TABLE C-1: Summary of Environmental Impacts from Draft EIS

Issue	Detailed Study Alternative															
	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
Length (miles)	20.6	20.5	19.7	19.7	20.5	20.5	19.6	19.6	20.6	20.5	19.7	19.6	20.5	20.5	19.6	19.6
Probable Range of Construction Costs (millions $)[1,2]	443.7–512.9	444.0–514.3	445.1–513.6	445.4–516.5	435.7–505.3	436.2–507.4	437.1–506.3	437.6–508.6	437.6–502.2	437.9–508.5	439.0–507.0	439.4–508.9	430.0–498.6	431.3–501.3	431.9–499.9	432.2–502.1
Probable Range of Right-of-Way Costs (millions $)[1,3]	160.2–201.4	166.7–197.5	176.3–221.6	178.4–224.2	174.2–218.9	176.4–221.8	190.9–239.5	192.8–242.1	164.6–206.7	166.4–209.1	180.8–227.3	182.8–229.6	178.4–224.2	180.2–226.7	194.7–244.9	196.7–247.3
Probable Range of Environmental Mitigation Costs (millions $)[1,4]	11.6–12.5	10.8–11.6	11.1–11.9	10.2–11.0	12.3–13.3	11.5–12.4	11.7–12.6	10.9–11.7	12.0–12.9	11.1–11.9	11.4–12.2	10.5–11.3	12.6–13.6	11.8–12.7	12.1–13.0	11.2–12.1
Probable Range of Total Costs (millions $)[1,5]	697.3–824.5	703.7–821.5	714.5–845.0	716.3–850.0	703.1–834.0	705.3–838.5	720.7–855.2	722.6–859.5	695.0–821.3	696.5–826.6	712.4–843.4	714.1–847.0	701.0–832.0	703.7–836.7	718.8–853.6	720.7–857.6
Median Total Project Costs (millions $)[16]	754.6	755.7	773.9	777.4	762.5	765.7	781.9	785.3	752.2	755.2	772.1	774.5	760.9	763.7	780.3	783.3
LAND USE																
Compatible with Land Use Plans	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ICE[6]: Potential for Accelerated Growth (Indirect Effect)	The DSAs are not expected to vary in their potential to accelerate growth. These potentials are as follows: Zone 1 – None; Zone 2 – Low; Zone 3 – Moderate; Zone 4 – None; Zone 5 – High. Additional information can be found in Draft EIS **Section 7.2.1**															
RELOCATIONS AND NEIGHBORHOOD IMPACTS																
Residential Relocations	94	97	104	107	112	115	122	125	118	121	128	131	136	139	146	149
Business Relocations	14	14	48	48	14	14	48	48	15	15	49	49	15	15	49	49
Named Neighborhoods Impacted	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
ICE[6]: Potential for Indirect Effects Due to Proximity to Neighborhoods	Variations in New Location Alternative DSA corridors are so small that indirect impacts are not expected to vary by alternative. The slight variations in the interchange locations by alternative are not anticipated to affect the location of residential development. Commercial and industrial development may shift somewhat due to the variations in interchange locations. However, these variations should not affect the quantity or type of development that occurs.															
MITIGATION	Conform to Uniform Relocation Act; continue public outreach efforts; meet with neighborhood-organization and business-community representatives; continue to look for design improvements to lessen impacts.															

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Issue	Detailed Study Alternative															
	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
COMMUNITY SERVICES AND FACILITIES IMPACTS																
Public Parks Impacted[7]	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
Private Recreational Facilities Impacted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Schools Impacted[8]	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
Churches with Impacts to Main Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Churches with Impacts to Property and/or Outbuildings Only	5	4	4	3	5	4	4	3	5	4	4	3	5	4	4	3
Cemeteries Requiring Relocation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MITIGATION	Conform to Uniform Relocation Act. Continue public outreach efforts; meet with school district representatives regarding site planning, bus routes and property encroachments. Coordinate with church leaders on property encroachments and relocation strategies. Continue to look for design improvements to lessen impacts.															
NOISE IMPACTS																
Total # of Impacted Receptors	130	127	152	150	138	135	160	158	120	117	142	140	128	125	151	148
ICE[6]: Overall Ambient Noise Increase	Construction of the New Location Alternatives would introduce larger volumes of traffic into areas that do not currently experience high traffic volumes. However, impacts are not expected to vary substantially by DSA.															
NOISE MITIGATION																
Total Length of Noise Barriers (ft)	6,458	6,458	6,458	6,458	6,458	6,458	6,458	6,458	4,115	4,115	4,115	4,115	4,115	4,115	4,115	4,115
Total # of Noise Barriers	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
Number of Benefitted Receptors	51	51	51	51	51	51	51	51	34	34	34	34	34	34	34	34
AIR QUALITY IMPACTS																
Transportation Conformity	The LRTPs and air quality conformity determinations for the MUMPO region will need to be updated prior to the completion of the ROD to modify the Monroe Bypass portion of the project to a toll facility.															
Mobile Source Air Toxics (MSATs)	Current tools and science not adequate to quantify the health impacts from MSATs.															

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	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
FARMLAND IMPACTS																
Farm Relocations	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
MITIGATION	None required.															
UTILITIES IMPACTS																
Power Transmission Line Crossings[9]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gas Transmission Pipeline Crossings[10]	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Railroad Crossings	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MITIGATION	Coordinate temporary and permanent changes in utility lines with each of the utility providers.															
VISUAL IMPACTS																
Changes in the Visual Landscape	Visual impacts to neighborhoods are not expected to vary substantially by DSA. The elevated segment along existing US 74 proposed under DSA Segment 2 (DSAs C, D, C1, D1, C2, D2, C3 and D3) would have unique visual impacts.															
MITIGATION	Implement a landscaping plan for the project. Investigate aesthetic treatments and structural alternatives for the elevated roadway segment in DSA Segment 2, in coordination with local jurisdictions.															
HAZARDOUS MATERIALS IMPACTS																
Hazardous Materials Sites within DSAs	7	6	12	11	7	6	12	11	7	6	12	11	7	6	12	11
MITIGATION	A more detailed field reconnaissance will be conducted for the Preferred Alternative.															
FLOODPLAINS/FLOODWAYS IMPACTS																
Floodplain Crossings	14	14	11	11	13	13	10	10	14	14	11	11	13	13	10	10
Floodway Crossings	3	3	3	3	2	2	2	2	3	3	3	3	2	2	2	2
Number of Major Culverts/Pipes (>72" diameter)[11]	38	36	37	35	36	34	35	33	38	36	37	35	36	34	35	33
MITIGATION	The effect of all the DSAs can be mitigated through proper sizing and design of hydraulic structures (e.g., culverts, bridges, and channel stabilization). A detailed hydrologic and hydraulic analysis will be conducted for the Preferred Alternative.															

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	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
CULTURAL RESOURCES IMPACTS																
Historic Resources with No Adverse Effect[12]	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall Potential for Archaeological Sites	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
MITIGATION	During final design of the Preferred Alternative, the designs will be reviewed to ensure that applicable conditions are met to maintain the "No Adverse Effect" determinations. Following selection of the Preferred Alternative, a final decision regarding any necessary archaeological surveys will be made.															
SECTION 4(F)/6(F) RESOURCES IMPACTS																
Section 4(f)Resources (full "use")	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Section 4(f) Resources *de miminis* Impact[13]	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
Section 6(f) Resources Impacted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MITIGATION	All applicable conditions must be met in order to maintain the "No Adverse Effects" determination to cultural resources. NCTA will continue coordination with local agencies with jurisdiction over park and recreation resources to ensure that right-of-way and construction limits within the property boundaries are minimized to the extent feasible.															
NATURAL COMMUNITIES IMPACTS[14]																
Disturbed/Clearcut (acres)	230	234	208	211	237	240	215	218	232	235	209	212	238	241	216	219
Agricultural (acres)	546	552	494	499	608	613	555	560	561	566	509	514	622	627	570	575
Upland Forested (acres)	507	498	460	450	416	406	367	358	514	505	467	457	423	413	374	365
Successional (acres)	101	97	105	101	88	84	92	88	101	97	105	101	88	84	92	88
Open Water (acres)	10	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8
ICE[6]: Effects on Wildlife and Habitat through Habitat Fragmentation	All DSAs equally have the potential to indirectly affect terrestrial communities through fragmentation, which would be the result of road construction and induced land use change.															
MITIGATION	An erosion and sedimentation control plan will be developed for the Preferred Alternative to prevent runoff, erosion and sedimentation impacts, and to minimize impacts to aquatic communities and wildlife in accordance with the NCDENR guidelines and Best Management Practices. Control measures will be implemented to reduce the potential for spreading non-native invasive plant species.															

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Issue	Detailed Study Alternative															
	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
JURISDICTIONAL RESOURCES IMPACTS[15]																
Pond Impacts (acres)	2.5	2.6	2.5	2.6	3.7	3.8	3.7	3.8	2.5	2.6	2.5	2.6	3.7	3.8	3.7	3.8
Wetland Impacts (acres)	10.7	7.7	11.0	8.1	10.3	7.3	10.7	7.7	9.5	6.6	9.9	7.0	9.2	6.2	9.5	6.6
Perennial Stream Impacts (linear ft.)	10,500	10,412	9,882	9,794	11,085	10,997	10,467	10,379	11,798	11,710	11,180	11,092	12,383	12,295	11,765	11,677
Intermittent Stream Impacts (linear ft.)	13,118	12,385	13,001	12,269	11,969	11,237	11,853	11,121	13,374	12,642	13,257	12,525	12,225	11,493	12,109	11,376
Total Stream Impacts (linear ft.)	23,618	22,798	22,883	22,063	23,054	22,234	22,320	21,500	25,172	24,352	24,437	23,617	24,608	23,788	23,873	23,053
Bridge Crossings over Streams	9	9	6	6	8	8	5	5	9	9	6	6	8	8	5	5
Linear Feet of Stream requiring Mitigation	14,314	13,439	13,425	12,550	15,815	14,941	14,926	14,052	14,885	14,010	13,996	13,122	16,387	15,512	15,498	14,623
ICE[6]: Effects on Water Quality, Wetlands, Impaired Waterways, and Watersheds	All DSAs equally have the potential to indirectly affect water quality, wetlands, impaired waterways, and watersheds, which would be the result of road construction and induced land use change															
MITIGATION	The DSAs incorporate measures to avoid and minimize impacts to Waters of the US. The NCTA agreed to include several bridges in the functional engineering designs, beyond those required to convey floodwaters. In addition, final design efforts will examine all appropriate and practical possibilities of avoiding and minimizing impacts to Waters of the US. Strict adherence to Best Management Practices for projects within sensitive watersheds will assist in minimizing project impacts.															
PROTECTED SPECIES IMPACTS																
Carolina Heelsplitter	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved
Carolina Heelsplitter Critical Habitat in Goose Creek and Duck Creek	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved	Unresolved
Schweinitz's Sunflower[17]	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect	May Affect/ Not Likely to Adversely Affect
Michaux's Sumac	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
Smooth Coneflower	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect

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	A	B	C	D	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
MITIGATION	Concurrence needed from US Fish and Wildlife Service (USFWS) on the biological conclusions of May Affect/Not Likely to Adversely Affect. Once the Preferred Alternative is selected, additional surveys will be conducted as needed for protected species, in coordination with USFWS.															

1. Source: HNTB, January 2009
2. Construction costs include construction, utilities, and administrative costs.
3. Source: CLA, January 2009; Future right-of-way costs were modeled to anticipated year of acquisition using inflation rates ranging from 5% to 12%, with 8% being most likely.
4. Environmental mitigation costs are based on the North Carolina **Ecosystem Enhancement Program** (NCEEP) fee schedule dated July 18, 2008, for estimated impacts to streams and wetlands and assume mitigation for impacts to all wetlands, all perennial streams, and intermittent streams with a NCDENR-DWQ stream rating greater than or equal to 26.
5. Total cost may not add up exactly, due to rounding.
6. ICE = Indirect and/or Cumulative Effect
7. Proposed Matthews Sportsplex (owned by Mecklenburg County)
8. Central Piedmont Community College – no impacts to school facilities (including sports fields and recreational areas). These same DSAs pass just south of Stallings Elementary School with no impacts to school use or access, including sports fields and recreational areas.
9. There may be one to three individual lines in a power-transmission easement. This table reports the numbers of individual transmission line crossings.
10. The three gas transmission pipeline crossings are located in easements parallel to US 601, NC 200, and Olive Branch Road (SR 1006).
11. Includes all of the multiple pipes/culverts required at interchanges.
12. Secrest Farm, Hiram Secrest House, and Perry-McIntyre House. A determination of No Effect was made for the William Bivens House.
13. *De minimis* impacts on publicly-owned parks are defined as those that do not adversely affect the activities, features, and attributes of the Section 4(f) resource. The proposed Matthews Sportsplex is minimally impacted by DSAs A, B, A1, B1, A2, B2, A3, and B3.
14. Acreages calculated within the DSA right-of-way limit.
15. These impacts were calculated using the functional engineering designs' construction limits, with an additional 40-foot buffer.
16. Source: HNTB, March 2009
17. Due to its location on the southern edge of the DSA corridor, it is assumed that all impacts to the observed Schweinitz's sunflower population will be avoided.