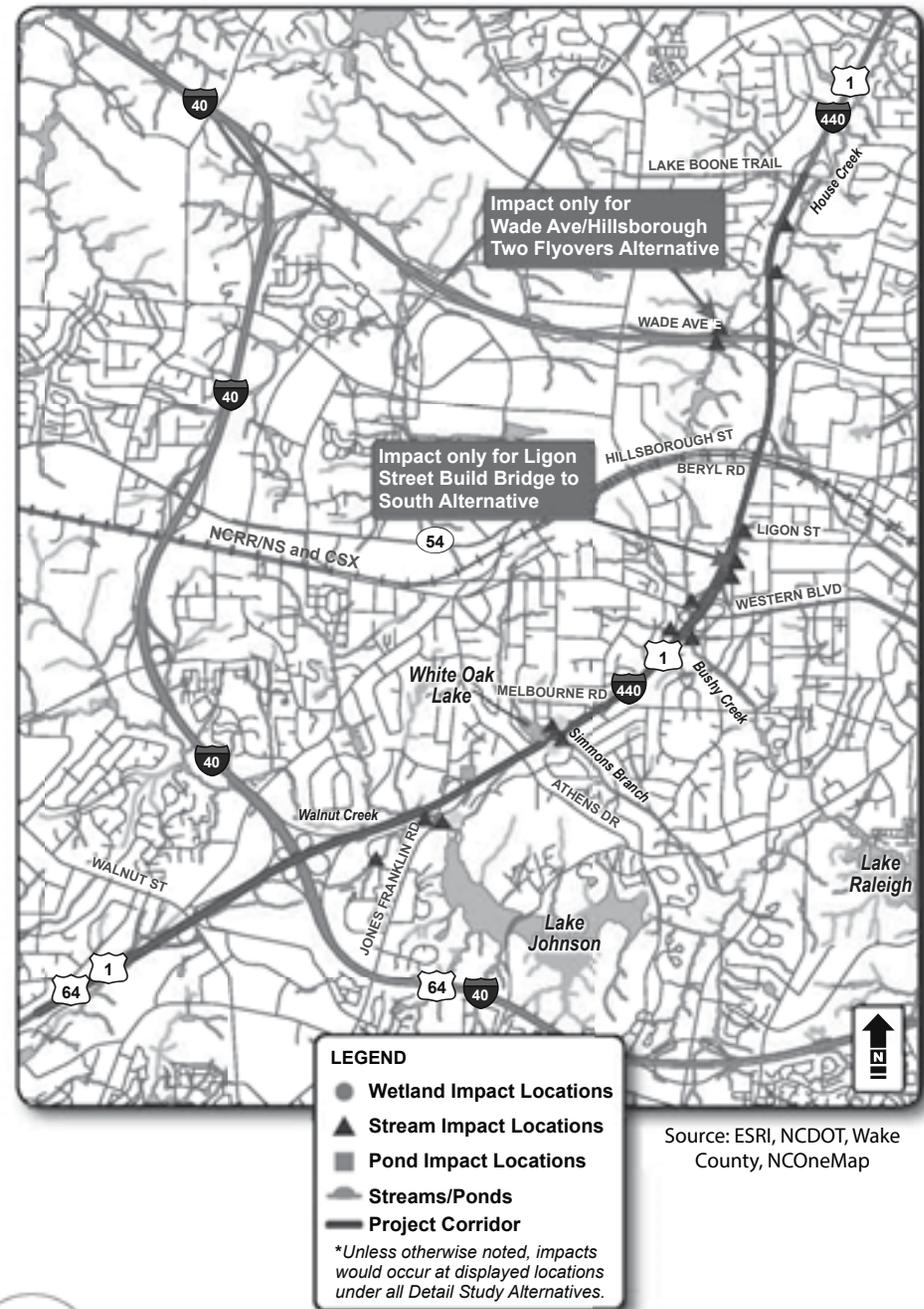
Permanent impacts to streams for any combination of Detailed Study Alternatives end-to-end range from 1,826 to 2,145 linear feet. Temporary impacts to streams range from 821 to 973 linear feet.

The longest permanent impacts at any one stream location are at an intermittent stream on the I-440 eastbound side across from White Oak Lake (approximately 251 linear feet) and a perennial stream on the I-440 eastbound side north and south of Ligon Street (approximately 236 linear feet). These streams are parallel to the roadway, so they have longer lengths of impacts from the roadway's expanded limits.

There are two locations where there are differences in stream impacts between Detailed Study Alternatives: I-440/Wade Avenue interchange and Ligon Street grade separation. These areas are described below.

At the Wade Avenue interchange, there are differences at the culvert crossing under Wade Avenue just west of I-440. On the NC Museum of Art property on the north side of Wade Avenue, a culvert extension is needed under the Two Flyovers Alternative that is not needed under the One Flyover or Slight Detour Alternatives. Under the Two Flyovers Alternative, the ramp from westbound I-440 to westbound Wade Avenue

Exhibit 3.10: Stream, Lake/Pond, and Wetland Impact Locations



Source: ESRI, NCDOT, Wake County, NCOneMap

needs to be shifted outward so that the flyover ramp from eastbound I-440 to westbound Wade Avenue can join with this ramp before joining Wade Avenue, creating a need to extend the House Creek culvert on the north side. This culvert extension would have approximately 85 linear feet of permanent impact and 87 linear feet of temporary impact.

At the Ligon Street grade separation, the Build Bridge to South Alternative would have approximately 85 more linear feet of permanent stream impacts and 64 linear feet more of temporary impacts compared to the Build Bridge to North and Extend Existing Traffic Culvert Alternatives.

Lake/Pond Impacts

Impacts to lakes/ponds would be the same for any combination of Detailed Study Alternatives end-to-end, since these pond impacts occur in areas where there is only one alternative currently under consideration.

The entire pond in the Waters Edge office park at the I-440/Jones Franklin Road interchange would be impacted. The pond (approximately 0.9 acres in size) would be temporarily drained during construction and part of the pond would be permanently filled.

Impacts may also occur at White Oak Lake. With the lake in its existing location, impacts would be approximately 0.08 acres. It should be noted that the City of Raleigh has a project to relocate the White Oak Lake dam outside the I-440 proposed right of way, and the timing of this City project with the I-440 project will need to be coordinated. Impacts from the I-440 project to White Oak Lake would be avoided with this City project.

Wetland Impacts

Wetland impact areas are very small and occur in two general locations as shown on **Exhibit 3.10**, near Lake Johnson at the Jones Franklin Road interchange and near White Oak Lake between Athens Drive and Melbourne Road. Total wetland impacts for any combination of Detailed Study Alternatives end-to-end would be approximately 0.09 acre of permanent impact and 0.01 acre of temporary impact.



Pond in Water's Edge Office Park

3.11.4 Permits and Measures to Reduce Impacts

Permits will be required from the USACE (Section 404 permit) and the NC DEQ Division of Water Resources (Section 401 Water Quality Certification) for roadway encroachment into jurisdictional surface waters and wetlands. The type of activity, the extent of the impacts, and the impacts by individual crossing will be considered by the USACE to determine the type of Section 404 permit needed.

Regardless of the Section 404 permit type issued by the USACE, any Section 404 permit will also require a 401 Water Quality Certification to be issued by the NC DEQ Division of Water Resources. Both the permit and the certification need to be obtained before construction can begin.

The permit process includes demonstrating that all practicable measures to avoid and minimize impacts to Waters of the US have been incorporated into the final design plans before addressing compensation for remaining impacts.

Some measures to avoid and minimize impacts to streams, lakes/ponds, and wetlands already have been incorporated into the preliminary designs. For example, retaining walls are proposed where Walnut Creek crosses under I-440 to avoid impacting this creek (see **Appendix B – Figure 3**). A retaining wall also is proposed to avoid a pond on the Meredith College campus (see **Appendix B – Figures 7a-c**).

During final design, NCDOT will continue to investigate ways to avoid and minimize impacts to streams, lakes/ponds, and wetlands. For remaining impacts, the permits from the USACE and the NCDEQ Division of Water Resources will identify the necessary mitigation measures needed to compensate for these impacts. NCDOT will coordinate with the NCDEQ Division of Mitigation Services to provide the required mitigation measures.

3.12 SECTION

Protected Plant and Animal Species

Protected species are plants and animals afforded protections under the federal Endangered Species Act and the Bald and Golden Eagle Protection Act. The US Fish and Wildlife Service administers these acts. See the information box on this page.

3.12.1 Protected Species Listed for Wake County

The US Fish and Wildlife Service lists four species under federal protection through the Endangered Species Act that are considered to have ranges extending into Wake County. These are listed in **Table 3.3**, with brief descriptions following. The bald eagle, known to be present in Wake County, is protected under the Bald and Golden Eagle Protection Act.

Table 3.3: Protected Species in Wake County

Type	Common Name	Scientific Name	Status
Plant	Michaux's sumac	<i>Rhus michauxii</i>	Endangered
Mussel	Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	Endangered
Bird	Red-cockaded woodpecker	<i>Picoides borealis</i>	Endangered
Bat	Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened



Endangered Species Act (ESA) and Bald and Golden Eagle Protection Act

ESA. The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the US Fish and Wildlife Service.

The ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, including the destruction or adverse modification of critical habitat (habitat essential to the conservation of a species).

The US Fish and Wildlife Service determines whether a species should be federally listed as threatened or endangered. **Endangered species** are those plants and animals in danger of extinction throughout all or a significant portion of their range. **Threatened species** are those likely to become endangered in the foreseeable future.

Any activity permitted, funded, or conducted by a federal agency that affects a listed species or designated critical habitat requires a consultation with the US Fish and Wildlife Service.

Eagle Protection Act. This act prohibits the take, disturbance, possession, sale, purchase, trade, or transport of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit.

Want to know more? Go to the US Fish and Wildlife Service websites
 For ESA: <https://www.fws.gov/endangered/laws-policies/>
 For Eagles Protection Act: <https://www.fws.gov/midwest/eagle/protect/laws.html>



Credit: Susan Miller, USFWS

Michaux's sumac is a sun-loving plant that likes sandy soils and areas disturbed by mowing, clearing, grazing, or periodic fire that keeps their habitat open. There is potentially suitable habitat for this plant in the project corridor. The NC Natural Heritage Program records indicate no known occurrences within one mile of the study corridor.



Credit: NC Wildlife Resources Commission

In North Carolina, the dwarf wedgemussel habitat includes the Neuse and Tar River drainages. It inhabits streams with slow to moderate currents and firm bottoms. There is potentially suitable habitat for this mussel in streams in the project corridor. The NC Natural Heritage Program records indicate no known occurrences within one mile of the study corridor.



Credit: NC Wildlife Resources Commission

The red-cockaded woodpecker likes mature stands of southern pines, particularly longleaf pine, for foraging and nesting. They excavate nesting cavities in pines that are 60 years or older. Potentially suitable foraging habitat for the red-cockaded woodpecker is present in the project corridor, but the NC Heritage Program records show no known occurrences within one mile.



Credit: Al Hicks, USFWS

The northern long-eared bat occurs in the NC mountains, with scattered records of its presence in the Piedmont and coastal plain. During the summer, this bat roosts singly or in colonies in live and dead trees. White nose syndrome, a fungus, has severely impacted this bat. There may be potentially suitable habitat for this species in the project corridor.



Credit: Katherine Whitmore, USFWS

The bald eagle lives near rivers, lakes, and marshes where they can find fish, their primary food. Within the project corridor, Lake Johnson and three smaller unnamed ponds may provide food sources for the bald eagle. The NC Natural Heritage Program records indicate no known occurrences within one mile of the study corridor.

3.12.2 Impacts to Protected Species

Suitable habitat for the protected species listed in **Section 3.12.1** was surveyed for the actual presence of these species. Survey findings and conclusions are listed below.

Michaux's sumac

Surveys for this plant did not find any occurrences in the project corridor. Under Section 7 of the Endangered Species Act, the biological conclusion for Michaux's sumac is "No Effect" for any of the Detailed Study Alternatives. The project study area will be re-surveyed prior to the final environmental document to ensure there are no new occurrences of the plant in the project study area.

Dwarf Wedgemussel

For streams identified as having potentially suitable habitat via a desktop review, habitat assessments were conducted in the field. The streams in the project area are urbanized and do not provide habitat for sensitive mussels such as the dwarf wedgemussel. Under Section 7 of the Endangered Species Act, the biological conclusion for dwarf wedgemussel is "No Effect" for any of the Detailed Study Alternatives.

Red-Cockaded Woodpecker

All areas identified as suitable foraging habitat in the project corridor were field reviewed for the presence of red-cockaded woodpeckers or cavity trees. Neither birds nor cavity trees were observed. Under Section 7 of the Endangered Species Act, the biological conclusion for red-cockaded woodpecker is "No Effect" for any of the Detailed Study Alternatives.

Northern Long-Eared Bat

The US Fish and Wildlife Service has developed a programmatic biological opinion (PBO) in conjunction with FHWA, USACE, and NCDOT for the northern long-eared bat in eastern North Carolina (which includes Wake County). The PBO went into effect in 2016 and covers all NCDOT projects and activities in NCDOT Divisions 1 to 8. The programmatic determination for the bat is "May Affect, Likely to Adversely Affect".

The PBO involves a research and tracking program to establish conclusive information concerning the existence of the northern long-eared bat in the eastern part of North Carolina. The PBO also requires that upon completion of clearing activities for each project with federal funds, NCDOT will report on the estimated acres of clearing to the US Fish and Wildlife Service.

Bald Eagle

A survey of the project study area and the area within 660 feet of the project study area boundaries did not find any bald eagles or eagle nests. No impacts to bald eagles are anticipated from any of the Detailed Study Alternatives.

3.13 SECTION

Impact Comparison Summary

The purpose of the project is to improve traffic flow, make the roadway operate more efficiently, and enhance mobility on this segment of I-440. The project will address the need to increase capacity, improve the layout of the road and interchanges, and fix poor conditions along this segment of I-440.

Any end-to-end combination of the Detailed Study Alternatives presented in this Environmental Assessment will meet the project's purpose and need. However, each potential end-to-end combination will have varying levels of costs, benefits, and impacts, as documented in the previous sections of **Chapter 3** and in an impact matrix included in **Appendix C**.

All of the end-to-end combinations of Detailed Study Alternatives would have adverse effects on the surrounding environment, but none of these impacts are anticipated to cause significant levels of adverse community, economic, or other environmental impacts that would warrant preparation of an Environmental Impact Statement.

Therefore, unless significant impacts are identified during the public review period, a Finding of No Significant Impact (FONSI) for the Preferred Alternative is expected to be issued by NCDOT and FHWA.

NCDOT and FHWA will decide on the Preferred Alternative based upon the technical studies and evaluations summarized in this Environmental Assessment, and input received from the public and reviewing agencies.

The following sections compare the Detailed Study Alternatives for each interchange and grade separation area. Where there is more than one Detailed Study Alternative, notable benefits and impacts that are the same between alternatives are described, as well as marked differences between the alternatives. In some locations, there is only one Detailed Study Alternative. For these instances, notable features and impacts are listed.

Not all impacts or benefits described in **Chapter 3** are addressed below for each location, just those that are notable or vary markedly between alternatives. See **Sections 3.1 to 3.12** and the summary matrix in **Appendix C** for information on all effects analyzed.

Benefits are marked with a green dot, adverse impacts are marked with a red square, and other notable effects are marked with a yellow triangle.

-  **Benefits**
-  **Adverse Impacts**
-  **Other Notable Effects**



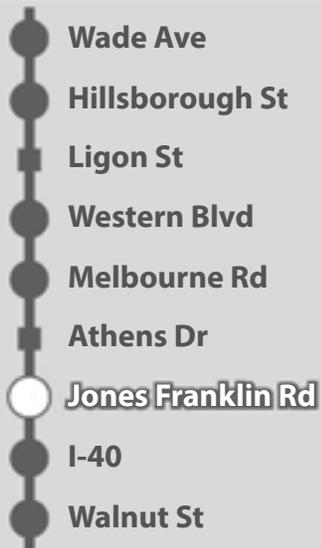
- Benefits
- Adverse Impacts
- △ Other Notable Effects

3.13.1 From South of Walnut Street to the I-40 Interchange

The Detailed Study Alternative in this location is the Widen I-440 Only Alternative. The table below lists notable impacts and benefits. See **Appendix C** for the complete impact matrix.

Widen I-440 Only Alternative	
●	Improvements in this area consist of widening I-440 and this can be done entirely within the existing right of way.
●	The improvements will connect the I-440 project (which would widen I-440 to six lanes) to the existing six-lane section of US 1-64, eliminating the bottleneck in this location.
●	There would be no impacts to surrounding resources.
●	The existing noise walls south of Walnut Street along both sides of US 1-64 would not be impacted by the project.

I-440 Project Area



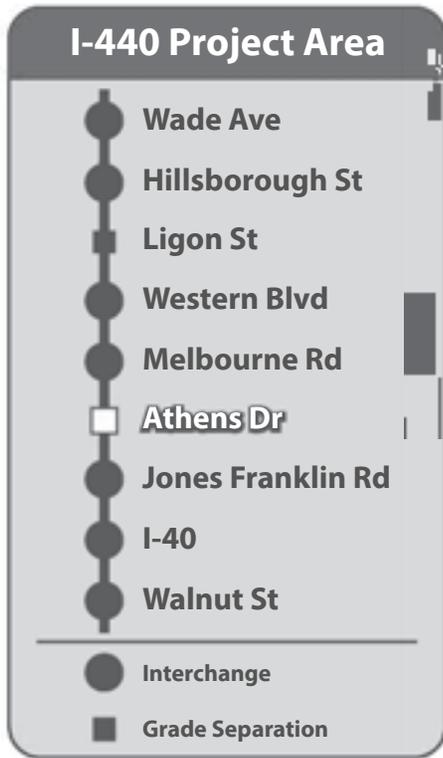
-  Interchange
-  Grade Separation

-  Benefits
-  Adverse Impacts
-  Other Notable Effects

3.13.2 Jones Franklin Road Interchange

There is one Detailed Study Alternative at this location: the Upgrade Existing Partial Clover Alternative. The table below lists notable impacts and benefits. See **Appendix C** for the complete impact matrix.

Upgrade Existing Partial Clover Alternative	
	Traffic flow on Jones Franklin Rd would be improved with widening Jones Franklin Rd to four lanes and realigning Ft Sumter Road to across from the interchange ramps. This alternative also would close the Capital Center Dr office park entrance at Jones Franklin Rd and relocate the entrance to a new Denise Drive extension with a traffic signal.
	The widened Jones Franklin Rd segment would improve mobility with new sidewalks and bicycle lanes, and the bridge over I-440 would be wide enough to accommodate a future greenway planned by the City of Raleigh.
	A permanent drainage easement at the Walnut Creek culvert in Lake Johnson Park (approximately 0.25 acres) would be required. The easement would not adversely affect the activities, features, or attributes of the park and a <i>de minimis</i> impact finding under Section 4(f) laws is proposed.
	There would be 23 residential relocations and 7 business relocations. There is an adequate supply of replacement housing and suitable business sites in the area.
	This alternative would require relocation of the Learn with the Best private school for special needs children located in the office building at the Waters Edge Drive/Jones Franklin Road intersection.
	<p>Natural resource impacts</p> <p>Streams - Approximately 367 linear ft of permanent impact and 231 linear ft of temporary impact</p> <p>Lakes/Ponds - Approximately 0.88 acres of pond at Waters Edge office park</p> <p>Wetlands - Approximately 0.02 acres</p> <p>Riparian Buffers - Approximately 3.3 acres of impact (Zone 1 + Zone 2)</p>



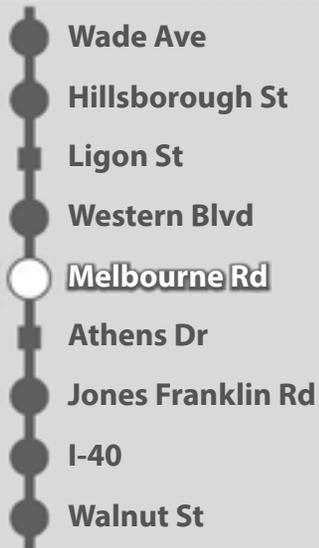
3.13.3 Athens Drive Grade Separation

There are two Detailed Study Alternatives in this location: Bridge in Place Alternative and Bridge to North Alternative. The table below lists notable impacts and benefits and those that vary markedly between alternatives. See **Appendix C** for the complete impact matrix.

Bridge in Place Alternative	Bridge to North Alternative
● Sidewalks and bicycle lanes would be added to Athens Dr under both alternatives, improving mobility.	● Sidewalks and bicycle lanes would be added to Athens Dr under both alternatives, improving mobility.
■ During construction, bridge would be closed for 9 to 12 months with a 2.8-mile off-site detour.	● Bridge would remain open during construction, with only brief closures.
● Slightly less expensive (\$3.6 million)	■ Slightly more expensive (\$4.9 million)
● No residential relocations	■ 5 residential relocations

- Benefits
- Adverse Impacts
- △ Other Notable Effects

I-440 Project Area



- Interchange
- Grade Separation

- Benefits
- Adverse Impacts
- △ Other Notable Effects

3.13.4 Melbourne Road Interchange

There are two Detailed Study Alternatives in this location: Bridge in Place Alternative and Bridge to North Alternative. The table below lists notable impacts and benefits and those that vary markedly between alternatives. See **Appendix C** for the complete impact matrix.

Bridge in Place Alternative	Bridge to North Alternative
● Sidewalks and bicycle lanes would be added to Melbourne Rd under both alternatives, improving mobility.	
△ A permanent drainage easement (Approximately 0.09 acres) needed from Kaplan park. This would not adversely affect the activities, features, or attributes of the park and a <i>de minimis</i> impact finding under Section 4(f) is anticipated.	
Natural resource impacts would be the same for each alternative. Streams - Approximately 418 linear ft of permanent impact and 137 linear ft of temporary impact Lakes/Ponds - Approximately 0.08 acres of White Oak Lake Wetlands - Approximately 0.07 acres Riparian Buffers - Approximately 1.7 acres of riparian buffer impacts (Zone 1 + Zone 2)	
■ During construction, bridge would be closed for 9 to 12 months with a 3.2-mile off-site detour.	● Bridge would remain open during construction, with only brief closures.
● Slightly less expensive (\$8.9 million)	■ Slightly more expensive (\$10.0 million)
■ 3 residential relocations	■ 6 residential relocations



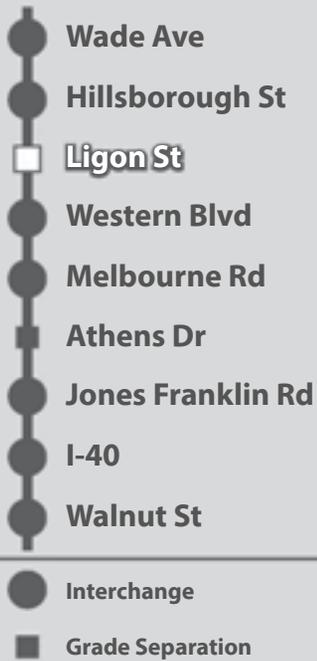
3.13.5 Western Boulevard Interchange

There is one Detailed Study Alternative in this location – Double Crossover Diamond Alternative (also known as a Diverging Diamond). The table below lists notable impacts and benefits. See **Appendix C** for the complete impact matrix.

Double Crossover Diamond Alternative	
●	This alternative removes the existing flyover ramp from westbound Western Blvd to westbound I-440 that merges onto I-440 on the left side of the through lanes, which is not a desirable configuration.
●	This alternative would replace the existing multi-use path along the westbound side of Western Blvd.
■	This alternative has a high estimated construction cost (\$43.9 million) due to challenges associated with installing adequate drainage structures through the interchange area. Existing drainage structures are deep (40+ ft) underground and tunneling methods will be needed.
■	1 residential relocation
■	Minor impact to the K-mart parking lot due to right of way needs.
■	Natural resource impacts: Streams - Approximately 376 linear ft of permanent impacts and 125 linear ft of temporary impact Riparian Buffers - Approximately 1.7 acres of riparian buffer impacts (Zone 1 + Zone 2)

- Benefits
- Adverse Impacts
- △ Other Notable Effects

I-440 Project Area



- Benefits
- Adverse Impacts
- △ Other Notable Effects

3.13.6 Ligon Street Grade Separation

There are three Detailed Study Alternatives in this location: Bridge to South Alternative, Bridge to North Alternative and Extend Existing Traffic Culvert Alternative. The table below lists notable impacts and benefits and those that vary markedly between alternatives. See **Appendix C** for the complete impact matrix.

Bridge to South Alternative	Bridge to North Alternative	Extend Existing Traffic Culvert Alternative
● Improved mobility and accessibility along Ligon St since bridge would have sidewalks and the bridge would allow for buses to cross I-440 at this location.		■ No improvement in mobility or accessibility. No sidewalks in culvert. Buses prohibited due to clearance limits.
● Bridge alternatives consistent with the City of Raleigh plans for a future connection of Ligon St to Blue Ridge Rd.		■ Culvert alternative not consistent with City's future plans for Ligon St.
● Cost in the middle (\$27.1 million)	■ Most expensive (\$28.2 million)	● Least expensive (\$15.7 million)
■ Adverse Effect to historic Oak Grove Cemetery under Section 106 of the Historic Preservation Act	● No Adverse Effect to historic Oak Grove Cemetery under Section 106 of the Historic Preservation Act	● No Adverse Effect to historic Oak Grove Cemetery under Section 106 of the Historic Preservation Act
■ 7 business relocations on Brickhaven Dr	■ 7 business relocations on Brickhaven Dr	■ 7 business relocations on Brickhaven Dr
■ 1 displacement of an NCSU research facility	■ 10 residential relocations	● No residential or research facility relocations
■ Approximately 310 linear ft of permanent stream impacts, 64 linear ft of temporary stream impact, and 1.0 acre of riparian buffers (Zone 1 + Zone 2)	■ Approximately 174 linear ft of permanent stream impacts and 0.7 acres of riparian buffers (Zone 1 + Zone 2)	■ Approximately 125 linear ft of permanent stream impacts and 0.4 acres of riparian buffers (Zone 1 + Zone 2)



- Benefits
- Adverse Impacts
- △ Other Notable Effects

3.13.7 Hillsborough Street and Wade Avenue Interchange Area

There are three Detailed Study Alternatives for the Hillsborough Street and Wade Avenue interchange area: One Flyover Alternative, Two Flyovers Alternative and Slight Detour Alternative. The table below lists notable impacts and benefits and those that vary markedly between alternatives. See **Appendix C** for the complete impact matrix.

One Flyover Alternative	Two Flyovers Alternative	Slight Detour Alternative
● All alternatives would eliminate the back-to-back loop ramps in the Wade Ave interchange area which slow down traffic and make it more difficult to merge onto I-440 and Wade Ave		
● Vehicles from Hillsborough St can access eastbound I-440 directly.	● Vehicles from Hillsborough St can access eastbound I-440 directly.	△ The Slight Detour Alternative requires vehicles from Hillsborough St to travel through the Wade Ave traffic signal to get onto eastbound I-440.
● Cost in the middle (\$250.9 million)	■ Most expensive (\$251.7 million)	● Least expensive (\$241.6 million)
■ 1 residential relocation	● No residential relocations	■ 1 residential relocation
■ Displacement of the NCSU Golf Practice Facility and NC State University Club facilities. Approximately 19.6 to 19.8 acres of right of way needed from NC State University property.		
■ Approximately 16.9 acres of right of way needed from Meredith College, impacting commuter parking lot and general athletic field	■ Approximately 13.5 acres of right of way needed from Meredith College, impacting commuter parking lot and general athletic field	■ Approximately 14.5 acres of right of way needed from Meredith College, impacting commuter parking lot and general athletic field
● Little change in views to/ from the Reedy Creek Greenway pedestrian bridge.	■ Most change in views to/ from the Reedy Creek Greenway pedestrian bridge	● Little change in views to/ from the Reedy Creek Greenway pedestrian bridge.

Hillsborough Street and Wade Avenue Interchange Area - Continued from previous page



-  Benefits
-  Adverse Impacts
-  Other Notable Effects

One Flyover Alternative	Two Flyovers Alternative	Slight Detour Alternative
 <p>Approximately 0.9 acres of right of way needed from Museum Park along westbound I-440 under all alternatives. An additional 0.3 acres of right of way and 0.2 acres of permanent drainage easement are needed from Museum Park under Two Flyovers Alternative. This new right of way is not anticipated to adversely affect the activities, features, or attributes of the park and a <i>de minimis</i> impact finding under Section 4(f) is anticipated with mitigation. A Memorandum of Agreement will be signed with the NC Museum of Art to define appropriate mitigation.</p>		
 <p>Reedy Creek Greenway would be impacted under any of the alternatives. The greenway would be relocated and reconnected to the unaffected greenway segments; and the activities, features, and attributes of the greenway would not be adversely affected and a <i>de minimis</i> impact finding under Section 4(f) is anticipated for any of the alternatives.</p>		
 <p>Approximately 540 linear ft of permanent stream impacts, 328 linear ft of temporary stream impacts, and 2.0 acres of riparian buffers (Zone 1 + Zone 2)</p>	 <p>Approximately 625 linear ft of permanent stream impacts, 416 linear ft of temporary stream impacts, and 2.5 acres of riparian buffers (Zone 1 + Zone 2)</p>	 <p>Approximately 541 linear ft of permanent stream impacts, 329 linear ft of temporary stream impacts, and 2.0 acres of riparian buffers (Zone 1 + Zone 2)</p>

FOR MORE DETAILS ON THE INFORMATION IN THIS CHAPTER:

Project Impacts - Social Resources

The following document is available on the project website at:
<https://www.ncdot.gov/projects/i-440improvements/>.

- **Community Impact Assessment for the I-440 Improvement Project (STIP U-2719)**

(June 2017, Atkins)

This document describes community demographics, community land use and transportation plans, and notable community resources (neighborhoods, parks, schools, community centers, etc.). Evaluation of project impacts includes direct physical impacts to residences, businesses, and other uses, mobility and access changes, effects on community cohesion, and environmental justice issues.

The following document is available upon request by contacting Beverly Robinson at NCDOT at brobinson@ncdot.gov.

- **Final Indirect Screening Report – I-440 Improvements from South of Walnut Street to North of Wade Avenue**

(March 5, 2015, Atkins) Document available upon request.

This screening tool includes evaluation of issues such as demographics, utilities, notable features, development regulations, local area plans, available land, and growth trends. The screening results indicate a lower level of concern for indirect effects and recommends no further related studies.

Project Impacts - Cultural Resources

The following documents are available upon request by contacting Beverly Robinson at NCDOT at brobinson@ncdot.gov.

- **Letter from the State Historic Preservation Office to NCDOT responding to request for scoping comments on Project U-32719**
(August 13, 2012, State Historic Preservation Office)

Letter states no archaeological resources surveys required for the project. Letter recommends a survey for historic architectural resources.

- **Historic Architectural Resources report for I-440 Beltline Improvements from Walnut Street, Cary to Wade Avenue, Raleigh**
(December 2013, New South Associates, Inc.)

This report surveys the project Area of Potential Effect for resources potentially eligible for listing on the National Register of Historic Places (NRHP).

- **Improvements to I-440 from Walnut Street to Wade Avenue, Cary and Raleigh – Addendum**

(August 25, 2014, New South Associates, Inc.)

This addendum provides additional information to determine eligibility for the NRHP for Capitol City Lumber, Hillsdale Forest neighborhood, and the NC State University Club.

- **Historic Architectural Resources Survey Report Meredith College Campus Evaluation**

(April 20, 2015, Fearnbach History Services, Inc.)

This report evaluates Meredith College Campus and potential boundaries for the portion eligible for listing on the NRHP.

- **Letter from the NC Historic Preservation Office listing resources eligible for listing on the NRHP**

(February 2, 2014, State Historic Preservation Office) Document is in Appendices.

Letters lists Royal Baking Company, Berry O’Kelly School Historic District and Oak Grove Cemetery and eligible for listing on the NRHP.

- **Letter from the NC Historic Preservation Office listing resources eligible for listing on the NRHP**

(September 26, 2014, NC Historic Preservation Office) Document is in Appendices.

This letter lists Capitol City Lumber as eligible for listing on the NRHP. It determines Hillsdale Forest neighborhood and NC State University Club are not eligible for listing on the NRHP.

- **Letter from the NC Historic Preservation Office listing resources eligible for listing on the NRHP**

(May 21, 2015, NC Historic Preservation Office) Document is in Appendices.

This letter states NCHPO agrees a portion of Meredith College campus is eligible for listing on the NRHP, but recommends a smaller boundary than included in the April 20, 2015 survey report.

- **Letter from NCDOT clarifying the boundaries of the Meredith College historic resource**

(May 28, 2015, NCDOT Human Environment Section) Document is in Appendices.

This letter provides a map showing the agreed-upon boundary noted in NCHPO's May 21, 2015 letter for the portion of Meredith College campus eligible for listing on the NRHP

- **Memo - Identification of Lake Johnson Park boundaries as they apply to Section 6(f) of the Land and Water Conservation Fund (LWCF)**

(April 13, 2017, Atkins)

This memo to file documents the boundaries of Lake Johnson Park that are protected under Section 6(f)(3) of the Land and Water Conservation Fund Act.

- **Letter from the NC Historic Preservation Office regarding effects determinations**

(May 2, 2017, State Historic Preservation Office) Document is in Appendices.

This letter states the effects of the proposed Detailed Study Alternatives on resources in the project area that are on or eligible for listing on the National Register of Historic Places.

Project Impacts - Physical Resources

The following documents are available upon request by contacting Beverly Robinson at NCDOT at brobinson@ncdot.gov.

- **Mobile Source Air Toxics Report I-440/US 1, From South of SR 1313 (Walnut Street) to North of SR 1728 (Wade Avenue)**

(August 31, 2016, Kimley-Horn and Associates)

This report is a quantitative assessment of mobile source air toxic emissions in the project area for 2012 and for the no-build and build conditions in 2035.

- **Preliminary Hydraulics Study for Environmental Impact – NCDOT TIP No. U-2719**

(Draft - January 19, 2017, Sungate Design Group)

This report identifies existing major drainage structures and stormwater control structures in the project corridor and recommends the major drainage structures required for the Detailed Study Alternatives.

- **Traffic Noise Report – I-440 Improvements from South of Walnut Street to East of Wade Avenue**

(June 2017, Atkins)

This report documents the modeling and analysis of existing (2012) and future (2035) traffic noise for the no-build condition and future traffic noise impacts under the Detailed Study Alternatives. This report also identifies noise walls determined preliminarily reasonable and feasible.

- **Utilities Estimate Worksheet**

(May 4, 2017, NCDOT Utilities Unit)

This report lists the major utilities present in the project corridor and estimates the costs for relocating utilities.

- **GeoEnvironmental Planning Report for Widening of I-440**

(April 20, 2017, NCDOT Geoenvironmental Unit)

This report identifies known potential hazardous waste sites in the project corridor and assesses the level of potential impact.

Project Impacts - Natural Resources

The following documents are available upon request by contacting Beverly Robinson at NCDOT at brobinson@ncdot.gov.

- **Freshwater Mussel Survey Report for Proposed Widening of I-440 (Cliff Benson Beltline) from South of SR 1313 (Walnut Street) to North of SR 1728 (Wade Avenue)**

(April 12, 2013, author)

This report documents surveys for freshwater mussels in streams in the project study area.

- **Red-Cockaded Woodpecker Survey Report – Widening of I-440 (Cliff Benson Beltline) from South of SR 1313 (Walnut Street) to North of SR 1728 (Wade Avenue)**

(May 2013, NCDOT Natural Environment Section) (now called the Environmental Analysis Unit)

This report documents the surveys for red-cockaded woodpecker in the project study area.

- **Final Natural Resources Technical Report – I-440 Improvements Project – TIP U-2719**

(January 17, 2014, Atkins)

This report documents the surveys for streams, ponds, wetlands, and biotic communities in the project study area and summarizes surveys for protected species.

- **Natural Resources Technical Report Addendum – Lake Boone Trail Stream/Wetland Survey – U-2719 I-440 Widening Project**

(October 3, 2014, Atkins)

This report documents the surveys streams, ponds, and wetlands in the project study area around the Lake Boone Trail interchange.

- **Natural Resources Technical Report Addendum – Jones Franklin Road Stream/Wetland Survey and Michaux's Sumac Survey– U-2719 I-440 Widening Project**

(May 17, 2016, Atkins)

Additional project study area was added along Jones Franklin Road and this report documents the surveys for streams, wetlands, ponds, and protected species in this area.

- **Preliminary Hydraulics Study for Environmental Impact – NCDOT TIP No. U-2719**

(Draft - January 19, 2017, Sungate Design Group)

This report identifies existing major drainage structures and stormwater control structures in the project corridor and recommends the major drainage structures required for the Detailed Study Alternatives.

- **Methodology and Calculations for Impacts from the U-2719 Preliminary Designs to Jurisdictional Streams, Ponds, Wetlands, and Riparian Buffers**

(April 13, 2017, Atkins)

This report documents the calculation methodologies and impacts at each individual stream, pond, and wetland and riparian buffer and provides combined totals for the Detailed Study Alternatives.

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4 CHAPTER

Public and Agency Involvement

This chapter describes the opportunities for the general public, local groups, and governmental agencies to be involved in the project, and how input was considered in studies and decisions about the project.

What's In This Chapter...

- 4.1 Input Opportunities Summary
- 4.2 Project Website, Email, and Telephone
- 4.3 Public Meetings and Public Hearing
 - 4.3.1 Past Meetings
 - 4.3.2 Future Meetings
- 4.4 Small Group Meetings
- 4.5 Stakeholder Advisory Committee
- 4.6 Agency Coordination

WANT MORE DETAILS?

See the list of technical reports at the end of this chapter.

4.1
SECTION

Input Opportunities Summary

NCDOT values public and agency input and considers all feedback when making decisions about the project. Opportunities for project input began early in the environmental planning process. A summary of events through completion of the planning process is provided in **Table 4.1**.

4.2
SECTION

Project Website, Email, and Telephone

The website includes project information and links for downloading project documents and for submitting comments and questions.

<https://www.ncdot.gov/projects/i-440improvements/>

The project team also has been and is accessible via email and telephone for comments and questions. NCDOT Project Manager is Mr. John Williams (jlwilliams@ncdot.gov or 919-707-6178).

Table 4.1: Opportunities for Project Input

	Project Initiation	Purpose and Need	Alternatives for Detailed Study	Environmental Assessment	Final Decision Document
Public Meetings		Meeting 1 12/3/12	Meeting 2 11/12/14	Future Public Hearing Mid/Late 2017	Future Final Document Late 2017
Stakeholder Advisory Committee		Meeting 1 11/1/12	Meeting 2 10/1/14	Future Meeting 3 Mid/Late 2017	
Small Group Meetings		Various held upon request	Various held upon request	Future meetings as requested	Future meetings as requested
Agency Coordination	Letter 7/20/12	Meeting 1 8/22/12	Meeting 2 3/12/15	Future Meeting 3 Mid/Late 2017	Future Meeting 4 Late 2017
Website, Email, Phone					

4.3

SECTION

Public Meetings and Public Hearing

4.3.1 Past Meetings

Two informal open-house public meetings were held to solicit input on the project. The first public meeting (December 3, 2012) focused on the project's purpose and need and scope of study. The second public meeting (November 12, 2014) focused on the alternatives recommended for detailed study. Both public meetings were held at the Method Community Park Pioneers Building. People could drop in anytime during the 4 to 7pm open house to review project materials (e.g. handouts, maps and displays), ask questions, and provide comments on the project. Spanish speaking team members were present at both open-house meetings.

The public meetings were advertised through a postcard mailing to communities adjacent to I-440 and to anyone who requested to be on the project mailing list. They were also advertised on the project website, the City of Raleigh website, and through ads and press releases sent to local English and Spanish newspapers and radio stations.

Public Meeting #1 - Start of Study and Purpose and Need

Attendees. Approximately 160 people signed in at the meeting.

Meeting Purpose. This meeting was held to seek early public input on the need for the project, opinion on whether to close the Melbourne Road partial interchange, and input on community resources and values in the project area.

Input Summary. Attendees overwhelmingly agreed that I-440 in the project area needs improvement.

The majority of the 84 commenters (62 percent) preferred to keep the Melbourne Road interchange open. Sixteen percent felt access was not important, with the remainder not offering an opinion. (This interchange is proposed to remain open as part of the project.)

The resources cited most frequently as important to consider were parks, lakes and streams, and noise/noise walls (around 30 percent each). Other concerns frequently cited included traffic congestion, right of way acquisition, and the need to redesign the Western Boulevard interchange.



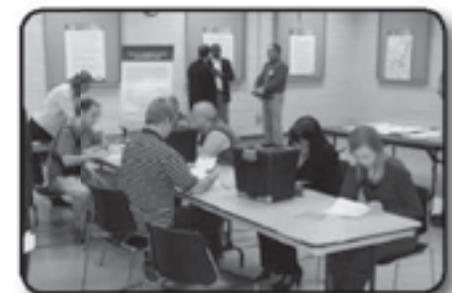
Project need video shown at Public Meeting #1



Discussion around a map at Public Meeting #1



Discussion around a map at Public Meeting #1



Comment table at Public Meeting #1

Public Meeting #2 - Alternatives Recommended for Detailed Study

Attendees. Approximately 250 people signed in at the meeting.

Meeting Purpose. This meeting presented the initial project alternatives and sought public input on the alternatives NCDOT recommended for detailed study in the environmental assessment.

Input Summary. Based on a review of input received, the recommendations on which alternatives to study in detail in the environmental assessment did not change. The greatest number of comments received concerned the interchanges at Western Boulevard and Melbourne Road and the grade separation at Ligon Street.

At Western Boulevard, many commenters requested bicycle/pedestrian facilities, and these are planned to be included. One citizen suggested an alternative partial cloverleaf design (see **Chapter 2**). This was evaluated as described in **Chapter 2**, but was found not to be superior to the proposed double crossover diamond design.

At Melbourne Road, a petition signed by 129 people was submitted in support of keeping the partial interchange ramps. Some commenters wanted to keep the Deboy Street connection on the off ramp, but this does not meet current design standards and the connection will be severed as part of the project.

At Ligon Street, there were concerns that a two-lane bridge would generate increased traffic in the Method Neighborhood. As a result, a refined traffic forecast for this area was prepared, as discussed in detail in **Section 2.3.3**. This forecast and other evaluations show that the project and other planned transportation improvements in the area would help reduce traffic volumes through the heart of the neighborhood. Method Neighborhood residents also were concerned about impacts to residences and to Oak City Baptist Church. See **Section 3.1.2** for a discussion of relocations and right of way impacts.

4.3.2 Future Meetings

The third public meeting will be a Public Hearing to receive input on the Environmental Assessment (EA). A Public Hearing includes three segments: an open house segment, followed by a formal presentation by NCDOT, and then an opportunity for people to speak in front of attendees about the project. The presentation and comment segment of the Public Hearing are recorded.

The EA will be made available for review on the project website and in hard copy a minimum of 15 days before the Public Hearing (see **Section Note to Reader**). The public comment period will remain open for at least 30 days, unless NCDOT or FHWA determine, for good cause, that a different period is warranted. All comments received during the comment period will be considered before a final decision is made on which alternatives to implement. This decision will be announced in a final decision document, along with a summary of public comments and responses to comments. The final decision document will be posted on the project website.



Displays shown at Public Meeting #2



Full house at Public Meeting #2

4.4 SECTION

Small Group Meetings

The project study team meets with local groups upon request to discuss the project, as listed below in **Table 4.2**. Input and actions based on this coordination are summarized after the table.

Table 4.2: Small Group Meetings

	2012 Quarters				2013 Quarters				2014 Quarters				2015 Quarters				2016 Quarters				2017 Quarters							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
A.B. Combs Elementary						5/14																						
Blue Ridge Corridor Alliance/ HSCSC												11/13		5/26*										2/9				
Fairway Ridge Residents						3/20																		6/19				
Meredith College										6/18		11/5						11/12	2/1					2/10	5/16			
Method Rd Neighborhood										3/12		7/12						12/17										
NC Museum of Art																								3/10	5/23			
NCSU												5/30						5/26*				3/23		4/12*		6/1		
NCSU University Club																		5/26*	9/16					4/12*		5/15		
Surtronics																								12/12				
West CAC																								9/25		10/27		3/21

HSCS = Hillsborough St Community Services Corp CAC= Citizens Advisory Council * Joint Meeting with multiple groups

AB Combs Elementary School PTA

AB Combs Elementary School is a magnet school located at 2001 Lorimer Road in Raleigh, in the Avent West neighborhood. The primary concern expressed by attendees was about retaining the Melbourne Road interchange. Because AB Combs is a magnet school, many families are from outside the immediate area and use the interchange to access the school. The proposed project will retain the Melbourne Road interchange.

Blue Ridge Corridor Alliance and Hillsborough Street Community Services Corporation (HSCSC)

The Blue Ridge Corridor Alliance (www.brcalliance.org) is a non-profit partnership between City of Raleigh, NCSU, property owners, businesses, and residents along an approximately three mile segment of Blue Ridge Road from Western Boulevard to Edwards Mill Road. The partnership promotes investment in the corridor and a mixed-use pedestrian friendly environment.

The HSCSC (www.hillboroughstreet.org) is a member of the Blue Ridge Corridor Alliance. It is a non-profit municipal service district in a three-mile segment of Hillsborough Street from I-440 to St. Mary's Street, similar to the Blue Ridge Road Alliance.

These groups generally prefer the bridge option at Ligon Street to provide more connectivity and pedestrian access in the area. Bridge options for the Ligon Street grade separation are Detailed Study Alternatives in this EA.

At the I-440 interchange with Hillsborough Street, the HSCSC is very supportive of maintaining the Hillsborough Street interchange. Of the Detailed Study Alternatives in this area, they did not prefer the Slight Detour option.

Fairway Ridge Road Residents

Fairway Ridge has 17 homes adjacent to the eastbound side of I-440 south of Western Boulevard in the Avent West neighborhood. The residents of this street asked for a small group meeting because they could not attend the December 2012 Public Meeting #1. The attendees were most concerned with understanding the right of way acquisition process, which was explained by NCDOT project team. They supported making improvements to the I-440 interchange at Western Boulevard and improving signing along I-440. The Western Boulevard interchange will be improved as part of the project and signing will be redone during the final design phase.

Meredith College

The main campus of Meredith College is located along the eastbound side of I-440 between Hillsborough Street and Wade Avenue. They also own a parcel north of Wade Avenue adjacent to I-440 that contains the President's house and maintenance facilities.

Meredith College representatives have expressed concern about right of way encroachment onto their property and impacts to their facilities and operations. During the alternative development process, they indicated a preference for the Slight Detour Alternative for the Wade Avenue and Hillsborough Street interchanges because this alternative had the least right of way encroachment based on the conceptual designs. To address their concerns, the Slight Detour option was retained as a Detailed Study Alternative and preliminary designs were developed, as discussed in this EA.

All of the Detailed Study Alternatives would impact the portion of Reedy Creek Greenway located on Meredith College property. The currently proposed option for mitigating this impact is to relocate the greenway along the new edge of the Meredith College/I-440 right of way. Another idea would be to relocate the greenway along the north and east sides of campus (Wade Avenue and Faircloth Street). Meredith College is supportive of this second concept.

Method Neighborhood

In addition to the small group meetings listed, Public Meeting #1 and Public Meeting #2 were both held in the Method Neighborhood at the Method Park Community Center Pioneers Building. The Method Neighborhood is shown in **Exhibit 4.1**. Several neighborhood residents and representatives of churches in the area attended these meetings and spoke with the project team.

The March 12, 2014 small group meeting was with the caretaker of the Oak Grove Cemetery and a member of the Method Civic League. The purpose of this meeting was to understand the history and relationship of the neighborhood and the cemetery. The attendees were concerned about impacts and access to the cemetery. All Detailed Study Alternatives retain access and avoid impacts to the cemetery.

The July 12, 2014 small group meeting was attended by approximately 37 neighborhood residents and property owners. Residents were supportive of retaining the Hillsborough Street interchange. They were concerned about impacts to Oak Grove Cemetery, Method Community Park, and residences.

The proposed project will avoid direct impacts to the cemetery and park. A noise wall is preliminarily recommended as feasible and reasonable for the park and residences adjacent to I-440 in this area. There would be some impacts to the Method Townes town homes near the Ligon Street crossing of I-440 under the Bridge to North alternative, as discussed in **Section 3.1.2**.

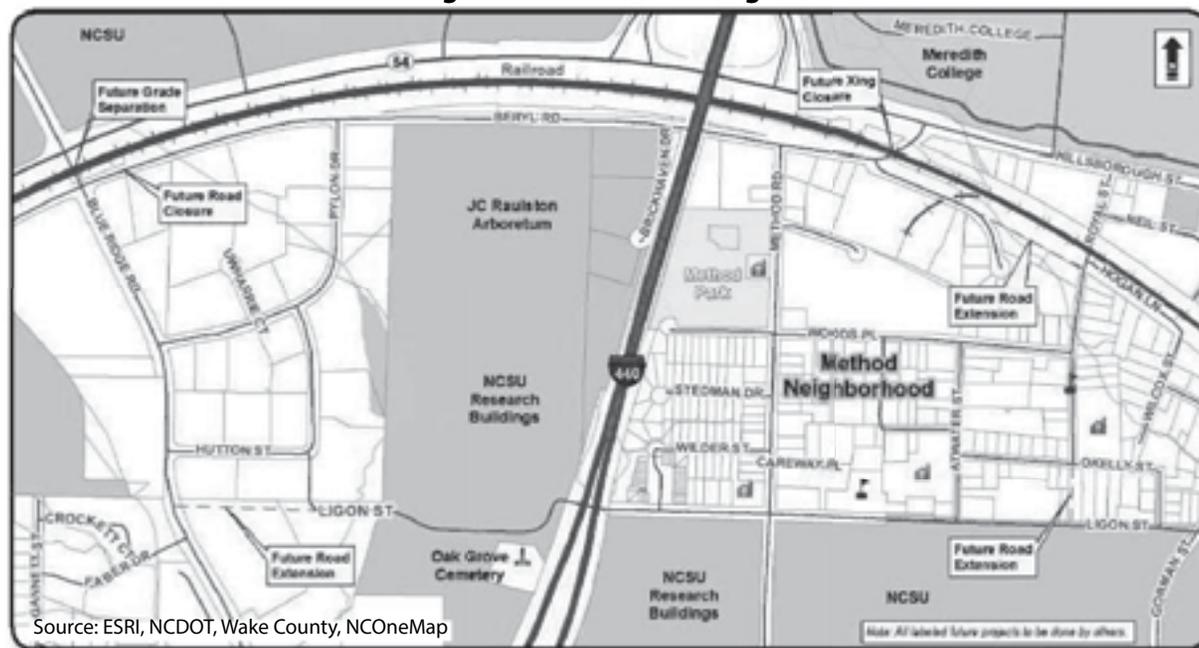
Attendees also noted that there have been drainage issues at the end of Stedman Drive, and they did not want the project to worsen drainage issues. Drainage will be designed in accordance with NCDOT standards during the final design phase and is not expected to make any situation worse.

Additional discussions regarding the Ligon Street grade separation included concerns about retaining access to the Oak Grove Cemetery, increased traffic through the neighborhood if a two-lane bridge were constructed, and the appearance of the grade separation. Residents have said that Method Road and Woods Place in the neighborhood are often used as cut-through streets for travelers to/from Hillsborough Street. The concern for the I-440 widening project is that a two-lane Ligon



700 block of Method Road

Exhibit 4.1: Ligon Street /Method Neighborhood Area



Source: ESRI, NCDOT, Wake County, NCOneMap