1. DRAFT EIS SUMMARY AND UPDATES

Section 1 provides a summary of information presented in the Draft EIS for the Monroe Connector/Bypass (March 2009). The information in this section is presented in the same order as in the Draft EIS. This section also contains, where indicated, clarification and updates such as changes in the existing environment or changes in guidance documents. Errata related to the Draft EIS is included in ***Appendix A****.*

1.1 PURPOSE AND NEED FOR ACTION

The purpose and need for the project are documented in detail in the *Final Statement of Purpose and Need for the Monroe Connector/Bypass* (PBS&J, February 2008), incorporated by reference and available on the NCTA Web site (www.ncturnpike.org/projects/monroe).

1.1.1 PROPOSED ACTION

The NCTA[1], in cooperation with FHWA, proposes to construct a project known as the Monroe Connector/Bypass, which would be a controlled-access toll road extending from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 20 miles.

The proposed project begins and ends on existing US 74 in order to provide continuity for the US 74 corridor. On the western end, the project would begin at I-485, another controlled-access facility. On the eastern end, the proposed project would terminate on US 74 between the towns of Wingate and Marshville. This is where existing and projected traffic volumes decrease and the study area transitions to a more rural character.

The proposed action is included in the NCDOT *2009–2015 State Transportation Improvement Program* as Project R-3329 (Monroe Connector) and Project R-2559 (Monroe Bypass) as a toll facility.

North Carolina roads traditionally have been built with taxpayer funds, either through the state transportation budget or federal-aid highway funds allocated to the state. There are many other priority projects statewide and, due to funding constraints, there is not enough funding available from traditional sources in the foreseeable future to construct all priority projects.

Generally, public comments on the Monroe Connector/Bypass project have indicated an acceptance of tolls as a way to accelerate construction of the project and pay for operating and maintaining the facility (Section 9.1.1 of the Draft EIS). Based on current information about projected construction costs and the availability of state and federal funds, and the revenue projected to be generated from tolls, NCTA has determined that the toll project is financially feasible (**Section 2.1.3**).

A series of Citizens Informational Workshops (CIW) took place in June 2007 to give the public an opportunity to comment on the purpose and need for the project. Agency comments on the purpose and need for the project also were solicited; beginning with the initial project scoping meeting in January 2007. Additional information on public involvement and agency coordination related to the purpose and need is presented in **Section 1.1.4**.

1 On July 27, 2009, NCTA became a division of NCDOT (NC Session Law 2009-343). Where applicable, references to NCDOT as a separate agency have been removed.

1.1.2 SUMMARY OF NEED FOR PROPOSED ACTION

The primary needs for the proposed action have not changed since the Draft EIS. Detailed discussions of existing and projected conditions within the project study area are presented in Sections 1.4 through 1.8 of the Draft EIS.

US 74 is the major east-west route connecting the Charlotte region, a major population center and freight distribution point, to the North Carolina coast and the port at Wilmington (North Carolina's largest port). In addition, US 74 is the primary transportation connection between Union County, the fastest growing county in North Carolina, and Mecklenburg County/City of Charlotte, the economic hub of the region. Union County is the only county adjacent to Mecklenburg County that does not have a controlled-access facility connecting it to Mecklenburg County.

US 74 also serves as an important commercial corridor for Union County residents and businesses, with many retail, commercial, and employment centers having direct access to/from US 74. In Union County, most employment is concentrated in the City of Monroe or along existing US 74.

The needs for the proposed action are summarized as follows:

Existing and Projected Roadway Capacity Deficiencies. Currently, US 74 in the project study area is a four- to six-lane arterial roadway with 26 at-grade signalized intersections, many additional unsignalized intersections, and numerous commercial and residential driveway connections. Average travel speeds currently range from approximately 20 to 30 miles per hour (mph) during the peak hour, and are expected to decline to less than 20 mph by 2030. Congestion is high, with one-third of the intersections currently operating at an unacceptable Level of Service (LOS) E or F during the peak hour. Approximately two-thirds of the intersections are expected to operate at LOS E or F by 2030.

Inability to Serve High-Speed Regional Travel Consistent with the Designations and Goals of State and Local Transportation Plans. The MUMPO *2030 LRTP* identified improvements to the US 74 corridor in the project study area and considered them a high-priority project. The MUMPO *2030 LRTP* proposed a new location controlled-access facility from I-485 near US 74 to US 74 in the area between the towns of Wingate and Marshville. These proposed improvements are also included in the *2035 LRTP,* adopted May 3, 2010. The MUMPO *2035 LRTP* identifies the Monroe Connector/Bypass as the highest priority project for the region.

Because of its statewide and regional importance, US 74 has been designated as a Strategic Highway Corridor (SHC) by NCDOT and is part of the North Carolina Intrastate System. Both designations call for this corridor to serve high-speed regional travel. The SHC designation specifically calls for a freeway. The North Carolina Intrastate System designation calls for a multi-lane facility with access control and grade separations (if warranted by traffic volumes).

Strategic Highway Corridor

In a renewed effort to enhance and preserve the backbone of the highway system, the NCDOT, in collaboration with the NC Department of Commerce and NC Department of Environment and Natural Resources, created the Strategic Highway Corridors (SHC) initiative. The SHC initiative represents a timely effort to preserve and maximize the mobility and connectivity on a core set of highway corridors, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods.

> ***North Carolina Intrastate System***
>
> *The purpose of the Intrastate System is to provide high-speed, safe travel service throughout the state. It connects major population centers both inside and outside the state and provides safe, convenient, through-travel for motorists. (NCGS 136-178).*

The existing and projected traffic and land use conditions along this segment of US 74 diminish its ability to function as part of the North Carolina Intrastate System and as a SHC. The facility type is also inconsistent with the SHC program vision of the US 74 corridor as a freeway.

The US 74 corridor is designated as part of the National Highway System Strategic Highway Network (STRAHNET). Existing and projected poor LOS and lack of access control along the US 74 corridor diminish the roadway's ability to function as part of the STRAHNET.

1.1.3 PURPOSE OF PROPOSED ACTION

The purpose of the proposed action has not changed since the Draft EIS. The purpose of the project is to improve mobility and capacity within the project study area by providing a facility for the US 74 corridor from near I-485 in Mecklenburg County to between the towns of Wingate and Marshville in Union County that allows for high-speed regional travel consistent with the designations of the North Carolina SHC program and the North Carolina Intrastate System, while maintaining access to properties along existing US 74.

To meet the purpose and need, an alternative must provide more than a minor improvement. An improvement would be considered minor if it is localized, temporary, and/or largely unnoticeable to the typical user of the transportation system. Alternatives that provide only a minor improvement do not meet the purpose and need, and, therefore, are not reasonable alternatives.

1.1.4 PROJECT DESCRIPTION AND HISTORY

The project setting, the existing road network, and public and agency involvement in the development of the purpose and need are discussed in more detail in Section 1.4 of the Draft EIS. There are no changes or updates to these sections, which are briefly summarized below.

Project Setting. The majority of the project study area is within Union County, with a portion adjacent to (and northwest of) I-485 within Mecklenburg County. **Figure 1-1** shows the project study area.

Existing Road Network. US 74 is the primary route between Charlotte and Monroe, and it accommodates a large portion of the southeast-northwest traffic demand in the area. Within the project study area, existing US 74 is a four- to six-lane divided highway with 26 at-grade signalized intersections, many additional unsignalized intersections, and numerous commercial and residential driveway connections.

Other major roadways in the area include I-485, US 601, Secrest Shortcut Road (SR 1501), and Old Monroe Road/Old Charlotte Highway (SR 1009).

Public and Agency Involvement in Development of the Purpose and Need. A formal scoping letter was distributed on January 5, 2007 to solicit early coordination and input (Appendix A-3 of the Draft EIS). Purpose and need also was discussed at five coordination meetings with environmental resource and regulatory agencies in 2007. Public comment was solicited at the first series of Citizens Informational Workshop, held in June 2007. A majority of the citizens providing written comments supported the use of tolls and the purpose of the project.

1.1.5 TRANSPORTATION SYSTEMS

The project's designation in various national and statewide networks and its relationship to other transportation modes are discussed in more detail in Section 1.5 of the Draft EIS. There are no changes or updates to these sections, which are briefly summarized below.

US 74 is part of the North Carolina SHC and the North Carolina Intrastate System. In addition to these designations, US 74 is also designated at the federal level as part of STRAHNET.

US 74 is part of a broader system of transportation modes available in the project study area, including public transportation, rail service, motor freight service, and air service, as described in Section 1.5.4 of the Draft EIS.

1.1.6 SOCIAL AND ECONOMIC CONDITIONS

Section 1.6 of the Draft EIS discusses population and employment, commuting patterns, and growth and development patterns. There are no changes or updates to these sections, which are briefly summarized below.

Regional Context. The Charlotte-Mecklenburg County region is the commercial capital of the Carolinas, and Charlotte is the largest city in North Carolina.

Population and Employment. Housing unit estimates from the US Census Bureau show Union County as the 17th fastest growing county in the United States. Union County also had the highest percentage of growth among all North Carolina counties from 2000 to 2008. The population and employment of both Mecklenburg and Union Counties are expected to increase through the year 2030.

Commuting Patterns. Based on 2006 data, 61 percent of Union County's residents commuted to outside Union County for work.

Growth and Development Patterns. The areas along the Union County and Cabarrus County lines abutting Mecklenburg County are expected to be the most rapidly growing areas within the MUMPO planning area.

1.1.7 TRANSPORTATION AND LAND USE PLANS

As discussed in Section 1.7 of the Draft EIS, the transportation needs and goals of the Mecklenburg-Union County region relating to roadways are addressed in three inter-related plans: the NCDOT *2009-2015 STIP*, the MUMPO *2030 LRTP*, and the *Mecklenburg-Union Thoroughfare Plan*. The proposed action is included in each of these plans in a manner that is consistent with the SHC and the North Carolina Intrastate System visions for the facility and corridor.

The only one of the three plans that has been updated since the Draft EIS is the MUMPO *2030 LRTP*, which has been updated to 2035. The Monroe Connector/Bypass project is included in the MUMPO *2035 LRTP* as a regionally significant project. The project is designated as a toll facility in the *2035 LRTP,* and the design concept and scope included in the *2035 LRTP* is consistent with the Preferred Alternative.

Land use plans are discussed in Section 3.3 of the Draft EIS and **Section 1.3.1.3** of this Final EIS.

1.1.8 ROADWAY CONDITIONS AND OPERATIONS

Section 1.8 of the Draft EIS discusses roadway conditions and operations along existing US 74 within the project study area. There have been no changes to the information in this section since the Draft EIS.

Roadway conditions and operations described in Section 1.8 of the Draft EIS are briefly summarized in **Section 1.1.2**.

A comment received on the Draft EIS stated that the document did not include a discussion of specific major improvements to the US 74 corridor that have occurred within the last ten years. In response to that comment, the following is a list, provided by NCDOT Division 10, of publicly-funded improvements to US 74 between Mecklenburg County and the project terminus west of Marshville over the past ten years. Improvements are listed from west to east. It should be noted that these improvements have been completed and are part of the existing conditions used to evaluate existing and future traffic operations along US 74 reported in Section 1.8.3 of the Draft EIS.

- **Stallings Road** – Lengthened eastbound and westbound left turn lanes; added eastbound and westbound right turn lanes
- **Indian Trail-Fairview Road** – Lengthened eastbound and westbound left turn lanes on US 74; added dual left turn lanes on Indian Trail-Fairview (southbound) and Indian Trail Road (northbound); extended right turn lane on US 74 eastbound
- **Walmart driveway entrance** – Added westbound right turn lane
- **Sonic Restaurant and Carwash** – Added right turn lane on US 74 westbound
- **Technology Drive** – Added right turn lane on US 74 westbound
- **Faith Church Road** – Constructed eastbound dual left turn lanes and eastbound and westbound right turn lanes; added dual left turn lanes from Faith Church Road to US 74 eastbound
- **Food Lion driveway** – Added right turn lane on US 74 westbound
- **Wesley Chapel Stouts Road / Sardis Road** – Extended right turn lane from Lowe's to this intersection; extended eastbound left turn lane on US 74; added dual left turn out of Wesley Chapel Stouts Road; added single left turn out of Sardis Road
- **Dale Jarrett Ford** – Added right turn lane on US 74 westbound
- **Honda dealership** – Added right turn lane on US 74 eastbound
- **Chamber Drive** – Added right turn lane on US 74 westbound and jughandle on US 74 eastbound
- **Executive Point Drive** – Added right turn lane on US 74 westbound
- **Breckinridge Center Drive** – Added right turn lane on US 74 westbound
- **Rocky River Road** – Lengthened left turn lanes on US 74 eastbound and westbound; added right turn lanes on US 74 eastbound and westbound
- **Woodbrook Lane** – Added right turn lane on US 74 westbound
- **Target development** – Added signal at main entrance, dual left turn lanes and single right turn lane in each direction on US 74

- **Five Guys Restaurant** – Added right turn lane on US 74 eastbound
- **Roland Drive** – Added right turn lane
- **Nottingham Plaza** – Added right turn lane on US 74 eastbound
- **Carwash** – Extended right turn lane on US 74 eastbound
- **Golden Corral/CVS** – Added right turn lane on US 74 eastbound
- **Walmart** – Added right turn lane on US 74 westbound; added left turn lane with signal on US 74 westbound; added signal at Hanover Drive with left turn lanes in each direction; extended right turn lane on US 74 westbound
- **Dickerson Avenue** – Extended left turn lanes on US 74 in each direction; added dual left turn lanes on US 74 westbound
- **Secrest Shortcut Road** – Added dual left turn lanes on US 74 eastbound
- **Rite Aid Drug Store** – Added right turn lane on US 74 eastbound
- **Bi-Lo** – Added right turn lane on US 74 eastbound
- **Medical Park** – Added right turn lane on US 74 westbound
- **Yale Security Credit Union** – Added right turn lane on US 74 eastbound
- **Presson Road** – Added right turn lane on US 74 eastbound
- **Forest Hills Road** – Added signal and right turn lane on US 74 eastbound

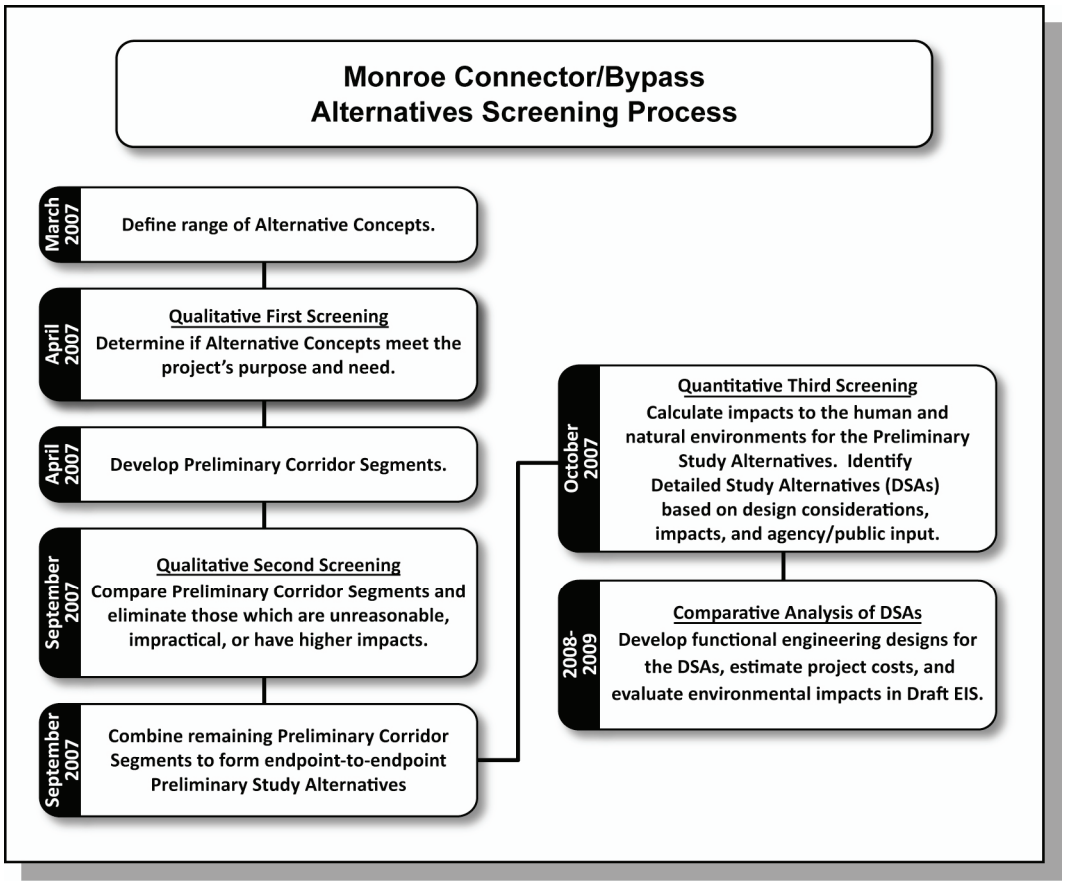
1.2 ALTERNATIVES CONSIDERED

1.2.1 ALTERNATIVES DEVELOPMENT AND SCREENING

The development and evaluation of alternatives, including the screening process used to determine the Detailed Study Alternatives (DSAs), are described in Sections 2.1 through 2.4 of the Draft EIS and documented in detail in the *Alternatives Development and Analysis Report* (PBS&J, April 2008), incorporated by reference and available on the NCTA Web site (www.ncturnpike.org/projects/monroe).

As described in Section 2.1.2 of the Draft EIS, the general public, in addition to local, state, and federal environmental resource and regulatory agencies, have been involved throughout the project development process. Several opportunities were provided for input and comment on the purpose and need, project study area, preliminary alternatives, and the DSAs.

The following Alternatives Screening Process flowchart shows the alternatives evaluation process and general timeframes for when the different screenings occurred.



1.2.2 ALTERNATIVES SCREENING RESULTS

The qualitative first screening, qualitative second screening, and quantitative third screening of alternatives are discussed in detail in Sections 2.2, 2.3, and 2.4 of the Draft EIS, respectively.

The screening results are briefly summarized below, and include references to clarifications regarding the analysis of the Transportation Demand Management (TDM) Alternative and Mass Transit/Multimodal Alternatives, and an expanded discussion of the Transportation System Management (TSM) Alternative.

1.2.2.1 Qualitative First Screening of Alternative Concepts

The Qualitative First Screening of Alternative Concepts considered the basic Alternative Concepts listed below:

- No-Build or No-Action Alternative
- Transportation Demand Management Alternative
- Transportation System Management Alternative
- Mass Transit/Multi-Modal Alternative
- Build Alternatives, including Improving Existing Roadways and New Location Alternatives

These concepts were screened against elements of the purpose and need to determine which of the concepts could be developed to meet all components of the project purpose and need. Those concepts that could not be developed to meet the defined purpose and need were removed from

further consideration. Each Alternative Concept was evaluated using the following screening criteria:

- Does the alternative address the need to improve mobility and capacity in the US 74 corridor?
- Is the alternative consistent with the NC SHC program and NC Intrastate System (i.e., does it allow for high-speed regional travel)?
- Does the alternative maintain access to properties along existing US 74?

A decision to carry an alternative forward beyond the first screening did not necessarily mean that the alternative would meet the purpose and need. Alternatives were carried forward beyond the first screening if, based on the information available, they appeared to have the potential to meet all elements of the purpose and need. Alternatives could also be eliminated later in the process if additional information and details made it clear that they could not meet the purpose and need.

The Alternative Concepts studied and the results of the Qualitative First Screening are presented in **Table 1-1**. Four Alternative Concepts were retained for evaluation in the Qualitative Second Screening: No-Build Alternative, Improve Existing US 74 (Controlled-Access Highway), New Location Roadway (Controlled-Access Highway), and New Location/Improve Existing Roadways Hybrid (Controlled-Access Highway).

TABLE 1-1: Qualitative First Screening – Ability of Alternative Concepts to Meet Purpose and Need

Alternative Concepts	Enhances Mobility and Increases Capacity[1]	Consistency with Planning and Legislative Vision for the Corridor			Maintains Access to Properties Along Existing US 74[1]
		Serves High Speed Regional Travel[1]	NC SHC[1]	NC Intrastate System [1]	
Transportation Demand Management	✓	✖	✖	✖	✓
Transportation System Management	✓	✖	✖	✖	✓
Mass Transit/Multi-Modal	✓	✖	✖	✖	✓
Improve Existing US 74					
Standard Arterial Widening	✖	✖	✖	✖	✓
Superstreet	✓	✖	✖	✖	✓
Controlled-Access Highway	✓	✓	✓	✓	✓
New Location Highway	✓	✓	✓	✓	✓
New Location/Improve Existing Roadways Hybrid	✓	✓	✓	✓	✓

1. ✖ - means the alternative concept cannot meet this element of purpose and need.
   ✓ - means the alternative concept does meet, or could be designed to meet, this element of purpose and need.

The TDM Alternative, the TSM Alternative, Mass Transit/Multi-Modal Alternative, Improve Existing US 74 (Standard Arterial Widening) and Improve Existing US 74 (Superstreet) were eliminated from further consideration because they would not fully meet the purpose and need of the project.

During the public review period for the Draft EIS, a general comment was received regarding the level of information provided in the Draft EIS about the TDM Alternative, TSM Alternative, and

Mass Transit/Multi-Modal Alternatives. Regarding the TSM Alternative, it also was brought to the attention of NCTA that NCDOT Division 10 conducted a study of the existing US 74 corridor titled, *US 74 Corridor Study* (July 2007) that should have been considered in the evaluation of the TSM Alternative.

Additional consideration of the TDM Alternative, the TSM Alternative (including consideration of the *US 74 Corridor Study*), and the Mass Transit/Multi-Modal Alternatives are provided in the response to Generalized Comment 4 included in **Section 3.3.2**. Upon consideration of this additional information, the decision to eliminate these alternatives from further consideration did not change.

1.2.2.2 Qualitative Second Screening and Quantitative Third Screening

None of the information and evaluations included in Sections 2.3 and 2.4 of the Draft EIS regarding the Qualitative Second Screening of Preliminary Corridor Segments and Quantitative Third Screening of Preliminary Study Alternatives has changed since the Draft EIS.

For the Qualitative Second Screening, a project study area to guide development of possible build alternative corridors was established (**Figure 1-1**). Then, 1,000-foot wide corridor segments on new location and on existing roadways were developed (Figure 2-3 of the Draft EIS) and qualitatively assessed and compared with respect to potential impacts to the human and natural environments, as well as with respect to reasonableness and practicability.

Corridor segments not eliminated by the Qualitative Second Screening process were combined to form 25 Preliminary Study Alternatives (PSAs) (Figure 2-6 in the Draft EIS) evaluated in the Quantitative Third Screening. Conceptual designs were prepared for the 25 Preliminary Study Alternatives. The designs were used to quantitatively estimate impacts to the human and natural environments. The human and natural environment impacts and design considerations for the 25 Preliminary Study Alternatives were then compared.

Of the 25 PSAs, 16 were recommended for detailed study in the Draft EIS. The Detailed Study Alternatives are: A, B, C, D, A1, B1, C1, D1, A2, B2, C2, D2, A3, B3, C3, and D3.

The nine PSAs recommended for elimination use all or a substantial length of existing US 74 (PSAs G, E, E1, E2, E3, F, F1, F2, and F3). The quantitative third screening showed that these alternatives would have high impacts compared to the other PSAs on the following screening factors and resources: business relocations, streams, minor road crossings, hazardous material sites, and construction costs.

The NCTA requested input and comments from the public and agencies on the recommended Detailed Study Alternatives, as described below.

In accordance with the Section 6002 Project Coordination Plan for this project, NCTA solicited public comment on the *Draft Alternatives Development and Analysis Report*. A project newsletter announcing the availability of the report on the NCTA website and requesting comments was distributed in early November 2007 to the project mailing list of more than 25,000 citizens.

The following is a summary of the public comments received:

- Twenty-two inquiries about impacts to individual properties.
- Two comments regarding improvements needed on US 601 between US 74 and the North Carolina/South Carolina border.
- One comment to use NC 218 as the route for the Connector/Bypass.

- Two emails supporting alternatives that include Corridor Segment 18A.
- Sixty-seven emails opposing alternatives that include Corridor Segment 18A.
- Village of Lake Park opposed alternatives that include upgrading existing US 74, including alternatives that include Corridor Segment 2.
- The Town of Indian Trail indicated that Corridor Segments 2 and 22A are inconsistent with local land use plans and expresses concern that Corridor Segment 2 would impact the Old Hickory Industrial Park.
- The Town of Stallings, Town of Matthews, and City of Monroe commented in support of routes that do not include Corridor Segment 18A.

In addition, 1,693 signed petitions and 609 copies of form letters opposing alternatives that include Corridor Segment 18A were received.

At the October 17, 2007 Turnpike Environmental Agency Coordination (TEAC) meeting, NCTA presented its recommended alternatives to be studied in detail in the Draft EIS. The NCTA distributed the *Draft Alternatives Development and Analysis Report* to the agencies on November 5, 2007 and requested written comments. Six agencies provided written comments. Complete copies of these comments and responses thereto can be found in Appendix D of the *Alternatives Development and Analysis Report* (PBS&J, April 2008). The majority of the comments pertained to potential indirect and cumulative effects of a new location alternative and the desire to further consider improving existing US 74.

In response to agency comments requesting further consideration of PSA G (improving US 74), NCTA further assessed PSA G and developed a Revised PSA G. These assessments of PSA G and Revised PSA G included additional analyses of traffic and operations, cost, and potential impacts. A description of Revised PSA G and the results of the assessments are summarized in Section 2.4.4.3 of the Draft EIS.

Although Revised PSA G would operate more efficiently and would be more cost effective than the original PSA G, the levels of impacts associated with Revised PSA G, which were minimized to the maximum extent practicable, were still considered unreasonable, as discussed in Section 2.4.4.3 of the Draft EIS and in more detail in the *Upgrade Existing US 74 Alternatives Study* (HNTB, April 2009). Therefore, both PSA G and Revised PSA G were eliminated from consideration and were not included as Detailed Study Alternatives in the Draft EIS.

1.2.3 DETAILED STUDY ALTERNATIVES

Sections 2.5, 2.6, and 2.7 of the Draft EIS describe the DSAs. The information in these sections has not changed since the circulation of the Draft EIS.

As discussed in Section 2.5 of the Draft EIS, 16 endpoint-to-endpoint DSAs (**Figure 1-2a-c**) were selected for further study based upon the outcome of the alternatives screening process. The DSAs are listed in **Table 1-2**.

TABLE 1-2: Detailed Study Alternatives

DSA	DSA Segment	Length (miles)
A	18A, 21, 22A, 31, 36, 36A, 40	20.6
B	18A, 21, 30, 31, 36, 36A, 40	20.5
C	2, 21, 22A, 31, 36, 36A, 40	19.7
D	2, 21, 30, 31, 36, 36A, 40	19.7

TABLE 1-2: Detailed Study Alternatives

DSA	DSA Segment	Length (miles)
A1	18A, 21, 22A, 31, 34, 34B, 40	20.5
B1	18A, 21, 30, 31, 34, 34B, 40	20.5
C1	2, 21, 22A, 31, 34, 34B, 40	19.6
D1	2, 21, 30, 31, 34, 34B, 40	19.6
A2	18A, 21, 22A, 31, 36, 36B, 41	20.6
B2	18A, 21, 30, 31, 36, 36B, 41	20.5
C2	2, 21, 22A, 31, 36, 36B, 41	19.7
D2	2, 21, 30, 31, 36, 36B, 41	19.6
A3	18A, 21, 22A, 31, 34, 34A, 41	20.5
B3	18A, 21, 30, 31, 34, 34A, 41	20.4
C3	2, 21, 22A, 31, 34, 34A, 41	19.6
D3	2, 21, 30, 31, 34, 34A, 41	19.6

The following describes the limits of each DSA Segment:

- **DSA Segment 2** – Follows existing US 74 from just east of I-485 to east of Stallings Road (SR 1365); then on new location alignment from east of Stallings Road (SR 1365) to east of Indian Trail-Fairview Road (SR 1520). Includes a frontage road system (two-to three-lane, one-way on each side of the mainline) along existing US 74 and interchanges at US 74 and Indian Trail-Fairview Road (SR 1520).
- **DSA Segment 18A** – New location alignment from I-485 to east of Indian Trail-Fairview Road (SR 1520), including partial interchanges at I-485 and Stallings Road (SR 1365) and an interchange at Indian Trail-Fairview Road (SR 1520).
- **DSA Segment 21** – New location alignment from east of Indian Trail-Fairview Road (SR 1520) to just west of Unionville-Indian Trail Road (SR 1367). This DSA Segment is common to all DSAs and was developed within an extra wide study corridor.
- **DSA Segment 22A** – New location alignment from west of Unionville-Indian Trail Road (SR 1367) to east of Roanoke Church Road (SR 1505), including interchanges at Unionville-Indian Trail Road (SR 1367) and Rocky River Road (SR 1514). This segment is north of Segment 30.
- **DSA Segment 30** – New location alignment from west of Unionville-Indian Trail Road (SR 1367) to east of Roanoke Church Road (SR 1505), including interchanges at Unionville-Indian Trail Road (SR 1367) and Rocky River Road (SR 1514). This segment is south of Segment 22A.
- **DSA Segment 31** – New location alignment from east of Roanoke Church Road (SR 1505) to west of NC 200, including an interchange at US 601. This DSA Segment is common to all DSAs.
- **DSA Segment 34** – New location alignment from west of NC 200 to just west of Ansonville Road (SR 1002), including an interchange at Morgan Mill Road (NC 200). This segment is north of Segment 36.
- **DSA Segment 36** – New location alignment from west of NC 200 to just west of Ansonville Road (SR 1002), including an interchange at Morgan Mill Road (NC 200). This segment is south of Segment 34.

- **DSA Segment 40** – New location alignment from just west of Ansonville Road (SR 1002) to the project terminus on existing US 74 between the towns of Wingate and Marshville, including partial interchanges at Forest Hills School Road and US 74.
- **DSA Segment 41** – New location alignment from just west of Ansonville Road (SR 1002) to the project terminus on existing US 74 between the towns of Wingate and Marshville, including partial interchanges at Forest Hills School Road and US 74.

In addition to the DSA segments described above, DSA Segments 34A, 34B, 36A, and 36B were added within existing DSA Segment corridor limits during preparation of the functional design plans to allow combinations of all DSA Segments to form endpoint-to-endpoint alternatives.

Traffic forecasts and operations analyses for the DSAs are discussed in Section 2.6 of the Draft EIS. Preliminary cost estimates for each DSA are presented in Section 2.7 of the Draft EIS. The total estimated median costs reported in the Draft EIS range from $752.5 million for DSA A2 to $785.3 million for DSA D1. In order from lowest estimated total cost to highest, the DSAs are: DSA A2, A, B2, B, A3, A1, B3, B1, C2, C, D2, D, C3, C1, D3, and D1. Table 2-8 in the Draft EIS lists the preliminary cost estimates for construction, environmental mitigation, and right of way for each DSA.

The No-Build Alternative also was retained to provide a baseline for comparison with the DSAs in accordance with the National Environmental Policy Act (NEPA) regulations (40 CFR Part 1502.14[d]) and FHWA guidelines (Technical Advisory T 6640.8A; Section V.E.1). The No-Build Alternative included in the Draft EIS assumes that the transportation systems for Union and Mecklenburg Counties would evolve as planned in the MUMPO *2030 LRTP*, but without major improvements to the existing US 74 corridor from I-485 near US 74 to between the towns of Wingate and Marshville. However, the No-Build Alternative would not meet the project's purpose and need.

1.2.4 RECOMMENDED ALTERNATIVE

The following information is from Section 2.8 of the Draft EIS, which describes the identification of DSA D as the Recommended Alternative. DSA D is comprised of DSA Segments 2, 21, 30, 31, 36, 36A, and 40, as shown in **Figure 1-2a-c**.

The FHWA, NCDOT, and NCTA identified a Recommended Alternative in the Draft EIS, which provided readers an indication of the agencies' thinking at the time the Draft EIS was published. After the Draft EIS comment period ended, the FHWA and NCTA (now a division of NCDOT, as described in **Section P.1**), identified a Preferred Alternative based on coordination with local transportation planning agencies, and state and federal environmental resource and regulatory agencies, as well as consideration of agency and public comments received on the Draft EIS and at the public hearings (**Section 3**).

The Preferred Alternative has been developed further in this Final EIS, as described in **Section 2**. The NEPA process will conclude with a Record of Decision (ROD), which will document the Selected Alternative to be constructed.

DSA D was identified in the Draft EIS as the Recommended Alternative based on the following considerations. Please note this list is not in order of importance, but is organized by issues as they were presented in the Draft EIS. Also, this list does not represent all benefits or impacts of DSA D, just those elements that differentiated DSA D when compared to the other DSAs.

Cost and Design Considerations

- DSA D is one of the shortest alternatives at 19.7 miles (all alternatives range from 19.6 to 20.6 miles).
- DSA D is one of eight alternatives that would not require the relocation of Rocky River Road and the associated wetland impacts. The relocation of Rocky River Road is required for the eight alternatives that include DSA Segment 22A.
- DSA D is higher in the range of median total project costs with a cost of $777.4 million (all alternatives range in cost from $752.5 million for DSA A2 to $785.3 million for DSA D1). The higher cost of the Recommended Alternative is offset by lower impacts in several other areas as described below.

Human Environment Considerations

- DSA D is one of the four DSAs with the fewest numbers of residential relocations at 107 residential relocations (the range being 94 to 149 residential relocations).
- Although DSA D is higher in the range of business relocations at 48 (the range being 14 to 49 business relocations), this number has been substantially reduced from preliminary estimates through design refinements, and there remains potential for further reduction through continued design innovation. Most of the impacted businesses are located along existing US 74 at the western end of the project. The relocation of these businesses is in exchange for the other positive factors associated with DSA D, including having the roadway located farther away from densely developed residential subdivisions and farther from Stallings Elementary School.
- DSA D would have no direct impacts to schools and would avoid any indirect impacts to Stallings Elementary School. DSA D is one of eight alternatives that would have no direct impacts to schools. The other eight alternatives would have a direct impact to Central Piedmont Community College and would be adjacent to Stallings Elementary School.
- DSA D is one of the four alternatives that would impact only three church properties (other DSAs impact four or five church properties). None of the DSAs would impact church buildings.
- DSA D is one of the eight alternatives that would avoid impacts to the proposed Matthews Sportsplex property, a public park to be developed by the Mecklenburg County Park and Recreation Department. Also see Cultural Resources Considerations below.

Physical Environment Considerations

- DSA D is lower in the range of impacts to agricultural land at 499 acres (all alternatives range from 494 to 627 acres).
- While none of the alternatives are subject to the Farmland Protection Policy Act, DSA D is one of the alternatives that would have the least impacts to prime and statewide important farmland soils. About 72.8 percent of the acreage within the right of way of DSA D is classified as prime or important farmland soils (all DSAs range from about 72.4 percent to 75.4 percent).
- DSA D is one of eight DSAs (DSAs C, D, C1, D1, C2, D2, C3, and D3) that would potentially impact the most hazardous materials sites (11-12 sites impacted, with the lowest impacts being 6-7 sites). However, the anticipated impact severity is “low” for all potentially impacted sites.

Cultural Resources Considerations

- DSA D is one of eight alternatives that would not have impacts on the proposed Matthews Sportsplex property, a future public park and Section 4(f) resource. The other eight alternatives would affect this proposed park, and NCTA would seek a Section 4(f) *de minimis* finding from FHWA if any of these alternatives is selected as the Preferred Alternative.

Natural Resources Considerations

- DSA D is in the middle range of impacts to upland forest at 450 acres (all alternatives range from 365 to 514 acres).
- DSA D is lower in the range of impacts to ponds at 2.6 acres (all alternatives range from 2.5 to 3.8 acres).
- DSA D is in the middle range of impacts to wetlands at 8.1 acres (all alternatives range from 6.2 to 11.0 acres).
- DSA D would have the least impacts to perennial streams with 9,794 linear feet of impact (all alternatives range from 9,794 to 12,383 linear feet).
- DSA D is lower in the range of impacts to intermittent streams at 11,915 linear feet (all alternatives range from 10,767 to 13,020 linear feet).
- DSA D would have the least linear feet of streams requiring mitigation at 12,550 linear feet (all alternatives range from 12,550 to 16,387 linear feet). While final decisions with respect to mitigation requirements have not been made by the regulatory agencies, for estimation purposes, streams were considered to require mitigation if they were perennial or if they were intermittent and had a stream rating issued by the North Carolina Department of Environment and Natural Resources (NCDENR) - Division of Water Quality (DWQ) of greater than or equal to 26. This implies that streams impacted by DSA D are of lower quality than those impacted by other DSAs.
- DSA D is one of eight alternatives that would cross only two 303(d)-listed streams, while the other eight alternatives would cross four. All four crossings of the 303(d)-listed named streams would be bridged.

Public Involvement

- Substantial public input regarding the DSAs, particularly at the western end of the project (DSA Segment 2 versus DSA Segment 18A), was received throughout the alternatives screening process. Much of this public input has been generated by Citizens Against Route Eighteen (C.A.R.E), a community-based group focused on informing and mobilizing residents against DSA Segment 18A of the Monroe Connector/Bypass (included in DSAs A, B, A1, B1, A2, B2, A3, and B3). C.A.R.E. has submitted more than 2,000 signatures in opposition to DSA Segment 18A. Specifically, the group is concerned about noise, visual, and air quality impacts to the new Stallings Elementary School and adjacent neighborhoods, as well as impacts to North Fork Crooked Creek, which is a 303(d)-listed stream. While this input was a factor in the decision to recommend DSA D, the recommendation was based on a wide range of factors included in the comprehensive review and analysis of the potential impacts of all DSAs, as described above.

The selection of DSA D as the Preferred Alternative is discussed in greater detail in **Section 2** of this Final EIS. Based on public comments received, several design changes were incorporated into the Preferred Alternative. These design refinements and updated impacts are discussed in **Section 2.3.1** of this Final EIS.

1.3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section of the Final EIS summarizes the affected environment and environmental consequences described in Sections 3-8 of the Draft EIS, and also includes general updates to the existing environment where indicated. The impact summary table from the Draft EIS, Table S-2, is included in **Appendix C** for reference.

1.3.1 HUMAN ENVIRONMENT

1.3.1.1 Socio-Economic Characteristics

The Draft EIS Section 3.1 includes an overview of the project study area's social and economic characteristics summarized from the *Community Impact Assessment* (PBS&J, February 2009), available on the NCTA Web site (www.ncturnpike.org/projects/monroe). The following is a brief summary of information presented in Section 3.1 of the Draft EIS. There have been no updates to this information since the Draft EIS was published.

Demographics, Census, and Economic Characteristics. The Demographic Study Area consists of 33 Union County Block Groups and six Mecklenburg County Census Block Groups and was established to identify and analyze population growth, household, and other demographic characteristics. Between 1990 and 2000, the Demographic Study Area grew 49 percent, with the largest percent increases in population generally occurring in and around the communities of Stallings and Indian Trail in western Union County and near Matthews within Mecklenburg County. The areas having the most block groups with negative or low growth increases are located within and around Monroe and Wingate. According to the 2000 Census White, Black or African American, and Hispanic are the three largest racial/ethnic categories within the project study area. Based upon the 2000 Census, the median family incomes for Mecklenburg County ($60,608) and Union County ($56,197) were substantially higher than the state average ($46,335).

In 1990 and 2006, the sector that provided the highest number of jobs in Mecklenburg County was Trade/Transportation/Utilities. The Professional/Business sector provided the second highest number of jobs in both 1990 and 2006.

In 1990, the Manufacturing sector by far provided the highest percentage of jobs in Union County at 40.7 percent, followed by Trade/Transportation/Utilities at 17.5 percent. In 2006, the Manufacturing sector still provided the highest percentage of jobs in Union County, but the percentage fell by nearly half to 21.3 percent. Education/Health moved to the second highest percentage, followed closely by Trade/Transportation/Utilities.

Socio-Economic Impacts. The Monroe Connector/Bypass project would not serve a specific economic development purpose, but local planners believe that the project is vital to the economic well-being of Union County, and will assist in attracting more non-residential uses to Union County. Business relocations are discussed in detail in Section 3.4.2 of the Draft EIS. The DSAs would relocate between 14 and 49 businesses. None of the businesses that would be displaced by the DSAs represent a unique type of business in the area. Accordingly, temporary disruption in their services during relocation is not anticipated to create any severe hardships to patrons in the area or impacts to the local economy.

1.3.1.2 Community Resources

The information in this section is summarized from Section 3.2 of the Draft EIS. This section addresses neighborhoods and community facilities. As described below, there has been an update to schools and parks/recreation areas in the project study area since the Draft EIS was circulated.

The Preferred Alternative functional design was refined in areas adjacent to several neighborhoods, as discussed in **Section 2.3.1**. Updated impacts to neighborhoods and community resources from the Preferred Alternative are discussed in **Section 2.5.1**.

Neighborhoods. The project study area contains a number of named neighborhoods and other communities within six municipalities and unincorporated areas of Union County and Mecklenburg County. Based upon GIS data and field reviews, there are approximately 20 named neighborhoods within the DSAs, varying from small to large, and recent construction to older subdivisions. Newer subdivisions within the DSAs include Fairhaven, Bonterra Village, Arbor Glen, Silverthorne, Glencroft, and residential development within the Village of Lake Park. Neighborhood locations are shown in **Figure 1-3a-c**.

Due to the large project size and number of neighborhoods affected by the functional designs for the DSAs, a matrix was developed in order to better organize and describe potential impacts to neighborhoods. This matrix, listing neighborhoods impacted, is presented in Table 3-3 of the Draft EIS. All DSAs would impact nine neighborhoods. The majority of these impacts would involve minor right-of-way encroachment and/or changes in access. Two neighborhoods, Acorn Woods and Poplin Farms, would experience the relocation of homes in the midst of their neighborhoods, regardless of which DSA is selected. DSAs C, D, C1, D1, C2, D2, C3, and D3 would involve relocations in three neighborhoods, while the remaining DSAs (A, B, A1, B1, A2, B2, A3, and B3) would require relocations in only two neighborhoods. None of the DSAs would result in the total displacement of a neighborhood.

Indirect effects could occur to neighborhoods under any of the DSAs. The project could accelerate land use changes to non-residential uses, causing changes in the character of neighborhoods. Additional discussion regarding indirect and cumulative effects associated with the Preferred Alternative is included in **Section 2.5.5** of this Final EIS.

Community Facilities. Community facilities in the project study area near the DSAs include churches and cemeteries, schools and colleges, and parks and recreation areas. The impact summary table from the Draft EIS included in **Appendix C** lists the impacts to community facilities from each DSA. Section 3.2.4 of the Draft EIS discusses impacts in detail.

Churches and Cemeteries. All DSAs would impact three to five church properties, but no church buildings would be impacted.

Schools and Colleges. All DSAs would temporarily impact school bus routes during construction, as well as result in modifications of existing routes and/or promote new bus routes. NCTA will coordinate with Mecklenburg County Public Schools and Union County Public Schools regarding minimizing impacts to school bus routes.

All DSAs would have a minimal indirect impact on Central Piedmont Community College (CPCC) through a change in access. Implementation of DSAs A, B, A1, B1, A2, B2, A3, or B3 also would require a small amount of right of way in the southeast quadrant of the existing I-485/US 74 interchange to accommodate improvements to the interchange.

Poplin Elementary School has been opened since the publication of the Draft EIS. It is located approximately 0.9 miles from the nearest DSA. The school is located outside the study area for the project and would not be impacted by any of the DSAs.

Parks and Recreation Areas. DSAs A, B, A1, B1, A2, B2, A3, and B3 would require approximately 2.25 acres from the proposed Matthews Sportsplex, a public park located southwest of the I-485/US 74 interchange. The minor encroachments on the edge of the parcel are not anticipated to impact access or any future use of the property for park purposes (**Section 1.3.3.3** provides more information).

In January 2009, Carolina Courts, a private recreation facility, opened a 44,000 square-foot facility at 7210 Stinson-Hartis Road in Indian Trail. This privately-owned facility offers a variety of indoor sports programs for all age groups (Carolina Courts Web site: www.carolinacourts.com). This facility was not brought to the attention of NCTA in time for it to be discussed in the Draft EIS. The entire Carolina Courts property would be purchased and entitled to relocation benefits under DSAs that use Corridor Segment 2 (DSAs C, D, C1, D1, C2, D2, C3, and D3).

1.3.1.3 Land Use and Transportation Planning

The information in this section is summarized from Section 3.3 of the Draft EIS and includes updates on local land use plans in the study area and the MUMPO *2035 LRTP*. More detailed information regarding local land use planning and changes in land use as a result of the Preferred Alternative is provided in the *Indirect and Cumulative Effects Quantitative Analysis* (Michael Baker Engineering, Inc., April, 2010), summarized in **Section 2.5.5** of this Final EIS.

Land Use and Transportation Plans. The following land use and transportation plans have been prepared or updated since the Draft EIS was published:

- City of Charlotte Zoning Ordinance (2009)
- Town of Marshville *Comprehensive Transportation Plan Study* (NCDOT, 2009)
- Union County *Draft Comprehensive Plan* (2009)
- *Western Union County Local Area Regional Transportation Plan* (Village of Marvin, Town of Waxhaw, Town of Weddington, Village of Wesley Chapel, and Centralina Council of Governments, 2009)
- *2035 LRTP* (MUMPO, May 3, 2010). Updated from year 2030

The proposed project would be generally consistent with local land use plans and regional, state, and local transportation plans (Section 3.3.4 of the Draft EIS).

Section 3.3.2 of the Draft EIS discusses the inclusion of the Monroe Connector and Monroe Bypass projects in the MUMPO *2030 LRTP*. Both projects were included in the MUMPO *2030 LRTP* as regionally significant projects. The only inconsistency was that the Monroe Bypass portion of the project was not shown as a toll facility. The Monroe Connector/Bypass is included in the updated MUMPO *2035 LRTP* as a toll facility.

Land Use. The Union County portion of the project study area is predominantly rural and suburban, while the Mecklenburg County portion is more urbanized. Single-family residential is the most common type of residential development in the project study area. Most of the commercial development in the project study area is located along US 74, and is comprised of strip shopping centers, auto-oriented businesses, and service and retail businesses.

Since the DSAs are generally on new location, direct land use changes from any of the DSAs would include converting the land needed for right of way from its existing use to transportation

use. This land includes a wide variety of uses, such as industrial, commercial, residential, recreational, agricultural, and undeveloped.

In addition to the changes that would occur due to right-of-way acquisition, other land use changes are likely due to the nature of the facility. Since this new roadway would enhance access to eastern Union County, it would provide opportunities for increased intensity of development. For example, the interchange locations may be developed with commercial uses (e.g., gas stations and convenience stores) to serve travelers. With the potential access improvements, there is also the possibility of increased residential suburbanization. However, this will be limited by the existing water and sewer availability within the counties and municipalities (which is discussed in more detail in Section 7 of the Draft EIS). The following paragraph provides updated information regarding the provision of water service in Union County.

As of June 30, 2009, Union County Public Works provides water and wastewater services to nearly 39,000 customers. On September 21, 2009, the *Union County Short-Term Water Allocation Plan* was adopted, amending the October 2008 water allocation policy discussed in Sections 4.4.1.2 and 7.5.2 of the Draft EIS. The purpose of the *Union County Short-Term Water Allocation Plan* is to document current usage and quantify the water capacity available for system expansion to new development. The plan is considered short-term because it should not be required once new treatment plant capacity is in place. On October 1, 2009, the Union County Board of Commissioners authorized approval of construction bids of over $5 million for improvements to Union County's water system that will allow accommodation of additional water from Anson County. Construction is anticipated to be completed in April 2011.

1.3.1.4 Right-of-Way Acquisition and Relocations

Residential and business relocation impacts for each of the DSAs are presented in Section 3.4 of the Draft EIS. A summary of relocation impacts reported in the Draft EIS is included in the table in **Appendix C**. There are no updates to this section of the Draft EIS. An updated discussion of relocation impacts associated with the modified design of the Preferred Alternative is included in **Section 2.5.1** of this Final EIS.

All DSAs would require relocation of residences and businesses. The total number of residential relocations for each DSA ranges from 94 residences (DSA A) to 149 residences (DSA D3). All DSAs would include three farm displacements. Business relocations are concentrated along US 74, and would range from 14 (DSAs A, A1, B, and B1) to 49 (DSAs C2, D2, C3, and D3).

Based on comments received during the public comment period, design changes were made to the Preferred Alternative that reduced the number of residential relocations. **Section 2.5.1.4** of this Final EIS provides updated relocation impacts for the Preferred Alternative.

The NCTA will follow the state and federal regulations and NCDOT policies for right-of-way acquisition and relocation.

1.3.1.5 Environmental Justice

The information in this section is summarized from Section 3.5 of the Draft EIS. There have been no updates to this information since the Draft EIS was published.

The Monroe Connector/Bypass project was evaluated for the potential for disproportionately high and adverse impacts on minority and low-income populations in two ways: 1) impacts that result

from building and operating any new road (e.g., taking of land, noise impacts, air impacts, etc.) and 2) impacts that result specifically from tolling the proposed facility.

The first category of impacts mainly involves people who are living in the immediate vicinity of the project. The second category involves people who are potential users of the road – a much broader geographic area. The general locations of African-American populations, Hispanic populations, and low-income populations are shown in Figures 3-4, 3-5, and 3-6 of the Draft EIS.

Based on information presented in Section 3.5 of the Draft EIS, the construction of any of the DSAs was determined not to have a disproportionately high and adverse impact on minority and low-income populations.

The Monroe Connector/Bypass would provide a new route in the region. One benefit of the project would be reduced traffic on existing alternate non-toll routes, including US 74. As shown in Section 5 of the *Year 2035 Build Traffic Operations Technical Memorandum* (PBS&J, February 2009*),* and summarized in Section 2.6.3.2 of the Draft EIS, existing US 74 would have fewer segments and intersections operating at an unacceptable level of service in 2035 if the project is constructed versus the No-Build Alternative. Completing the project would benefit all motorists, including low-income motorists who may choose not to use the toll facility or may tend to use it less frequently.

All reasonable efforts have been made to include low-income and minority groups in the decision-making process to date. The project would not deny, reduce, or delay receipt of project benefits to low-income or minority groups. Impacts to low-income and/or minority populations resulting from implementing the Monroe Connector/Bypass as a toll facility are not anticipated to be "disproportionately high and adverse".

1.3.2 PHYSICAL ENVIRONMENT

1.3.2.1 Noise

Section 4.1 of the Draft EIS provides details of the noise analysis conducted for the DSAs. There are no updates to this section of the Draft EIS. A summary of impacts and mitigation reported in the Draft EIS is presented in the Draft EIS impact summary table included in **Appendix C**. The noise analysis for the Preferred Alternative (DSA D) has been updated to incorporate design changes and updated traffic forecasts that have been prepared since the Draft EIS was circulated. The updated noise analysis for the Preferred Alternative is discussed in **Section 2.5.2.1** of this Final EIS.

Traffic noise from the DSAs was evaluated based upon FHWA and NCDOT criteria (Section 4.1.2 of the Draft EIS). The FHWA Traffic Noise Model® (TNM), Version 2.5, was used to predict future traffic noise levels for this project and to evaluate the feasibility and reasonableness of preliminary noise barriers.

The table in **Appendix C** lists the numbers of receptors predicted to be impacted by traffic noise, based upon the 2035 traffic noise contours. Impacted receptors are receptors expected to experience traffic noise impacts either by approaching or exceeding the FHWA Noise Abatement Criteria (NAC) for the applicable activity category, as listed in Table 4-1 in the Draft EIS, or by a substantial increase in exterior noise levels (as defined in NCDOT's Traffic Noise Abatement Policy). Impacted receptors do not include noise-sensitive receptors that would be relocated by the project.

The numbers of impacted receptors range from 108 impacted Category B receptors for DSA B2, to 130 impacted Category B receptors for DSA C1. The impacts to Category B receptors are primarily substantial increase impacts. Category B receptors in the project area are mostly residential, with one church (Forest Hills Baptist Church near DSAs A, C, A1, C1, A2, C2, A3, and C3) and one school (Stallings Elementary School near DSAs A, B, A1, B1, A2, B2, A3, and B3). More detailed evaluation of potential noise impacts at Forest Hills Baptist Church and Stallings Elementary School determined that there would be no impacts to areas of frequent outdoor use at these facilities (Section 4.1.5.2 of the Draft EIS).

The numbers of Category C (business) impacts range from nine to eleven for DSAs that use DSA Segment 18A (DSAs A, B, A1, B1, A2, B2, A3, and B3) to 28 to 31 for DSAs that use DSA Segment 2 (DSAs C, D, C1, D1, C2, D2, C3, and D3). The higher numbers of business impacts for DSAs using DSA Segment 2 occur along existing US 74.

If traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures for reducing or eliminating the noise impacts must be considered. Types of abatement measures include highway alignment selection, traffic management measures, vegetative buffers, property acquisition, or noise barriers. Due to design constraints, access and space requirements, and cost considerations, noise barriers were found to be the only feasible and reasonable method of abatement.

Three locations were identified where noise barriers were preliminarily determined to be feasible and reasonable. The three preliminary noise barriers are listed in Table 4-6 of the Draft EIS, and shown in Figure 4-1a-c of the Draft EIS. Preliminary Barrier N4-1 would apply to all DSAs, and is located on the eastbound side of the proposed project, east of Indian Trail-Fairview Road near the Acorn Woods/Gold Hill neighborhood. Preliminary Barrier N7-2 would apply to all DSAs and is located on the eastbound side of the proposed project, east of Roanoke Church Road, near the Avondale Park neighborhood. Preliminary Barrier N9-1 would apply to DSAs A, B, C, D, A1, B1, C1, and D1, and is located on the westbound side of the proposed project, east of Ansonville Road near the Glencroft neighborhood.

1.3.2.2 Air Quality

The information in this section is summarized from Section 4.2 of the Draft EIS. Air quality issues addressed include transportation conformity, mobile source air toxics (MSATs), and potential air quality impacts from construction activities. As discussed below, there have been updates to transportation conformity and MSATs since the Draft EIS was published. Due to the complexity of air quality issues, background text from the Draft EIS has been included here under Existing Conditions Related to National Ambient Air Quality Standards (NAAQS) and Transportation Conformity Background.

Existing Conditions Related to National Ambient Air Quality Standards. The USEPA has established NAAQS for six criteria air pollutants: carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide. An area that exceeds the NAAQS for one or more criteria pollutants is said to be in "non-attainment" of the NAAQS enforced under the Clean Air Act.

As presented in Section 4.2 of the Draft EIS, the Charlotte-Gastonia-Rock Hill air quality region, which includes the project area, is in attainment for nitrogen dioxide, lead, particulate matter, and sulfur dioxide. Except for Mecklenburg County, all other areas within the Charlotte-Gastonia-Rock Hill air quality region are designated as attainment for carbon monoxide. Mecklenburg County is a maintenance area for carbon monoxide.

On June 15, 2004, the Charlotte-Gastonia-Rock Hill air quality region was designated as a moderate non-attainment area for the 1997 8-hour ozone NAAQS (USEPA Web site: www.epa.gov/oar/oaqps/greenbk). The region includes the following counties in North Carolina: Mecklenburg, Gaston, Lincoln, Cabarrus, Rowan, Union, and the southern portion of Iredell. The urbanized area of eastern York County, South Carolina, also is included. Compliance with the 1997 ozone standard is required by June 15, 2010. The State Implementation Plan (SIP) for ozone for this region submitted to USEPA by the NCDENR-Division of Air Quality (DAQ) projects that the 8-hour ozone standard will be met by this time (*State of the Environment Report 2008*, Mecklenburg County Land Use & Environmental Services).

The SIP in North Carolina is developed by the NCDENR-DAQ. The SIP describes how North Carolina will maintain or achieve compliance with the NAAQS.

Transportation Conformity Background. Section 176(c) of the Clean Air Act Amendments (42 USC 7506(c)) requires that transportation plans, programs, and projects conform to the intent of the SIP. Conformity requirements apply to transportation plans, programs, and projects funded or approved by the FHWA or the Federal Transit Administration (FTA) in areas that do not meet, or previously have not met, NAAQS for ozone, carbon monoxide, particulate matter, or nitrogen dioxide (*Fact Sheets on Highway Provisions*, FHWA Web site: www.fhwa.dot.gov/safetealu/factsheets/conformity.htm).

Under the transportation conformity regulations, a transportation conformity determination is required every time a Metropolitan Planning Organization (MPO) approves an update or amendment to its LRTP and transportation improvement program (TIP). A regional conformity determination is needed for each update and amendment to an LRTP and TIP.

In addition to the regional conformity determination for LRTPs and TIPs, FHWA also must make a project-level conformity determination. For all pollutants, a project-level conformity determination can be made only if the project is included in a conforming LRTP and TIP. In addition, for carbon monoxide and particulate matter, a project-level conformity finding requires a localized conformity analysis, known as a "hot-spot" analysis.

For the Monroe Connector/Bypass project, transportation conformity determinations are required for two pollutants: ozone and carbon monoxide. The conformity requirements apply to these pollutants because the Metrolina region as a whole is designated as a nonattainment area for the 1997 8-hour ozone standard and Mecklenburg County is designated as a maintenance area for carbon monoxide.

Transportation Conformity Update. The Draft *Conformity Analysis and Determination Report for the Cabarrus-Rowan MPO, Mecklenburg-Union MPO, and the Gaston Urban Area MPO 2035 Long Range Transportation Plans and the FY 2009-2015 Transportation Improvement Programs and for Non-MPO Areas of Lincoln County, Iredell County, Gaston County, and Union County areas (8-Hour Ozone, and CO (Mecklenburg County Only))* was made available for public review on February 5, 2010. Public meetings to solicit comments on these documents as well as the Draft *2035 LRTP* and the *2009 – 2015 STIP Amendment* were held on February 24, 2010 in the Charlotte Mecklenburg Government Center and on February 25, 2010 in the Indian Trail Town Hall. All of the above referenced documents were made available for review until the close of the public review and comment period on March 8, 2010. As of that date, no substantive comments were received and all were endorsed by the MUMPO TCC on March 11, 2010 and by MUMPO on March 24, 2010. USDOT made a conformity determination on the LRTP and TIP on May 3, 2010. A copy of this letter, along with USEPA's April 22, 2010 review, can be found in **Appendix D** of this Final EIS.

Mobile Source Air Toxics Update. Subsequent to circulation of the Draft EIS, the FHWA released updated guidance regarding MSATs, titled *Interim Guidance Update on MSAT Analysis in NEPA Documents* (FHWA, September 2009) (FHWA Web site: www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm). The interim guidance update "reflects recent regulatory changes, addresses stakeholder requests to broaden the horizon years of emission trends performed with MOBILE6.2, and updates stakeholders on the status of scientific research on air toxics." The update "does not change any project analysis thresholds, recommendations, or guidelines."

The information presented below updates the text in Section 4.2.3 of the Draft EIS.

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list in their latest 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) (http://cfcpub.epa.gov/ncea/iris/index.cfm).

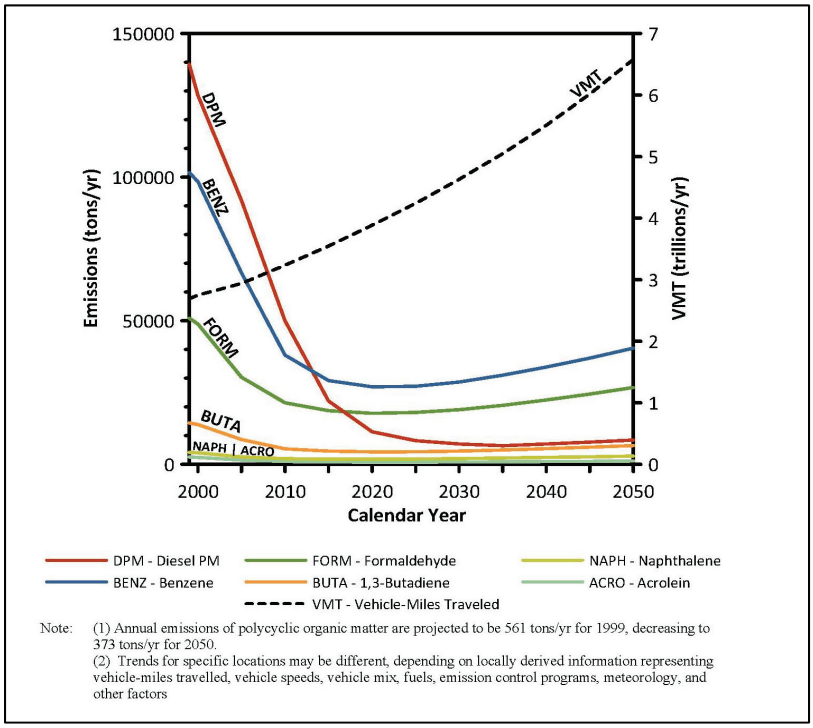
In addition, USEPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future USEPA rules.

The 2007 USEPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using the USEPA MOBILE6.2 model, a combined reduction of 72 percent in the total annual emission rate for the priority MSATs is projected from 1999 to 2050 even if vehicle-miles traveled (VMT) increases by 145 percent as assumed (**Exhibit 1-1**).

Mobile Source Air Toxics Impact Analysis Update. As mentioned above, the *Interim Guidance Update on MSAT Analysis in NEPA Documents* (FHWA, September 2009) does not change any project analysis thresholds, recommendations, or guidelines. Therefore, the qualitative impact evaluation conclusions described in Section 4.2.5.2 and Appendix E (Mobile Source Air Toxics Analysis) of the Draft EIS do not change. However, the interim guidance update did recommend updated language for incomplete and unavailable information and provided information on new research. Section 4.2.5.2 of the Draft EIS is updated as described below. Appendix E in the Draft EIS also has been updated and is included as **Appendix E** in this Final EIS.

The following text updates the text in Section 4.2.5.2 of the Draft EIS. Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project level decision-making within the context of the NEPA.

EXHIBIT 1-1: National MSAT Emission Trends 1999 – 2050 for Vehicles Operating on Roadways Using USEPA MOBILE6.2 Model



Source: *Interim Guidance Update on MSAT Analysis in NEPA Documents* (FHWA, September 2009) (FHWA Web site: www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm).

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, FHWA is duly expected by the public and other agencies to address MSAT impacts in environmental documents. The FHWA, USEPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

While this research is ongoing, FHWA requires each NEPA document to qualitatively address MSATs and their relationship to the specific highway project through a tiered approach (*Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*, September 30, 2009). A qualitative analysis of MSATs for this project appears in its entirety in **Appendix E** of this Final EIS.

Construction Air Quality. Provided local ordinances for open burning and dust control are followed, significant air quality impacts due to construction of the proposed project are not anticipated. The proposed project would be constructed in sections, limiting the overall construction activity occurring at any one location. There would also be emissions related to construction equipment and vehicles. However, these impacts related to construction would be temporary.

1.3.2.3 Farmland

The following information is summarized from Section 4.3 of the Draft EIS, with an update to prime and important farmland soils and a correction and update to the impact calculations for prime and important farmland soils. Agricultural census information also is updated. Updated

information on impacts to prime and important farmland soils associated with the refined design of the Preferred Alternative is presented in **Section 2.5.2.3** of this Final EIS.

Prime and Important Farmland Soils. Section 4.3.2 and Table 4-9 of the Draft EIS discusses prime and important farmland soils within the DSA corridors. This discussion is based on Natural Resource Conservation Service (NRCS) soils surveys for Union County (dated 1996) and Mecklenburg County (dated June 1980) and a list of prime and statewide important farmland soils for North Carolina downloaded from the US Department of Agriculture (USDA) Web site in April 2005.

Updated soils surveys and lists of prime and important farmland soils for Union County and Mecklenburg County were published by the NRCS on June 19, 2009 and April 29, 2009, respectively (NRCS Web site: http://soildatamart.nrcs.usda.gov). There were substantial changes in the lists of prime and statewide important soils between the lists used in the Draft EIS and the most current lists.

Table 1-3 below replaces Table 4-9 of the Draft EIS with the most recent list of prime and important farmland soils within the DSAs.

TABLE 1-3: Prime and Important Farmland Soils in the Detailed Study Alternatives

Soil Symbol	Soil Name	Percent Slope	County
Prime Farmland Soils			
ApB	Appling Sandy Loam	2-8	Mecklenburg & Union
CeB2	Cecil Sandy Clay Loam - eroded	2-8	Mecklenburg
CeB2	Cecil Gravelly Sandy Clay Loam	2-8	Union
EnB	Enon Sandy Loam	2-8	Mecklenburg
GfB2	Georgeville Silty Clam Loam - eroded	2-8	Union
HeB	Helena Sandy Loam	2-8	Mecklenburg
HeB	Helena Fine Sandy Loam	2-8	Union
TaB	Tarrus Gravelly Silt Loam	2-8	Union
TbB2	Tarrus Gravelly Silty Clay Loam - eroded	2-8	Union
Statewide Important Farmland Soils			
Bab	Badin Channery Silt Loam	2-8	Union
BaC	Badin Channery Silt Loam	8-15	Union
BdB2	Badin Channery Silty Clay Loam - eroded	2-8	Union
BdC2	Badin Channery Silty Clay Loam - eroded	8-15	Union
CeC2	Cecil Gravelly Sandy Clay Loam - eroded	8-15	Union
CeD2	Cecil Sandy Clay Loam - eroded	8-15	Mecklenburg
CmB	Cid Channery Silt Loam	1-5	Union
CoA	Colfax Sandy Loam	0-3	Union
ScA	Secrest-Cid Complex	0-3	Union
TbC2	Tarrus Gravelly Silty Clay Loam - eroded	8-15	Union
WyB	Wynott Gravelly Loam	2-8	Union

Source: NRCS Web site: http://soildatamart.nrcs.usda.gov; Union County data dated June 19, 2009; Mecklenburg County data dated April 29, 2009.

All proposed DSAs would involve the use of prime and statewide important farmland soils. The No-Build Alternative would not directly impact prime and important farmland soils. **Table 1-4** presents the updated acreages of prime and important farmland soils within the functional engineering design right of way for each DSA, based on the 2009 soils surveys. The acreages

were calculated using GIS by overlaying the functional design right of way on the soils GIS layer and subtracting out disturbed land already in urban development. It should also be noted that the acreages presented in **Table 1-4** differ from those presented in Table 4-10 of the Draft EIS due to the use of the updated soils data and due to a calculation error in the total acreages and acreages of statewide important farmland soils reported in Table 4-10 (**Appendix A**). Updated soils information for the Preferred Alternative refined design is presented in **Section 2.5.2.3** of this Final EIS.

TABLE 1-4: Impacts to Prime and Important Farmland Soils

DSA	Total Acreage in DSA Right of Way	Prime Farmland Soils	Statewide Important Farmland Soils	Prime and Important Farmland Soils in DSA	
		Acres in Right of Way*		Total Acres	%
A	1,468	316	780	1,096	74.7
B	1,461	319	767	1,086	74.3
C	1,330	179	794	973	73.1
D	1,324	183	781	964	72.8
A1	1,414	330	721	1,051	74.4
B1	1,408	334	708	1,042	74.0
C1	1,277	193	735	929	72.8
D1	1,271	197	723	920	72.4
A2	1,479	321	794	1,115	75.4
B2	1,473	324	781	1,106	75.1
C2	1,342	184	808	992	73.9
D2	1,336	188	795	983	73.6
A3	1,425	335	736	1,071	75.1
B3	1,419	339	723	1,061	74.8
C3	1,288	198	750	948	73.6
D3	1,282	202	737	939	73.2

Sources for Soils Information: Soils Survey of Union County, North Carolina (NRCS, June 19, 2009); Soils Survey of Mecklenburg County, North Carolina (NRCS, April 29, 2009). Available for download on the NRCS Web site: http://soildatamart.nrcs.usda.gov

*Acreages are calculated for the functional engineering design right of way for each DSA. Areas of prime and statewide important soils already in urban development were not included in the totals.

Farmland Conversion Impact Ratings. Section 4.3.4.2 of the Draft EIS discusses farmland conversion impact ratings. There are no updates to this section, which is summarized below. Please note that the calculation error described above was not a factor in the forms and ratings described below.

In accordance with the Farmland Protection Policy Act of 1981 (FPPA) and FHWA's *Guidelines for Implementing the Final Rule of the Farmland Protection Policy Act for Highway Projects*, a "Farmland Conversion Impact Rating for Corridor Type Projects" form was prepared. The ratings on the NRCS forms are comprised of two parts. The Land Evaluation Criterion Value represents the relative value of the farmland to be converted on a scale from 0 to 100 points. The Corridor Assessment, which is rated on a scale of 0 to 160 points, evaluates farmland soils based upon its use in relation to the other land uses and resources in the immediate area. The two ratings are added together for a possible total rating of 260 points. Sites receiving a total score of 160 points or more are given increasingly higher levels of consideration for protection (7 CFR 658.4).

Table 4-11 in the Draft EIS lists the total points for each DSA. The total point value for each DSA is less than 160 points. According to the FPPA, lands that receive a combined score of less than 160 points are not covered by the FPPA. Since the soils impacted by the DSAs did not meet the threshold of protection based on the evaluation under the FPPA, the impacts to prime and statewide important farmland were not considered under the FPPA.

Existing Agricultural Uses. Since publication of the Draft EIS, there has been an update to agricultural census information presented in Section 4.3.3.1 of the Draft EIS. The Draft EIS includes information from the *2002 Census of Agriculture*. In February of 2009, a *2007 Census of Agriculture* (USDA National Agricultural Statistics Service, February 2009, USDA Web site: http://www.agcensus.usda.gov/Publications/2007/index.asp) was published. Between 2002 and 2007, the number of farms decreased from 1,224 to 1,107, and the average farm size increased from 156 to 161 acres in Union County. For Mecklenburg County between 2002 and 2007, the number of farms decreased from 300 to 236, while the average farm size decreased from 85 to 81 acres.

Farm Displacements. As reported in Section 4.3.4.3 of the Draft EIS, the *Relocation Reports for the Monroe Connector/Bypass* (Carolina Land Acquisition, January 2009) note that all DSAs would include three farm displacements. Because much of eastern Union County is still rural, it is anticipated that there would be suitable replacement property available for farm relocation.

1.3.2.4 Utilities and Infrastructure

The following information is summarized from Section 4.4 of the Draft EIS. Utilities addressed include electric power, water and sewer facilities, natural gas, telecommunications, and railroads. There have been no updates to this information since the Draft EIS was circulated.

All DSAs for the Monroe Connector/Bypass have the potential to impact utilities, as summarized below.

All DSAs cross the high-voltage Duke Energy Corporation power line easement that runs between Faith Church Road (SR 1518) and Sardis Church Road (SR 1516). There are no electrical substations or towers located within the DSAs, but there may be vertical clearance issues associated with power lines in areas where the elevation of the proposed roadway is higher than the existing ground.

The DSAs would cross water and sewer lines, but no negative impacts to water or sewer service are anticipated with any of the DSAs. None of the DSAs would impact water or wastewater treatment facilities.

All DSAs would cross the two-inch gas lines running parallel to US 601, NC 200, and Olive Branch Road (SR 1006).

None of the DSAs would directly impact the aboveground Piedmont Natural Gas switching station located within DSA Segment 31. The functional designs for all the DSAs are common in this area, and at their closest point, the estimated construction limits would be approximately 60 feet from the fenced-in area. The functional designs in this area would be in a fill section and impacts to the natural gas switching station are not anticipated.

Telephone and cable lines are located throughout the project study area and all DSAs would cross telecommunications lines. None of the DSAs would impact cellular telephone towers.

On the eastern end of the project, all DSAs would cross the CSX Railroad line that parallels existing US 74.

Utility coordination would be conducted during final design. All utility providers would be contacted and coordinated with to ensure that the proposed design and construction of the project would not substantially disrupt service.

1.3.2.5 Visual Resources

The following information is summarized from Section 4.5 of the Draft EIS. There have been no updates to this information since the Draft EIS was circulated, except as related to the Preferred Alternative (**Section 2.5.2.5**).

As visual impacts can be subjective, a distinction was not made among alternatives with regard to the most or least visually impacting alternative. However, some general conclusions can be made regarding visual/aesthetic changes. Overall, the DSAs that have a higher number of neighborhoods exposed to the roadway (i.e., impact a greater number of neighborhoods with residential relocations) are expected to have a greater amount of visual impacts. In this case, all of the DSAs have similar numbers and types of relocation impacts to neighborhoods. As such, visual impacts to neighborhoods are not expected to vary significantly among the DSAs as a result of this project.

Unique visual impacts could occur due to the potential elevation of an approximately one-mile section of elevated roadway that would run along the existing US 74 alignment, from just east of I-485 to just east of Stallings Road, associated with DSA Segment 2 (DSAs C, D, C1, D1, C2, D2, C3, D3). Aesthetic treatments and structural alternatives for this elevated roadway would be identified and coordinated with local municipalities to minimize any visual impacts through this primarily commercial area.

DSA D was selected as the Preferred Alternative (**Section 2.2**) and therefore unique visual impacts could occur due to the section of elevated roadway along existing US 74 from just east of I-485 to just east of Stallings Road. Plans for enhancing the aesthetics of the Preferred Alternative are discussed in **Section 2.5.2.5**. These plans were developed with local stakeholder input as outlined in **Section 3.1.4** of this Final EIS.

1.3.2.6 Hazardous Materials

The following information is summarized from Section 4.6 of the Draft EIS. There are no updates to this section of the Draft EIS. Additional studies to evaluate potentially contaminated sites were conducted for the Preferred Alternative. Updated information on hazardous materials impacts associated with the Preferred Alternative is presented in **Section 2.5.2.6** of this Final EIS.

As discussed in Section 4.6.1, an assessment of the project study area was performed to identify the presence of potentially contaminated sites. Seventeen sites were identified that presently contain or formerly contained petroleum above ground storage tanks (ASTs) or underground storage tanks (USTs). In addition, five other geoenvironmental concern areas were identified, including two junkyards, one auto repair service, and two farm USTs within the immediate vicinity of the DSAs. These sites are listed in Table 4-12 of the Draft EIS.

Table 4-13 of the Draft EIS summarizes the impacts from potentially contaminated sites for each DSA. All potential impacts were rated as “low” impact, meaning there would be little to no impacts to cost or schedule if the project would directly affect the site.

Based on the assessment presented in Section 4.6.2 of the Draft EIS, DSAs A, B, A1, B1, A2, B2, A3, and B3 would impact six to seven potentially contaminated sites, while DSAs C, D, C1, D1,

C2, D2, C3, and D3 would impact 11 to 12 sites. Generally, the DSA corridor segments utilizing portions of US 74 had the highest numbers of potentially contaminated sites. The impact summary table from the Draft EIS included in **Appendix C** lists the numbers of potentially contaminated sites within each DSA.

1.3.2.7 Floodplains and Floodways

The following information is summarized from Section 4.7 of the Draft EIS. As noted below, there are corrections to the number of floodway crossings reported in the Draft EIS.

Floodplains and Floodways in the Project Study Area. As discussed in Section 4.7.1 of the Draft EIS, the Federal Emergency Management Agency (FEMA), in cooperation with federal, state, and local governments, developed floodplain and floodway boundaries and Flood Insurance Rate Maps (FIRMs) for Union County in November 2008 and developed preliminary mapping for Mecklenburg County in October 2007 (North Carolina Floodplain Mapping Program Web site: www.ncfloodmaps.com/firm_indexes.htm).

Figure 4-4a-c in the Draft EIS shows the floodplains and floodways in the project study area. Named streams with defined floodplains in the project study area include, from west to east: North Fork Crooked Creek, South Fork Crooked Creek, Stewarts Creek, Lick Branch, Stumplick Branch, Richardson Creek, Rays Fork, Meadow Branch, and Negro Head Creek.

Defined floodways generally are located within or near municipal limits. Named streams with defined floodways in the project study area include, from west to east: North Fork Crooked Creek, South Fork Crooked Creek, Stewarts Creek, Richardson Creek, Meadow Branch, and Negro Head Creek. Please note that the Draft EIS did not include North Fork Crooked Creek, Meadow Branch, or Negro Head Creek in the list of named streams with defined floodways in the project study area (**Appendix A**).

Major Drainage Structures and Floodway/Floodplain Impacts. As discussed in Section 4.7.3 of the Draft EIS, a preliminary hydraulics analysis (*Preliminary Hydraulic Technical Memorandum*, PBS&J, December 2008) was performed to identify the preliminary sizes and locations of major drainage structures along the DSAs that would be needed to adequately carry floodwaters. Major drainage structures are bridges, box culverts, or pipe culverts greater than 72 inches in diameter.

The major drainage structures and crossings were discussed with the environmental resource and regulatory agencies at a Turnpike Environmental Agency Coordination Meeting on October 7, 2008, and at a bridging location field review on October 21, 2008. As a result of these meetings, the NCTA agreed to include bridges at several locations previously recommended for culverts in order to avoid or minimize stream and wetland impacts. The recommended bridge locations to avoid and minimize stream and wetland impacts are listed in Section 4.7.3 of the Draft EIS.

The locations of major drainage structures are shown on Figure 2-10a-cc in the Draft EIS. Appendix H of the Draft EIS includes details about the crossing locations such as preliminary drainage structure size and length, floodplain width, and floodway width.

Table 4-14 in the Draft EIS summarizes the number of major drainage structures associated with each DSA. The number of floodway crossings for each DSA listed in Table 4-14 did not account for the floodways at North Fork Crooked Creek, Meadow Branch, or Negro Head Creek. **Table 1-5** is an update to Table 4-14 with the corrected floodway crossings. No other data in the table changed.

TABLE 1-5: Summary of Major Drainage Structures and Floodway and Floodplain Crossings

DSA	Bridge Crossings over Streams	Major Culverts or Pipes (>72 inches in diameter)	Floodway Crossings	Floodplain Crossings
A	9	38	7	14
B	9	36	7	14
C	6	37	5	11
D	6	35	5	11
A1	8	36	6	13
B1	8	34	6	13
C1	5	35	4	10
D1	5	33	4	10
A2	9	38	7	14
B2	9	36	7	14
C2	6	37	5	11
D2	6	35	5	11
A3	8	36	6	13
B3	8	34	6	13
C3	5	35	4	10
D3	5	33	4	10

Source: *Preliminary Hydraulic Technical Memorandum* (PBS&J, December 2008), with a correction to the number of floodway crossings (**Appendix A**).

1.3.3 CULTURAL RESOURCES

1.3.3.1 Historic Architectural Resources

The following information is summarized from Section 5.2 of the Draft EIS. There have been no updates to this information since the Draft EIS was published. Information on historic architectural resources in relation to the modified designs for the Preferred Alternative is provided in **Section 2.5.3.1** of the Final EIS.

Four resources on or eligible for listing on the National Register of Historic Places (NRHP) were identified in the project's Area of Potential Effects. These are the Secrest Farm (Site Number UN 835), Hiram Secrest House (Site Number UN 351), William Bivens House (Site Number UN 830), and Perry-McIntyre House (Site Number UN 306). The locations of these resources are shown on Figure 5-1 of the Draft EIS.

As discussed in Section 5.2.2 of the Draft EIS, none of the DSAs would result in an Adverse Effect to a historic property on or eligible for listing on the NRHP. No property would be acquired from any of the historic resources.

1.3.3.2 Archaeological Resources

The following information is summarized from Section 5.3 of the Draft EIS. There are no updates to this section of the Draft EIS. Since the Draft EIS was published, an intensive archaeological survey and assessment has been prepared for the Preferred Alternative. Additional information regarding the intensive survey is provided in **Section 2.5.3.2** of this Final EIS.

For the eastern portion of the project study area, details are documented in the *Archaeological Background Report - US 74 Monroe Bypass (R-2559) Study Area* (NCDOT, December 1995) and the results of an intensive field survey of the Monroe Bypass preferred alignment conducted in 1997. No NRHP eligible sites have been discovered by previous archaeological investigations and no currently recorded NRHP sites are located in or near the Monroe Bypass portion of the project study area. This is mainly due to poor site integrity, which is the result of excessive soil erosion from extensive farming in Union County.

For the western portion of the project study area, a field review of the Monroe Connector study area was conducted in 2003. These studies indicated a long history of erosion and soil disturbance in Union County and low probability that sites worthy of further investigation are present in the project study area. Through preliminary coordination with the State Historic Preservation Office (HPO), it was determined that a final decision regarding an archaeological survey from I-485 to US 601 would be made following selection of the Preferred Alternative.

1.3.3.3 Section 4(f) and Section 6(f) Resources

Section 4(f) and Section 6(f) resources are afforded special considerations from federal actions. Section 4(f) resources include publicly-owned parks, recreation areas, and wildlife and waterfowl refuges as well as significant historic sites under public or private ownership. Section 6(f) resources include public recreation sites and facilities that have utilized funding through the Land and Water Conservation Fund Act.

The following information is summarized from Section 5.4 of the Draft EIS. An update is included below summarizing input received during the Draft EIS public review period regarding the Matthews Sportsplex.

Section 4(f) and Section 6(f) Resources in the Study Area. As shown in Figure 5-2 of the Draft EIS, there is one publicly-owned park, the proposed Matthews Sportsplex, located within the corridor for DSA Segment 18A (DSAs A, B, A1, B1, A2, B2, A3, and B3). There are no other Section 4(f) resources within the DSAs.

There are no properties within the project study area that are subject to Section 6(f) of the Land and Water Conservation Fund Act (Section 6(f) resources).

Section 4(f) Impacts. The proposed Matthews Sportsplex is on property owned by Mecklenburg County just southwest of DSA Segment 18A at the US 74 and I-485 interchange in Mecklenburg County. Access to the proposed Matthews Sportsplex will be provided by an extension to Independence Pointe Parkway from Matthews – Mint Hill Road and a new connector road to be constructed from East John Street (SR 1009) to Tank Town Road (SR 3453).

DSA Segment 18A, which is included in DSAs A, B, A1, B1, A2, B2, A3, and B3 would involve improvements to the I-485/US 74 interchange, including reconstruction of the ramp in the southwest quadrant of the interchange. This would require right-of-way acquisition (totaling approximately 2.25 acres) from the three undeveloped parcels, which total approximately 160 acres, owned by Mecklenburg County and designated for future park use as the Matthews Sportsplex. DSAs C, D, C1, D1, C2, D2, C3, and D3 would not impact the property owned by Mecklenburg County for the proposed Matthews Sportsplex because they would not involve modifications to the I-485/US 74 interchange.

Section 5.4.3 of the Draft EIS explains that *de minimis* impacts on publicly-owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource (FHWA Web site:

www.fhwa.dot.gov/hep/qasdeminimus.htm). 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 for that property and the Section 4(f) evaluation process for that property is complete. The determination of *de minimis* impacts requires concurrence from the officials with jurisdiction over the park, recreation area, or wildlife or waterfowl refuge.

The Mecklenburg County Park and Recreation Department concurs that the estimated right of way needed under DSAs A, B, A1, B1, A2, B2, A3, and B3 would not adversely affect the activities, features, and attributes of the proposed Matthews Sportsplex (Section 5.4.3.1 and Appendix I of the Draft EIS).

Potential Section 4(f) impacts were presented at the Public Hearings for the proposed project held in May 2009, and public comment was solicited on the estimated encroachments into the proposed Matthews Sportsplex. Of the 400 comment forms received during the public comment period, more than 85 percent had no comment on potential impacts to the Matthews Sportsplex; approximately ten percent felt there would be no adverse effects; 3.5 percent felt there would be adverse effects; and 2.5 percent were unsure or just did not want the project to be built at all.

The proposed Matthews Sportsplex would not be impacted by the Preferred Alternative and therefore no further action with regards to Section 4(f) is necessary.

1.3.4 NATURAL RESOURCES

1.3.4.1 Soils, Geology, and Mineral Resources

The following information is summarized from Section 6.1 of the Draft EIS, with updates based on the most recent soil surveys for Union and Mecklenburg Counties.

Soils. The USDA NRCS has published soil surveys for all counties within North Carolina. The surveys for the project study area described in the Draft EIS Section 6.1, *Soil Survey of Union County, North Carolina* (USDA, January 1996) and *Soil Survey of Mecklenburg County, North Carolina* (USDA, June 1980) were updated June 19, 2009 and April 29, 2009, respectively (NRCS Web site: http://soildatamart.nrcs.usda.gov). The updated soils information reflects changes in soil series information and farmland classifications.

The soil surveys provide maps showing the soil types within Union County and Mecklenburg County and information on soil properties that can affect land use. The 2009 soil surveys identify 30 soil types within the DSAs. **Table 1-6** updates Table 6-1 in the Draft EIS.

TABLE 1-6: Soils Within the Detailed Study Alternatives

Soil Series (Symbol)	Suitability for Road Construction	Suitability as Roadfill	Shrink-Swell Potential
Appling sandy loam (ApB)	Somewhat Limited	Poor	Low
Appling-Urban land complex (AuB)	Somewhat Limited	Fair	Low
Badin channery silt loam (BaB)	Very Limited	Poor	Moderate
Badin channery silt loam (BaC)	Very Limited	Poor	Moderate
Badin channery silty clay loam (BdB2)	Very Limited	Poor	Moderate
Badin channery silty clay loam (BdC2)	Very Limited	Poor	Moderate
Badin-Urban land complex (BuB)	Very Limited	Poor	Moderate
Cecil gravelly sandy clay loam (CeB2)	Somewhat Limited	Fair	Low
Cecil gravelly sandy clay loam (CeC2)	Somewhat Limited	Fair	Low

TABLE 1-6: Soils Within the Detailed Study Alternatives

Soil Series (Symbol)	Suitability for Road Construction	Suitability as Roadfill	Shrink-Swell Potential
Cecil sandy clay loam (CeD2)	Somewhat Limited	Fair	Low
Chewacla silt loam (ChA)	Very Limited	Poor	Low
Cid channery silt loam (CmB)	Very Limited	Poor	Moderate
Cid-Urban land complex (CnB)	Very Limited	Poor	Moderate
Colfax sandy loam (CoA)	Somewhat Limited	Poor	Low
Cecil-Urban land complex (CuB)	Somewhat Limited	Fair	Low
Enon sandy loam (EnB)	Very Limited	Fair	High
Georgeville silty clay loam (GfB2)	Somewhat Limited	Fair	Low
Goldston very channery silt loam (GoC)	Somewhat Limited	Poor	Low
Goldston very channery silt loam (GoE)	Very Limited	Poor	Low
Goldston-Badin complex (GsB)	Somewhat Limited	Poor	Low
Goldston-Badin complex (GsC)	Somewhat Limited	Poor	Low
Goldston-Badin complex (GsE)	Very Limited	Poor	Low
Helena fine sandy loam (HeB)	Very Limited	Fair	High
Misenheimer-Cid complex (MhA)	Very Limited	Poor	Low
Secrest-Cid complex (ScA)	Very Limited	Poor	Low
Tarrus gravelly silt loam (TaB)	Somewhat Limited	Fair	Low
Tarrus gravelly silty clay loam (TbB2)	Somewhat Limited	Fair	Low
Tarrus gravelly silty clay loam (TbC2)	Somewhat Limited	Fair	Low
Udorthents, loamy (Ud)	Somewhat Limited	Fair	Moderate
Wynott gravelly loam (WyB)	Very Limited	Poor	High

Source: NRCS Web site: http://soildatamart.nrcs.usda.gov; Union County data dated 6/19/09; Mecklenburg County data dated 4/29/09

As shown in **Table 1-6**, the entire area underlain by the DSAs is rated "somewhat limited" or "very limited" for road construction. This means that the soil properties indicate that special planning, design, or maintenance is needed to overcome soil limitations. The concern cited in the soil surveys was low strength (i.e., the soil is unable to support loads). Some soils also had shrink-swell potential, which is the potential for a soil volume to change with a loss or gain of moisture. Shrinking and swelling can cause damage to structures and roads, if either lacks special design (USDA, January 1996).

The expected soil limitations can be overcome through proper engineering design, including the incorporation of techniques such as soil modification, appropriate choice of fill material, use of non-corrosive subgrade materials, and design of drainage structures capable of conveying estimated peak flows. Decisions regarding soil limitations and methods to overcome them would be determined during the final design phase.

Mineral Resources. According to the NCDENR-Division of Land Resources, there are several active and inactive permitted mines in Mecklenburg and Union Counties (NCDENR Division of Land Resources Web site: www.dlr.enr.state.nc.us/pages/permittedmines.html). None of the active or inactive mines would be impacted by the DSAs. Geotechnical surveys conducted during the final design phase would identify abandoned mine shafts in the area that could affect construction activities. It is expected that abandoned mine shafts can be accommodated in the design and construction of the roadway under any of the DSAs.

1.3.4.2 Water Resources

The following information is summarized from Section 6.2 of the Draft EIS. Section 6.2.1 describes existing water resources, Section 6.2.2 describes water quality, and Section 6.2.3 discusses water resources impacts and mitigation. Updates are provided below, as noted. Updated discussions of potential indirect and cumulative effects to water quality associated with the Preferred Alternative are included in **Section 2.5.5** of this Final EIS.

Water Resources. There are no updates to this section of the Draft EIS (Section 6.2.1) since it was published. A summary of water resources in the project study area is provided below.

DSAs are located within the Yadkin-Pee Dee and Catawba River Basins (US Geologic Suvery [USGS] Hydrologic Units 03040105 and 03050103). Named streams in the project study area are shown in Figure 4-4a-c of the Draft EIS. The named streams within the Yadkin-Pee Dee River Basin portion of the study area include the North Fork Crooked Creek, South Fork Crooked Creek, Stewarts Creek, East Fork Stewarts Creek, Richardson Creek, Stumplick Branch, Ray's Fork, Bearskin Creek, Lick Branch, Meadow Branch, and Negro Head Creek. The only streams within the Catawba River Basin portion of the project study area are unnamed tributaries to Four Mile Creek, located to the northwest of the existing I-485/US 74 interchange in the McAlpine Creek watershed.

There is one waterbody near the DSAs that is designated as a water supply resource. Lake Twitty, northeast of the City of Monroe, is classified as a Water Supply III (WS-III) water supply by the NCDENR-DWQ (NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/bims/reports/basinsandwaterbodies/hydroYadkin.pdf). As shown in Figure 4-4b of the Draft EIS, the eastern portion of the project study area is within the protected area of the water supply watershed for the Lake Twitty reservoir, but outside the critical area. In the WS-III watershed protected area, dischargers must obtain General Permits (NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/wswp/wsclasses.html).

Water Quality. Section 6.2.2 of the Draft EIS describes impaired waters (Section 6.2.2.1), best usage classifications (Section 6.2.2.2), National Pollutant Discharge Elimination System Discharges (Section 6.2.2.3), and water quality monitoring and basin-wide assessments (Section 6.2.2.4). These sections are summarized below, with updates as noted.

Impaired Waters. Section 303(d) of the Clean Water Act requires states to develop a list of waters that are not meeting water quality standards or which have impaired uses. The 2006 *Final North Carolina 303(d) List* (NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/tmdl/documents/303d_Report.pdf) is the most recent final list, as reported in the Draft EIS. The portions of North Fork Crooked Creek, South Fork Crooked Creek, and Richardson Creek within the project study area are included on the list.

In addition to the waterbodies on the 2006 list, Stewart's Creek is included on the Draft 2008 303(d) List (NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf). All four aforementioned waterbodies are included on the Draft 2010 303(d) List (NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/tmdl/documents/draft_2010_Cat_5.pdf).

Best-Usage Classifications. There have been no updates to the best-usage classifications of the named stream segments in the study area since the Draft EIS was published. Of the eleven named streams, eight are classified as Class C waters, which are designated for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Stewarts Creek, Lick Branch, and Stumplick Branch, as well as their respective tributaries, have a best-

usage classification of WS III, which applies to waters protected as water supplies that are generally in watersheds of low to moderate development.

National Pollutant Discharge Elimination System Discharges. The National Pollutant Discharge Elimination System (NPDES) regulates the construction, alteration, and/or operation of any sewer system, treatment works, or disposal system, and certain stormwater runoff which would result in a discharge to surface waters.

Table 6-2 in the Draft EIS has been updated in **Table 1-7**. Two new dischargers, Carolina Water Service, Inc. and Radiator Specialty Company, have been added since the last download of the information on October 6, 2008 from the NCDENR-DWQ Web site.

TABLE 1-7: Active NPDES Permits with Discharges to Streams in the Project Study Area

Permit #	Owner	Facility Name	Permitted Flow (gpd)	Subbasin	Receiving Stream
NC0069841	Union County	Crooked Creek WWTP #2	1,900,000	03-07-12	East Fork Stewarts Creek
NC0024333	City of Monroe	Monroe WWTP	10,400,000	03-07-14	Richardson Creek
NC0030597	Union County Public Schools	New Salem Elementary School	3,000	03-07-14	Richardson Creek
NC0045993	Allvac	Monroe Plant	Not limited	03-07-14	Richardson Creek
NC0080381	City of Monroe	John Glenn WTP	Not limited	03-07-14	Stewarts Creek
NC0087858	Equipment and Supply, Inc.	Union County Remediation site	21,600	03-07-14	Stewarts Creek
NC0035041	Carolina Water Service, Inc.	Hemby Acres WWTP	300,000	03-07-12	North Fork Crooked Creek
NC0088838	Radiator Specialty Company	Radiator Specialty Company	90,000	03-07-12	South Fork Crooked Creek

Source: NCDENR-DWQ Web site: http://h2o.enr.state.nc.us/NPDES/documents/BIMS_120109.xls

Water Quality Monitoring and Basin-Wide Assessments. The discussions and references to basinwide water quality plans included in Section 6.2.2.4 of the Draft EIS are still up to date.

Water Resources Impacts and Mitigation. As discussed in more detail in Section 6.2.3 of the Draft EIS, short-term impacts on water quality within the project study area may result from soil erosion and sedimentation. Construction impacts to water quality may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. Long-term impacts on water quality also are possible due to particulates, heavy metals, organic matter, pesticides, herbicides, nutrients, and bacteria that are often found in highway runoff.

Prior to construction, an erosion and sedimentation plan will be developed for the Preferred Alternative in accordance with the NCDENR publication *Erosion and Sediment Control Planning and Design* and NCDOT *Best Management Practices for Protection of Surface Waters*.

In addition, because all DSAs pass through the hazardous spill basin area for Lake Twitty, all DSAs would need to incorporate hazardous spill basins in this area in final designs.

The *Standard Specifications for Roads and Structures* requires proper handling and use of construction materials (NCDOT, January 2002) (NCDOT Web site: www.ncdot.org/doh/preconstruct/ps/specifications/dual/). The contractor would be responsible for taking every reasonable precaution throughout the construction of the project to prevent the pollution of any body of water. The contractor also shall be responsible for preventing soil erosion and stream siltation.

1.3.4.3 Natural Communities and Wildlife

The following information is summarized from Section 6.3 of the Draft EIS. There are no updates to terrestrial communities, terrestrial wildlife, aquatic communities and wildlife, or invasive plant species as documented in Sections 6.3.1 through 6.3.5 of the Draft EIS.

Updated direct impacts to natural communities and wildlife as a result of design changes to the Preferred Alternative can be found in **Section 2.5.4.3** of this Final EIS. Indirect and cumulative impacts are analyzed and discussed in the *Indirect and Cumulative Effects Quantitative Analysis* (Michael Baker Engineering, Inc., April, 2010), and summarized in **Section 2.5.5** of this Final EIS.

Terrestrial Communities. Seven terrestrial communities were identified within the DSAs, as described in Section 6.3.1 of the Draft EIS: urban/disturbed, mesic mixed hardwood forest, basic mesic forest, pine forest, piedmont/low mountain alluvial forest, agriculturally maintained, and successional/ agriculturally unmaintained.

As described in Section 6.3.5 of the Draft EIS, terrestrial communities would be impacted permanently by project construction from clearing and paving. Table 6-3 in the Draft EIS and the Draft EIS Summary of Impacts table included in **Appendix C** provide the acreage of terrestrial communities by habitat type impacted by DSA. The acreage represents the area within each DSA's proposed right-of-way limits. Acres of upland forest impacted range from approximately 358 acres for DSA D1 to approximately 514 acres for DSA A2. Acreage in active agriculture ranges from approximately 494 acres for DSA C to 627 acres for DSA B3.

Terrestrial Wildlife. Both direct and indirect impacts from the DSAs would occur to the terrestrial communities and to the animals that inhabit them. Destruction of natural communities along the DSAs' rights of way would result in the loss of foraging and breeding habitats for the various animal species that utilize the area. All DSAs equally have the potential to indirectly affect terrestrial communities through fragmentation, which would result from road construction and induced land use change. Habitat fragmentation also is expected to occur under the No-Build Alternative due to continued growth in population and development within Union County.

Aquatic Communities and Wildlife. Aquatic communities in the DSAs include both intermittent and perennial piedmont streams, as well as still-water ponds. Impacts to aquatic communities include fluctuations in water temperature as a result of the loss of riparian (forest) vegetation. Construction impacts may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. Temporary and permanent impacts to aquatic organisms may result from increased sedimentation. Impacts to aquatic communities and wildlife from erosion and sedimentation will be minimized through implementation of a stringent erosion-control schedule and the use of Best Management Practices (BMPs).

Invasive Plant Species. Several known invasive species are present within the DSA corridors, as described in Section 6.3.4 of the Draft EIS. Construction of any of the DSAs has the potential to provide opportunities for introduction or spread of invasive plant species. Known invasive plant species will not be used in construction, revegetation, or landscaping. NCTA will follow the BMPs recommended by NCDOT for management of invasive plant species.

1.3.4.4 Water Resources in Federal Jurisdiction

The following information is summarized from Section 6.4 of the Draft EIS. There has been an update to intermittent stream impacts as described below. Updates related to jurisdictional resource impacts for the Preferred Alternative are discussed in more detail in **Section 2.5.4.4** of this Final EIS.

Waters of the United States. Section 404 of the Clean Water Act prohibits discharge of dredged or fill material into waters of the US, except when executed in accordance with a permit. The term Waters of the US has broad meaning and incorporates both wetlands and surface waters such as streams and ponds. The USACE is responsible for issuing permits and enforcing permitting requirements under Section 404 of the Clean Water Act. The NCDENR-DWQ also has regulatory input through Section 401 of the Clean Water Act (Water Quality Certification).

Existing Jurisdictional Resources. More than 200 jurisdictional stream segments and approximately 200 jurisdictional wetlands were identified within the DSAs during surveys conducted in February through April, 2008. All jurisdictional streams are designated as warm water streams for purposes of stream mitigation. Three types of wetlands were identified within the DSAs; palustrine, palustrine scrub/shrub, and palustrine emergent.

Approximately 70 ponds are located in or near the DSAs. Thirty-seven of these ponds consist of impounded stream systems with surface connections to other jurisdictional features, while the remaining ponds are isolated with no jurisdictional connection.

Impacts to Jurisdictional Resources. Project construction for any of the DSAs cannot be accomplished without infringing on surface waters, including streams, wetlands, and ponds. Streams may be bridged, filled, relocated, or placed in a culvert by project construction. Wetlands may be either partially or completely filled. In some instances, larger wetland areas may become hydraulically disconnected from an adjacent stream.

Table 6-4 in the Draft EIS and the Draft EIS impact summary table (Table S-2) present the amounts of streams, wetlands, and ponds estimated to be impacted by each DSA (**Appendix C**). These impact estimates take into account avoidance and minimization measures that have been incorporated into the project, including the bridging of streams and wetlands. The impacts were calculated using the functional design estimated construction limits plus 40 feet, in accordance with NCDOT procedures.

The intermittent stream impacts for all DSAs reported in Table 6-4 of the Draft EIS should have included 354 linear feet of impact to Stream SX162z. **Table 1-8** includes the corrections to Table 6-4 of the Draft EIS (**Appendix A**). Stream SX162z is located along the proposed realignment of Forest Hills School Road near the eastern end of the project (**Figure 2-3s**) and was not included in the area initially surveyed for jurisdictional resources. This area was surveyed after the Draft EIS was published. The inclusion of Stream SX162z adds the same length of intermittent stream impact to each DSA, and therefore the relative differences between the DSAs as reported in the Draft EIS still apply. No other information in the table has changed.

DSA A2 would have the greatest intermittent stream impacts (totaling 13,374 linear feet), and DSA A3 would have the greatest perennial stream impacts (12,383 linear feet). DSA D1 would have the least intermittent stream impacts (11,121 linear feet), and DSA D would have the least perennial stream impacts (9,794 linear feet).

TABLE 1-8: Impacts to Waters of the US

DSA	Intermittent Stream Impacts (linear ft)[1,2]	Perennial Stream Impacts (linear ft)[1,2]	Total Stream Impacts (linear ft)[1,2]	Total Number of Stream Crossings	Wetland Impact Area (acres)[1,2]	Total Number of Wetlands Impacted	Pond Impact Area (acres)[1,2]
A	13,118	10,500	23,618	118	10.7	54	**2.5**
B	12,385	10,412	22,798	110	7.7	45	2.6
C	13,001	9,882	22,883	116	**11.0**	**56**	**2.5**
D	12,269	**9,794**	22,063	**104**	8.1	47	2.6
A1	11,969	11,085	23,054	122	10.3	53	3.7
B1	11,237	10,997	22,234	114	7.3	44	**3.8**
C1	11,853	10,467	22,320	116	10.7	55	3.7
D1	**11,121**	10,379	**21,500**	**104**	7.7	46	**3.8**
A2	**13,374**	11,798	**25,172**	119	9.5	52	**2.5**
B2	12,642	11,710	24,352	111	6.6	43	2.6
C2	13,257	11,180	24,437	113	9.9	54	**2.5**
D2	12,525	11,092	23,617	105	7.0	45	2.6
A3	12,225	**12,383**	24,608	**124**	9.2	51	3.7
B3	11,493	12,295	23,788	116	**6.2**	**42**	**3.8**
C3	12,109	11,765	23,873	118	9.5	53	3.7
D3	11,376	11,677	23,053	110	6.6	44	**3.8**

Source: Data in table was calculated using GIS with data from the *Natural Resources State Technical Report for the Monroe Connector/Bypass* (ESI, December 2008) and functional designs dated 12/31/08.
Note: [1]Highest and lowest values are indicated by bold font. [2]Impacts were calculated using the functional designs' construction limits, with an additional 40-foot buffer, in accordance with NCDOT procedures.

Permitting and Mitigation. An Individual Permit under Section 404 of the Clean Water Act, as well as a Section 401 Water Quality Certification, will be required for roadway encroachment into jurisdictional wetlands and surface waters.

The DSAs incorporate measures to avoid and minimize impacts to Waters of the US. The major drainage structures and crossings were reviewed by the environmental regulatory and resource agencies at the TEAC meeting on October 7, 2008 and at a bridging location field review on October 21, 2008. As a result of these meetings, NCTA agreed to include bridges at several locations previously recommended for culverts in order to avoid or minimize stream and wetland impacts. Additional avoidance and minimization measures associated with the Preferred Alternative are discussed in greater detail in **Section 2.3.3** of this Final EIS.

Because this project would be permitted under an Individual 404 Permit, mitigation for impacts to surface waters will be required by USACE and NCDENR-DWQ. Furthermore, in accordance with its regulations (33 CFR Part 332), USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. It is anticipated that stream impacts will be greater than USACE and NCDENR-DWQ regulatory thresholds and will require compensatory mitigation.

NCTA has received agreement from the NCDENR Ecosystem Enhancement Program (EEP) to provide compensatory mitigation through the in-lieu fee program. All impacts, corresponding mapping, and mitigation information will be included in the 401 Water Quality Certification Application submitted by NCTA to NCDENR-DWQ and the 404 Dredge and Fill permit package submitted to USACE following the completion of the NEPA process. A conceptual mitigation plan for the Preferred Alternative that utilizes the EEP has been prepared, and is described in **Section 2.5.4.4** of this Final EIS.

1.3.4.5 Protected Species

The following information is summarized from Section 6.5 of the Draft EIS. There are no updates to this information. Additional studies were conducted for the Preferred Alternative, as noted below and described in **Section 2.5.4.5**.

Federally-Protected Species. Plants and animals with a federal classification of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Sections 7 and 9 of the Endangered Species Act of 1973 (ESA), as amended. The USFWS lists four species under federal protection that are considered to have ranges extending into Union County and/or Mecklenburg County (USFWS Web site: www.fws.gov/nc-es/es/countyfr.html). These species are listed in Table 6-5 in the Draft EIS**,** along with the bald eagle, which has been delisted but is still federally-protected by the Bald and Golden Eagle Protection Act. Table 6-5 in the Draft EIS is reproduced here as **Table 1-9**.

Impacts to Protected Species. The Draft EIS (Section 6.5.4) includes Biological Conclusions for the four federally-protected species and the bald eagle listed in **Table 1-9**.

TABLE 1-9: Federally-Protected Species in Union and Mecklenburg Counties

Common Name	Scientific Name	County	Federal Status
Vertebrates			
Bald eagle	*Haliaeetus leucocephalus*	Union & Mecklenburg	Delisted (BGPA)
Invertebrates			
Carolina heelsplitter	*Lasmigona decorata*	Union & Mecklenburg	E
Vascular Plants			
Michaux's sumac	*Rhus michauxii*	Union & Mecklenburg	E
Schweinitz's sunflower	*Helianthus schweinitzii*	Union & Mecklenburg	E
Smooth coneflower	*Echinacea laevigata*	Mecklenburg	E

Source: USFWS Web site: www.fws.gov/nc-es/es/countyfr.html, Updated 1/31/08

Notes: BGPA Bald and Golden Eagle Protection Act
E Endangered-A species that is threatened with extinction throughout all or a significant portion of its range.

Michaux's sumac, smooth coneflower, and bald eagle. Biological Conclusions of No Effect were determined for Michaux's sumac, smooth coneflower, and bald eagle.

Schweinitz's sunflower. Surveys of potentially suitable habitat were conducted in September and October 2007 (*Natural Resources State Technical Report for the Monroe Connector/Bypass*, ESI, December 2008). Two population sites were discovered along Secrest Shortcut Road within a power-line easement. Both populations are located just outside the right of way boundaries of the DSAs that include Segments 22A and 30. The functional designs of the DSAs do not directly encroach on either population, and it is expected that no direct disturbance to the populations will occur from construction activities. The Draft EIS included a biological conclusion of "May Affect, Not Likely to Adversely Affect" for Schweinitz's sunflower (*Helianthus schweinitzii*). USFWS comments on the Draft EIS (dated June 12, 2009) indicate that "*it is premature to determine that there will be no impacts to the Schweinitz's sunflower from this project. Until more specifics about design and any changes that may result from public comment or other information are available we believe the appropriate conclusion for this species is 'unresolved.'*"

Carolina heelsplitter. A Biological Conclusion of Unresolved was determined for the Carolina heelsplitter (*Lasmigona decorata*) and its designated critical habitat. The larger streams within the project study area may provide potentially suitable habitat for the Carolina heelsplitter. All DSAs have similar stream crossings. Goose Creek basin, which at its closest point is located approximately one mile to the north of the corridor study area, is designated as critical habitat for the Carolina heelsplitter. Goose Creek supports one of six known populations of this species. Portions of Duck and Waxhaw Creeks within Union County also are designated as critical habitat (Federal Register Vol. 67, No. 127, Page 44502). Goose Creek and Duck Creek are outside the project study area but within the project's Future Land Use Study Area (FLUSA) as defined in the *Indirect and Cumulative Effects Assessment* (HNTB, January 2009). Waxhaw Creek is outside of the project study area and the FLUSA.

Coordination with the USFWS and additional surveys for the above protected species were conducted as part of the Biological Assessment prepared for the Preferred Alternative (**Section 2.5.4.5**). In addition, the *Indirect and Cumulative Effects Quantitative Analysis* (Michael Baker Engineering, Inc., April 2010) examined the indirect and cumulative effects on these species and their habitat as a result of the project. The findings of these additional studies are presented in **Section 2.5.5** of this Final EIS.

1.3.5 INDIRECT AND CUMULATIVE EFFECTS

Section 7 of the Draft EIS presents information from the qualitative *Indirect and Cumulative Effects Assessment* (HNTB, January 2009). The information presented below is summarized from Section 7 of the Draft EIS.

A quantitative analysis titled *Indirect and Cumulative Effects Quantitative Analysis* (Michael Baker Engineering, Inc., April 2010) has been completed for the Preferred Alternative. The results of the quantitative assessment are presented in **Section 2.5.5** of this Final EIS.

The qualitative assessment summarized in Section 7 of the Draft EIS was performed in accordance with NCDOT guidance titled, *Assessing Indirect and Cumulative Effects of Transportation Projects in North Carolina* (November, 2001), referred to in the Draft EIS as the *ICI Guidance*.

The study area used for the analysis is the FLUSA, and is the area within which the DSAs have the potential to influence land use changes. The NCDOT *ICI Guidance* indicates that development effects of a new or improved roadway facility are most often found up to one mile around an interchange and two to five miles along major intersecting roadways to the interchange. Based on the *ICI Guidance*, it was determined that the potential for indirect and cumulative effects could be felt within about five miles of the various project alignments. This approximate five-mile radius was defined as the FLUSA, as shown in Figure 7-1 of the Draft EIS.

The locations of the DSAs are close enough together such that indirect impacts are not expected to vary substantially by DSA. For all DSAs, residential development patterns are expected to continue at relatively the same pace and intensity as the No-Build Alternative in Mecklenburg County and near the Mecklenburg County/Union County line south of US 74. These areas tend to be more influenced by proximity to Charlotte and I-485. The DSAs may influence residential development in the central and eastern parts of Union County because the project would improve travel time from those areas to Charlotte.

Given the already strong residential growth within the area, the DSAs would not cause major shifts in population but could increase the pace of development in some areas, particularly in

areas surrounding existing US 74. Because the DSAs would provide enhanced accessibility, they have the potential to encourage residential development along the intersecting roads to the interchange locations, as well as increase residential densities as compared to current plans. There is high potential for additional infill residential development in the area around existing US 74 within and west of Monroe, which has experienced high levels of residential growth during past years. There is also high potential for new residential growth east of Monroe, where the DSAs would improve access and allow for easier and faster commutes to the Charlotte-Mecklenburg County urban area.

With the DSAs, it is also expected that some new development would shift to land parcels within the vicinity of project interchanges, as opposed to locating elsewhere, depending upon the availability of water and sewer service (which is one of the primary factors limiting growth in the area). The shift would occur to take advantage of the improved access and visibility that these parcels would have to the new freeway and the reduced commute times to the major employment center within the region.

The DSAs would not be expected to induce substantial land use changes or growth north and west of the DSAs, which is the area that includes habitat for the federally-endangered Carolina heelsplitter mussel. The DSAs would also have low to moderate potential for indirect impacts to other sensitive resources, including water resources, farmland, and terrestrial communities.

It is anticipated that any indirect impacts that occur within the FLUSA would be in the form of complementary land development (such as highway-retail oriented businesses) surrounding the interchange locations, potential shifts of commercial development to more accessible and visible interchange locations, and residential and associated development in proximity to the new location facility or upgraded facility. Local officials are targeting development for the major feeder roads in anticipation of the project.

The level of growth is not anticipated to be significantly higher with implementation of the project. As such, the DSAs would likely contribute only minimally to cumulative effects on water quality and terrestrial habitat, as development that is affecting these resources is already occurring, and is expected to continue. Local plans are in place that will help minimize cumulative impacts to water quality. The DSAs are not expected to contribute to cumulative effects on the Carolina heelsplitter and Goose Creek and Duck Creek watersheds.

1.3.6 OTHER IMPACTS

1.3.6.1 Irretrievable and Irreversible Commitment of Resources

The following information is reproduced from Section 8.1 of the Draft EIS. There have been no updates to this information.

Implementation of any of the DSAs would involve a commitment of a range of natural, physical, human, and fiscal resources. Land used for the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material would be expended. Additionally, large amounts of labor and natural resources would be used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply

and their use will not have an adverse effect upon continued availability of these resources. Any construction also would require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, region, and state will benefit from the improved quality of the transportation system. These benefits will consist of improved accessibility and connectivity, savings in time, and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

1.3.6.2 Relationship between Short-Term and Long-Term Impacts

The following information is reproduced from Section 8.2 of the Draft EIS. The date for the MUMPO LRTP has been updated from 2030 to 2035.

The most disruptive short-term impacts associated with the proposed project would occur during land acquisition and project construction. However, these short-term uses of human, physical, socioeconomic, cultural, and natural resources would contribute to the long-term productivity of the project study area.

The short-term local impacts and use of resources by implementation of any of the DSAs would be consistent with the maintenance and enhancement of long-term productivity. Construction of the proposed Monroe Connector/Bypass would add a vital link to the long range transportation system for the region. The project is consistent with the long range transportation goals and objectives of the NCDOT *2009-2015 STIP* and the MUMPO *2035 LRTP*. It is anticipated that the roadway would enhance long-term access and connectivity opportunities in Union County and Mecklenburg County, and would support local, regional, and statewide commitments to transportation improvement and economic viability.

1.4 PUBLIC INVOLVEMENT AND AGENCY COORDINATION PRIOR TO THE DRAFT EIS

The following information is summarized from Section 9 of the Draft EIS, which discusses public involvement and agency coordination activities prior to publication of the Draft EIS. Public involvement and agency coordination activities since the Draft EIS are described in **Section 3** of this Final EIS.

1.4.1 PUBLIC INVOLVEMENT

1.4.1.1 Citizens Informational Workshops

In 2007, a series of CIWs were held on June 25 (at South Piedmont Community College) and June 26 (at NC Cooperative Extension Office – Union County Center). The workshops, hosted by the NCTA, presented the draft Statement of Purpose and Need for the project and the range of alternatives being considered for the project. They also gave an overview of the NCTA, the project schedule, the project development process, and the NEPA planning process. The workshops afforded the public an early opportunity to comment on the draft Statement of Purpose and Need as well as the range of alternatives being considered, per Section 6002 of SAFETEA-LU. Approximately 398 citizens signed in at those workshops, and 480 written comment forms were received at and following the workshops.

1.4.1.2 Local Officials Meeting

A Local Officials Meeting was held prior to the June 2007 CIWs to provide local officials a project overview and an opportunity to ask questions and submit comments. The meeting was held on June 25, 2007, at Monroe City Hall. A presentation was made by the NCTA covering the project overview, project financing options, and tolling aspect of the project. Following the presentation, an open discussion was held and officials were given the opportunity to ask questions.

1.4.1.3 Open Houses

A series of open house style meetings were held in September 2008 to present the draft functional designs for the DSAs. Approximately 200 individuals attended these open house meetings. Three stations displaying small-scale functional design plans were provided at each meeting site. NCTA representatives were assigned to each station to answer project specific questions in a one-on-one format. Large-scale plans also were displayed. Functional designs presented at these open houses were the same as those included in the Draft EIS and used for impact calculations. Public comments were accepted and incorporated into the Preferred Alternative as appropriate.

Prior to the September 2008 open house meetings, additional individual meetings were held with representatives of the Town of Stallings, C.A.R.E., Hendricks Automotive Group, CPCC, McGee Corporation, and the Union County Public Schools. These meetings afforded these stakeholders an opportunity to discuss specific concerns associated with the draft functional designs. C.A.R.E is a community-based group focused on informing and mobilizing residents against Corridor Segments 18 and 18A of the Monroe Connector/Bypass. At the time of the Draft EIS, the group had submitted more than 2,000 signatures in opposition to Corridor Segments 18 and 18A. No additional petitions have been received since then.

1.4.1.4 Small Group Meetings

Throughout the study process, the project study team met with a variety of organizations, agencies, and groups to exchange information, collect data, or to make a presentation about the project at the request of community groups. These groups included Bonterra Builders, CPCC, Fairhaven Subdivision and C.A.R.E., Hendricks Automotive Group, Lennar Homes, Matthews Transportation Summit, McGee Corporation, and Union County Public Schools, as well as several localities within the project study area, such as Monroe City Council, Town of Indian Trail, Town of Hemby Bridge, Stallings Town Council, Union County Commissioners, and Rocky River Rural Planning Organization (RPO). At these meetings, NCTA provided project updates and answered questions from attendees.

1.4.1.5 Other Outreach Efforts

Two newsletters, distributed to residents and property owners within the project study area, were used to provide the public with information about the project and project-related events (such as CIWs) and to seek comments from the public.

The first newsletter was distributed in June 2007 and announced the upcoming CIWs and included project information. The second newsletter was distributed in November 2007 and announced the selection of the DSAs. Each newsletter was mailed to more than 24,000 addresses.

A project Web site (NCTA Web site: www.ncturnpike.org/projects/monroe) provides project information, documents, previous newsletters, project maps, and an online comment form. The

online comment form enables users to add their name to the project mailing list and/or provide comments and ask questions. Visitors are also able to e-mail the project study team directly (at monroe@ncturnpike.org). The Web site is updated periodically as new information, documents, maps, and reports become available.

A toll-free hotline number was created for the project (1-800-475-6402). This provides a resource for citizens to ask questions, provide input, or request a meeting for a particular organization. All calls received were logged and responded to in a timely manner.

1.4.2 AGENCY COORDINATION

1.4.2.1 Scoping Letter

A formal scoping letter (as required by NEPA) was sent by NCTA to local, state, and federal agencies on January 5, 2007. The scoping letter is included in Appendix A-3 of the Draft EIS, along with the agency response letters. The purpose of the scoping letter was to solicit comments and collect pertinent project information early in the project development process. The coordination (NEPA scoping) between NCTA, NCDOT, FHWA, and the agencies aided the development of the Statement of Purpose and Need, range of alternatives considered, and the determination of the DSAs.

A second scoping letter was distributed on January 22, 2007 to solicit comments and invite local officials to a scoping meeting. This second scoping letter was not included in the Draft EIS, but it is included with the Errata in **Appendix A** of this Final EIS.

Table 9-2 in the Draft EIS lists the agencies and local officials that provided comments in response to the scoping letters (arranged by date), along with a brief summary of those comments.

1.4.2.2 Notice of Intent

A Notice of Intent to prepare a Draft EIS for the project was published by FHWA in the Federal Register on January 19, 2007 (Volume 72, No.12, pages 2,582–2,583).

1.4.2.3 Section 6002 Project Coordination Plan

In October 2007, in accordance with Section 6002 of SAFETEA-LU, the NCTA developed a Project Coordination Plan for the proposed Monroe Connector/Bypass project. The plan establishes a project schedule, sets a monthly schedule for coordination meetings, establishes agency review times, identifies a process for resolving issues of concern, and identifies cooperating and participating agencies. The Section 6002 Project Coordination Plan was developed and finalized in coordination with FHWA and NCDOT, as well as the cooperating and participating agencies.

Draft versions of the plan were shared with cooperating and participating agencies, and discussed at the TEAC meetings held February 14, 2007, and May 17, 2007. The plan was revised to incorporate comments received. The final Section 6002 Project Coordination Plan for the Monroe Connector/Bypass project is included in Appendix A-5 of the Draft EIS, along with copies of invitation letters to cooperating and participating agencies, and responses to those invitations.

1.4.2.4 Coordination with MUMPO

NCTA presented regular project updates at the bi-monthly meetings of the MUMPO and at the monthly meetings of the MUMPO Technical Coordinating Committee (TCC). Section 9.2.3.2 of the Draft EIS includes summaries of each of these meetings. Descriptions of meetings with MUMPO which occurred after the approval of the Draft EIS are included in **Section 3.2.2** of this Final EIS.

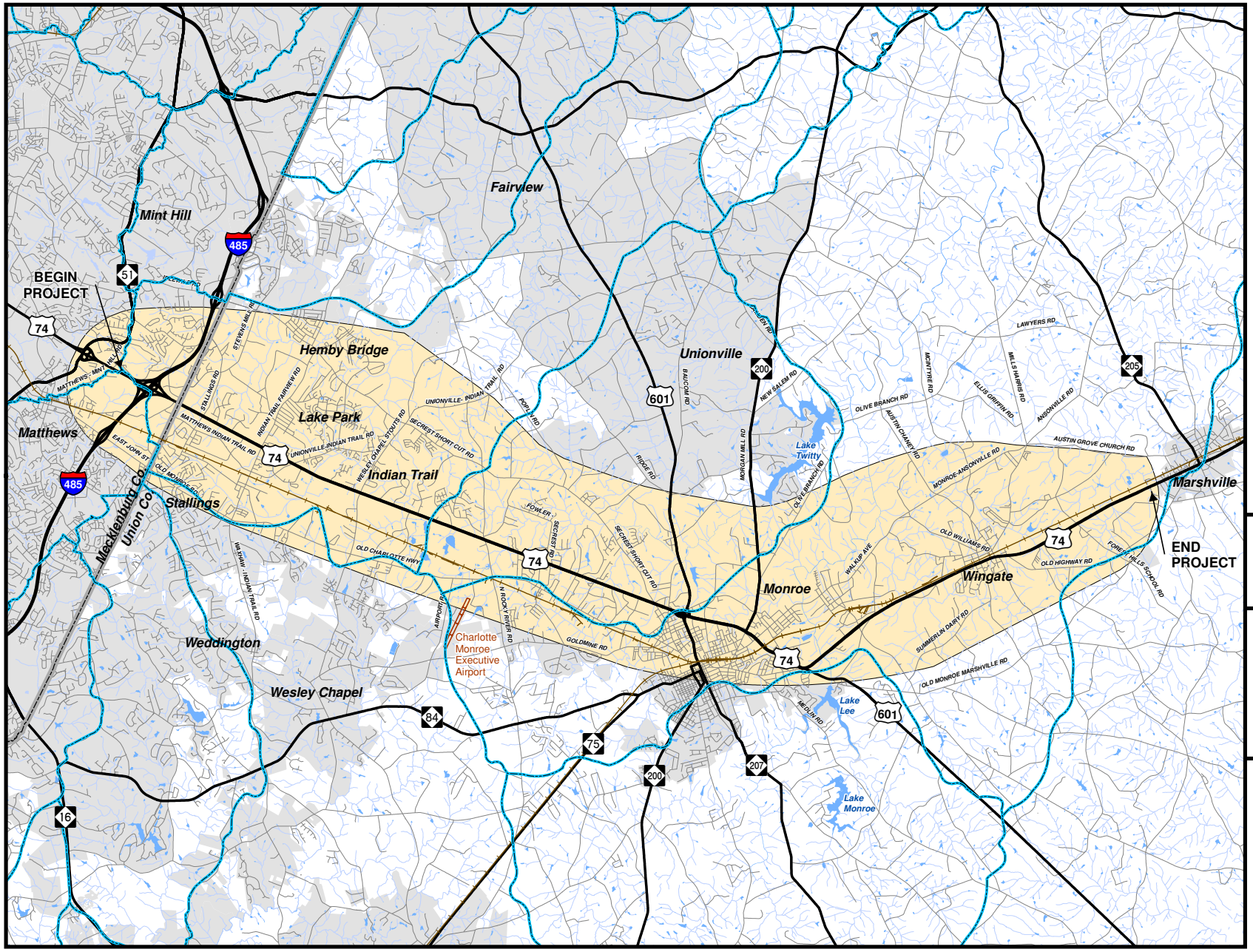
1.4.2.5 Turnpike Environmental Agency Coordination Meetings

The NCTA conducted regularly scheduled agency coordination meetings throughout the project development process. These TEAC meetings were held to review the status of current NCTA projects and to discuss environmental concerns and permitting requirements. Table 9-6 in the Draft EIS provides summaries of the TEAC meetings held for the Monroe Connector/Bypass project prior to the publication of the Draft EIS. Descriptions of TEAC meetings which occurred after the publication of the Draft EIS are included in **Section 3.2** of this Final EIS.

1.5 UNRESOLVED ISSUES IN THE DRAFT EIS

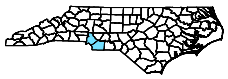
Section S.9 of the Draft EIS lists unresolved issues to be addressed prior to the publication of the Final EIS. These issues are listed below, along with a brief description of the resolution.

- Selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) and development of avoidance and minimization efforts within the corridor of the Preferred Alternative in coordination with regulatory agencies.
    - NCTA and FHWA have identified DSA D as the Preferred Alternative. USACE will officially identify the LEDPA during the permitting process. Avoidance and minimization measures for the Preferred Alternative are discussed in **Section 2.3.3** and **Section 2.5.4.4** of this Final EIS.
- Preparation of a conceptual mitigation plan for unavoidable wetland and stream impacts.
    - A conceptual mitigation plan was prepared for the Preferred Alternative, as described in **Section 2.5.4.4** of this Final EIS.
- Completion of additional archaeological surveys for the Preferred Alternative corridor, as necessary, based on coordination with NCDOT and the State HPO.
    - Additional archaeological surveys for the Preferred Alternative were conducted, as described in **Sections 2.4** and **2.5.3.2** of this Final EIS.
- Development and implementation of a survey protocol for the Carolina heelsplitter in coordination with USFWS and, if required, Section 7 consultation under the Endangered Species Act to consider impacts on this species and its critical habitat.
    - Coordination with the USFWS regarding the Carolina heelsplitter and its critical habitat is summarized in **Section 2.5.4.5** of this Final EIS.



Legend

- Project Study Area
- Watershed Basin
- Lakes
- Streams
- Railroad



Source: Mecklenburg County and Union County GIS. Map Printed November 2009.

0 0.875 1.75
Miles

NORTH CAROLINA Turnpike Authority

STIP PROJECT NO. R-3329/R-2559

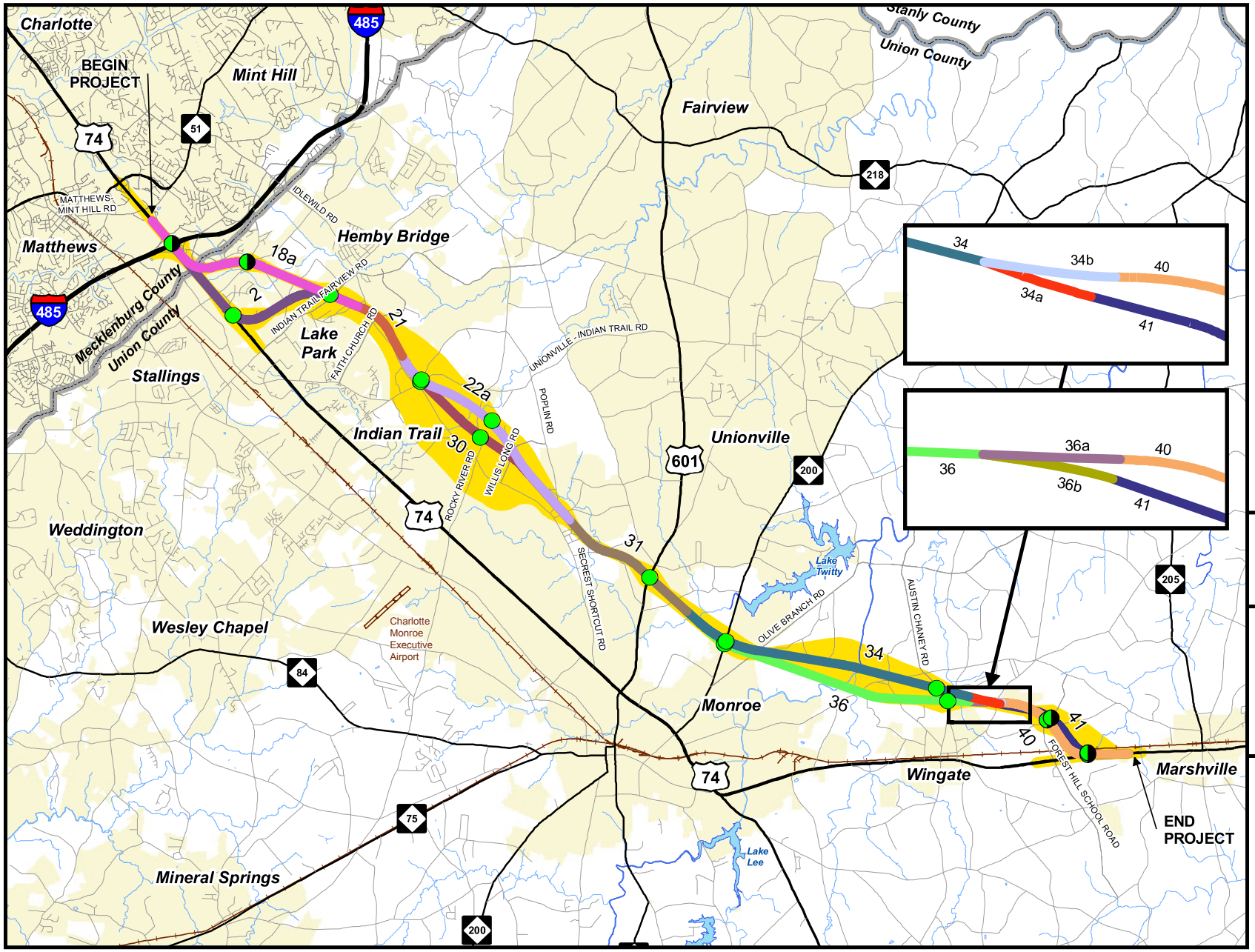
Mecklenburg County and Union County

MONROE CONNECTOR/ BYPASS

PROJECT STUDY AREA

Figure 1-1

FEIS_Study_Area.mxd 12-10-09



STIP PROJECT
NO. R-3329/R-2559

Mecklenburg County and Union County

MONROE CONNECTOR/ BYPASS

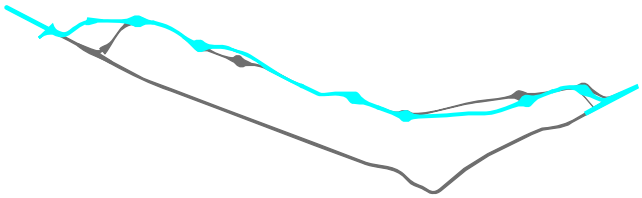
DETAILED STUDY ALTERNATIVES

Figure 1-2a

FEIS_02a-dsa_rev.ai 10-27-09

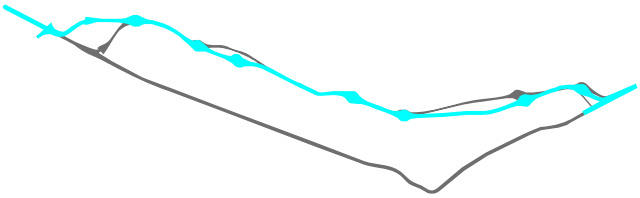
Alternative A

(Segments 18A, 21, 22A, 31, 36, 36A, and 40)



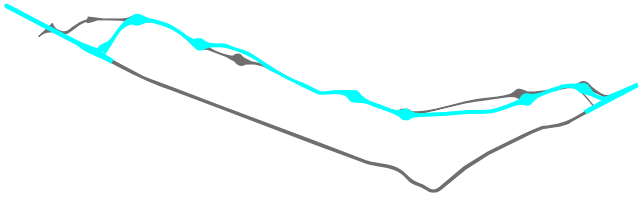
Alternative B

(Segments 18A, 21, 30, 31, 36, 36A, and 40)



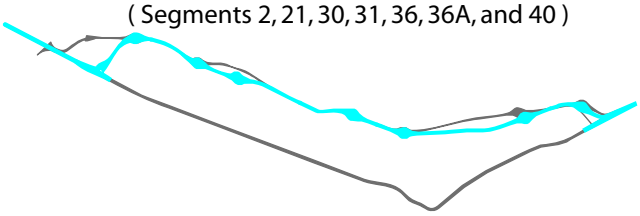
Alternative C

(Segments 2, 21, 22A, 31, 36, 36A, and 40)



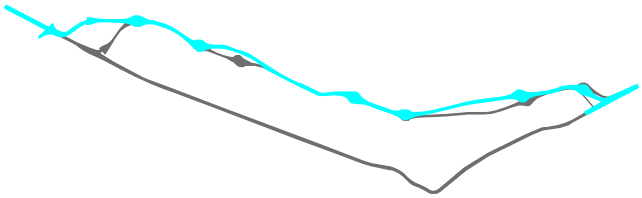
Alternative D

Recommended Alternative in Draft EIS
Preferred Alternative in Final EIS
(Segments 2, 21, 30, 31, 36, 36A, and 40)



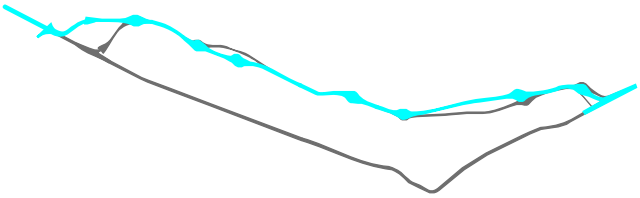
Alternative A1

(Segments 18A, 21, 22A, 31, 34, 34B, and 40)



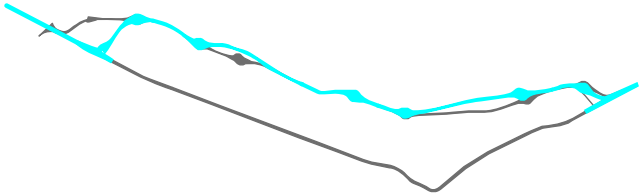
Alternative B1

(Segments 18A, 21, 30, 31, 34, 34B, and 40)



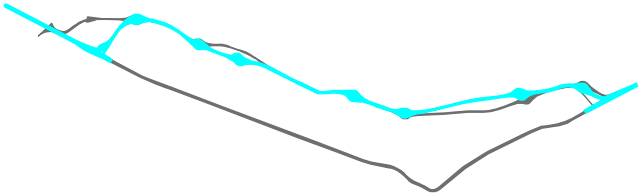
Alternative C1

(Segments 2, 21, 22A, 31, 34, 34B, and 40)



Alternative D1

(Segments 2, 21, 30, 31, 34, 34B, and 40)



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

STIP PROJECT NO. R-3329 / R-2559
Mecklenburg County and Union County

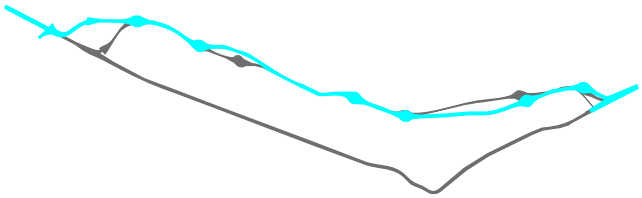
DETAILED STUDY ALTERNATIVES

FIGURE 1-2b

FEIS_Prelim_Corrr_SegREV.ai 02.24.09

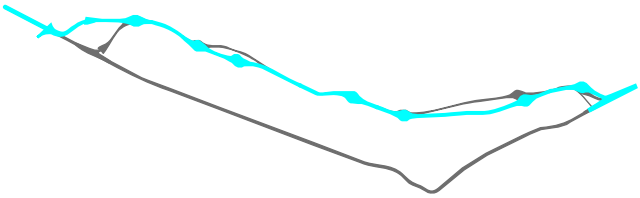
Alternative A2

(Segments 18A, 21, 22A, 31, 36, 36B and 41)



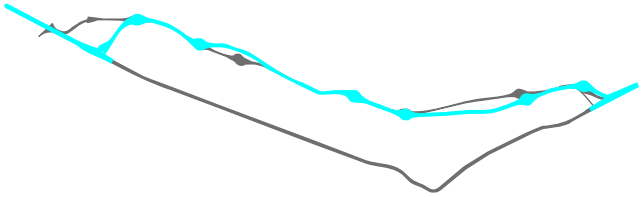
Alternative B2

(Segments 18A, 21, 30, 31, 36, 36B and 41)



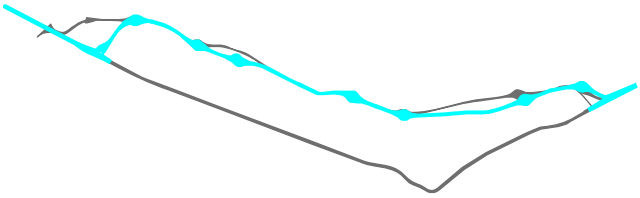
Alternative C2

(Segments 2, 21, 22A, 31, 36, 36B, and 41)



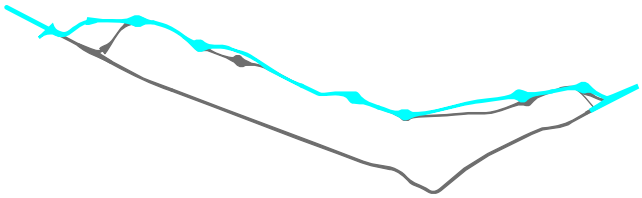
Alternative D2

(Segments 2, 21, 30, 31, 36, 36B, and 41)



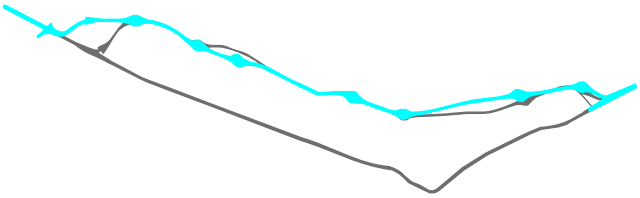
Alternative A3

(Segments 18A, 21, 22A, 31, 34, 34A, and 41)



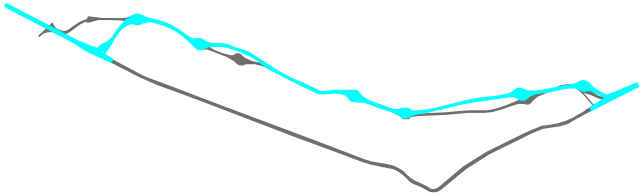
Alternative B3

(Segments 18A, 21, 30, 31, 34, 34A, and 41)



Alternative C3

(Segments 2, 21, 22A, 31, 34, 34A, and 41)



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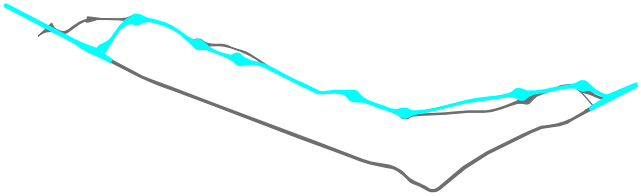
(Segments 2, 21, 30, 31, 34, 34A, and 41)



NORTH CAROLINA Turnpike Authority

MONROE CONNECTOR / BYPASS

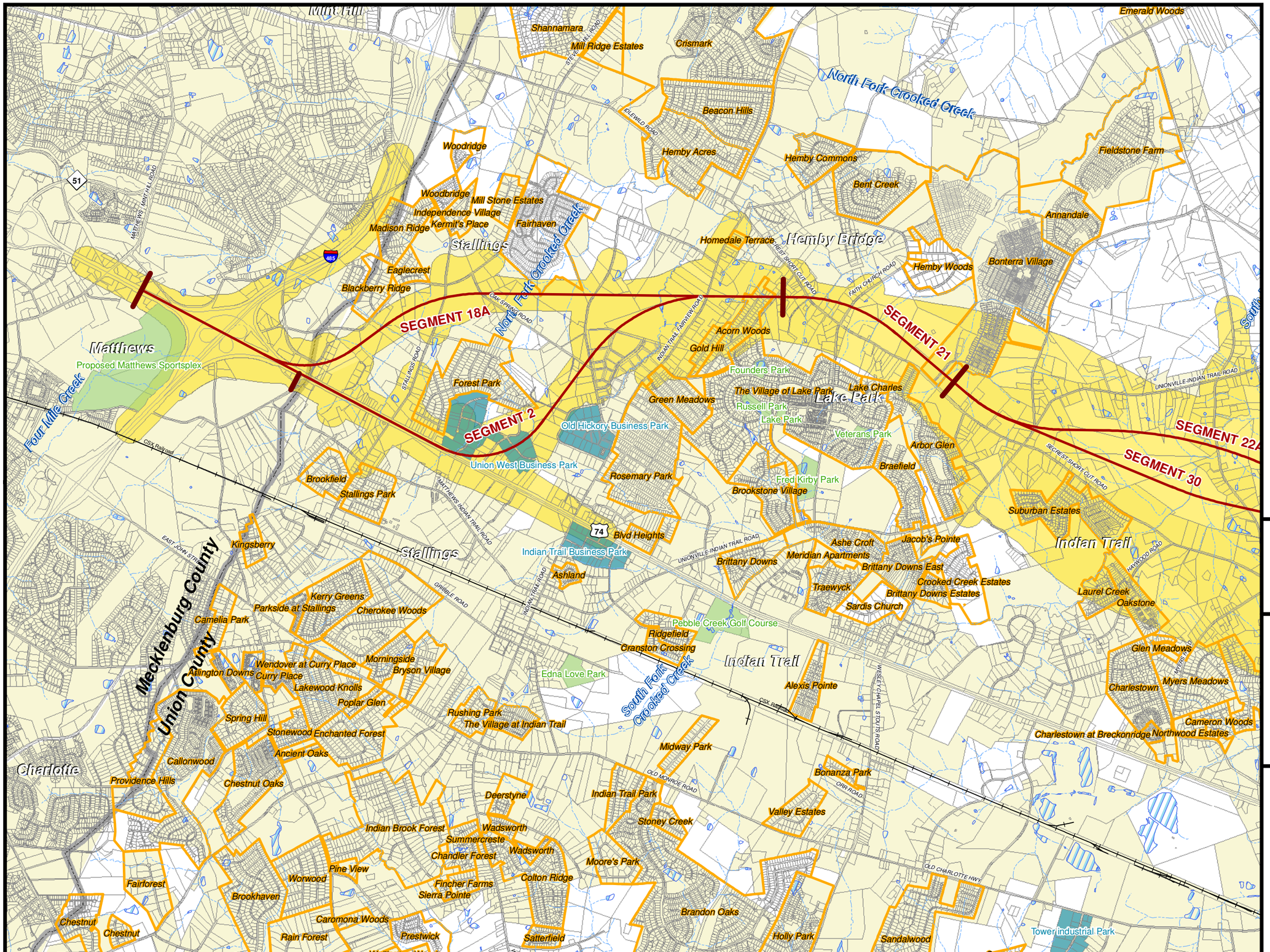
STIP PROJECT NO. R-3329 / R-2559

Mecklenburg County and Union County

DETAILED STUDY ALTERNATIVES

FIGURE 1-2c

FEIS_Prelim_Corrr_SegREV.ai 02.24.09



Legend

- Subdivisions
- Segment Breaklines
- Functional Design Centerline
- Railroad
- Streams
- Lakes
- Parks
- Business Parks
- Parcels
- Corridor Study Area
- Municipal Limits

Source: Mecklenburg County and Union County GIS.
Map Printed November 2009.

0 1,500 3,000
Feet

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. R-3329/R-2559

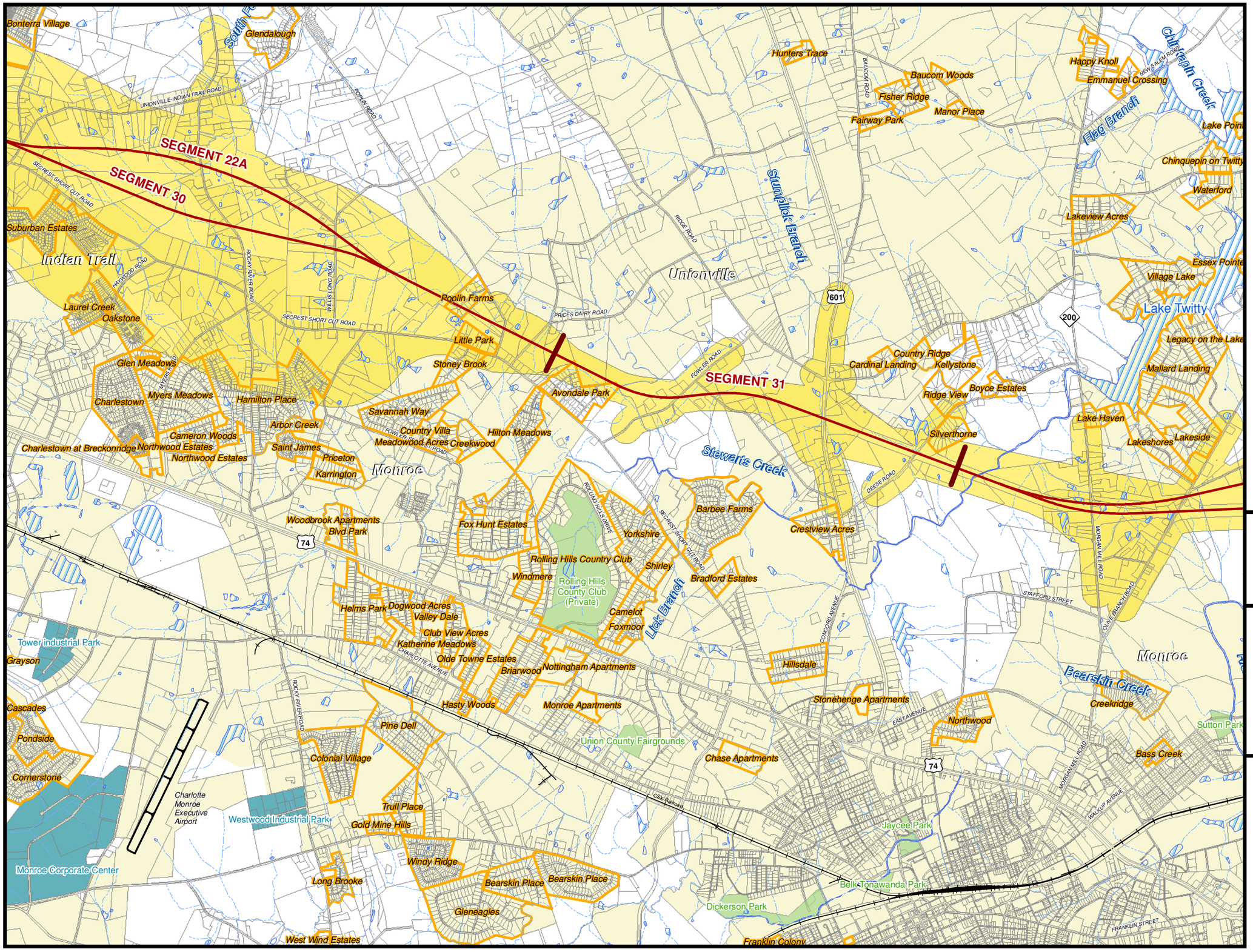
Mecklenburg County and Union County

MONROE CONNECTOR/ BYPASS

NEIGHBORHOODS

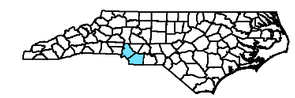
Figure 1-3a

FEIS_Neighborhoods.mxd 12-11-09



Legend

- Subdivisions
- Segment Breaklines
- Functional Design Centerline
- Railroad
- Streams
- Lakes
- Parks
- Business Parks
- Parcels
- Corridor Study Area
- Municipal Limits



Mecklenburg and Union Counties
North Carolina Counties

Source: Mecklenburg County and Union County GIS.
Map Printed November 2009.

0 1,500 3,000
Feet

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. R-3329/R-2559

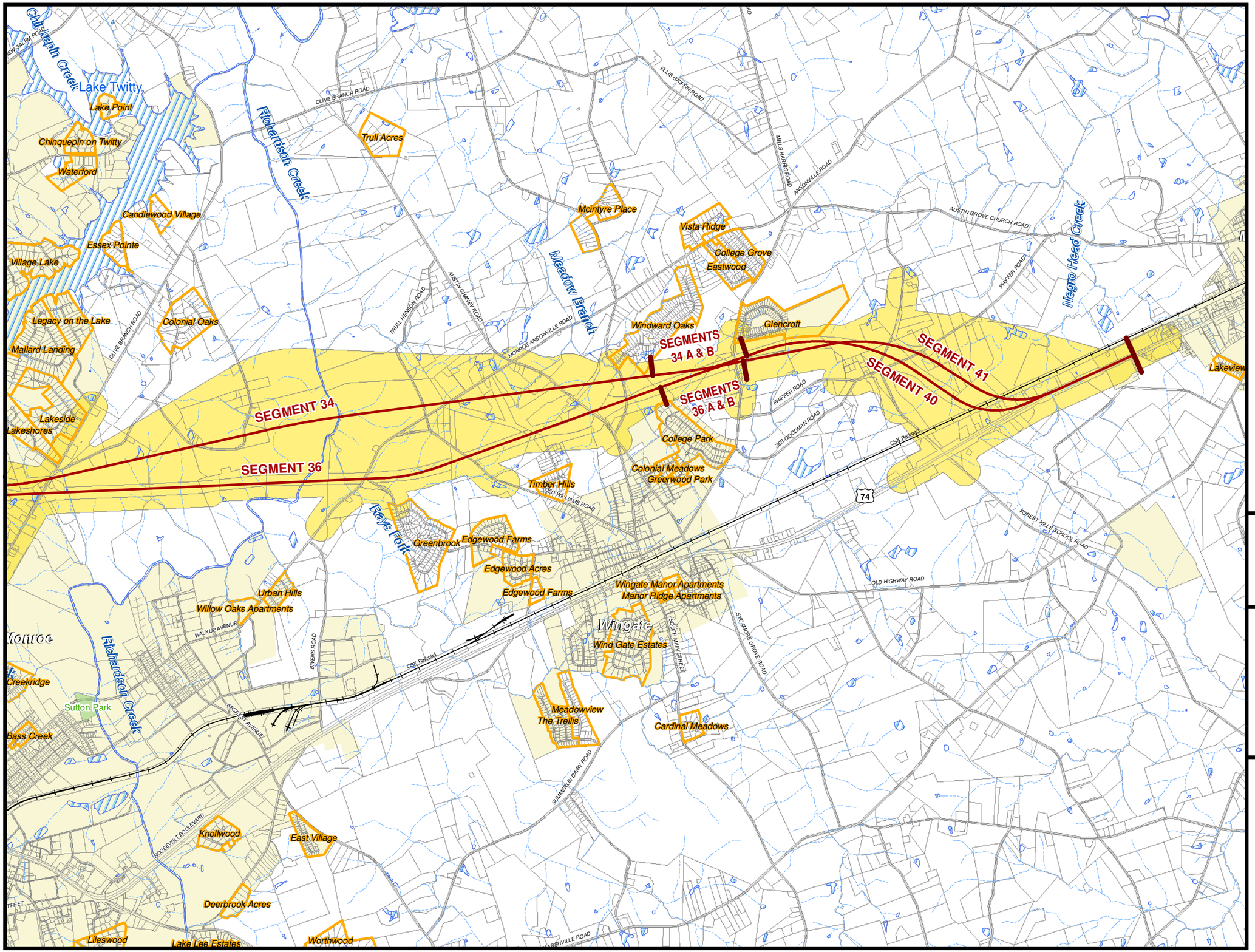
Mecklenburg County and Union County

MONROE CONNECTOR/ BYPASS

NEIGHBORHOODS

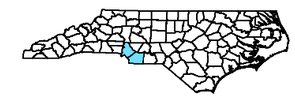
Figure 1-3b

FEIS_Neighborhoods.mxd 12-11-09



Legend

- Subdivisions
- Segment Breaklines
- Functional Design Centerline
- Railroad
- Streams
- Lakes
- Parks
- Business Parks
- Parcels
- Corridor Study Area
- Municipal Limits



Source: Mecklenburg County and Union County GIS.
Map Printed November 2009.

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Feet

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. R-3329/R-2559

Mecklenburg County and Union County

MONROE CONNECTOR/ BYPASS

NEIGHBORHOODS

Figure 1-3c

FEIS_Neighborhoods.mxd 12-11-09