

APPENDIX C
DRAFT EIS IMPACT SUMMARY TABLES

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

ISSUE	DETAILED STUDY ALTERNATIVE											
	4	5	9	22	23	27	58	64	68	76	77	81
Length (miles)	21.4	21.5	21.9	21.9	22.0	22.4	23.1	23.3	23.7	21.8	21.9	22.2
Construction Costs (millions \$) ¹	955.0-1,140.8	980.2-1,173.2	974.5-1,168.4	999.5-1,195.0	1,022.6-1,228.2	1,019.7-1,221.7	978.2-1,171.3	992.4-1,188.6	986.2-1,180.9	982.1-1,174.0	1,007.4-1,209.6	1,000.5-1,199.7
Right-of-Way Cost (millions \$) ¹	186.7-228.5	199.1-243.0	173.9-213.0	197.0-241.1	208.8-255.5	183.5-224.5	197.3-241.3	215.7-263.2	190.8-233.2	182.4-223.2	194.6-237.6	169.6-207.3
Environmental Mitigation Costs(millions \$) ¹	38.9-41.1	34.8-36.7	32.2-34.0	40.4-42.6	36.4-38.4	33.8-35.7	41.5-43.7	34.3-36.1	31.8-33.5	37.7-39.8	33.2-35.0	31.1-32.8
Total Costs (millions \$) ¹	1,180.6-1,410.4	1,214.1-1,452.9	1,180.6-1,415.4	1,236.9-1,478.7	1,267.9-1,522.0	1,237.1-1,481.9	1,217.0-1,456.3	1,242.4-1,488.0	1,208.7-1,447.6	1,202.1-1,436.9	1,235.2-1,482.3	1,201.2-1,439.8
Median Total Project Cost (millions \$) ¹	1,280.5	1,316.9	1,282.0	1,342.2	1,378.4	1,342.9	1,321.2	1,348.2	1,312.6	1,304.3	1,341.9	1305.0
LAND USE												
Compatible with Land Use Plans	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ICE ² : Potential for Accelerated Growth and Indirect Effects in Gaston County	High	High	High	High	High	High	High	High	High	High	High	High
RELOCATIONS AND NEIGHBORHOOD IMPACTS												
Residential Relocations	377	358	348	373	354	344	359	336	326	384	365	355
Business Relocations	38	33	37	40	35	39	30	26	30	29	24	28
Named Neighborhoods	21	24	18	19	22	16	17	21	15	18	21	15
Rural Neighborhoods ³	8	8	7	6	6	5	10	10	9	7	7	6
ICE ² : Potential for indirect effects due to proximity to neighborhoods	Most	Most	Most	Most	Moderate	Most	Most	Least	Moderate	Most	Least	Moderate

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	4	5	9	22	23	27	58	64	68	76	77	81
MITIGATION	Conform to Uniform Relocation Act; continue public outreach efforts; meet with neighborhood organization and business community representatives; continue to evaluate design improvements to lessen impacts.											
COMMUNITY SERVICES AND FACILITIES IMPACTS												
Public Parks ⁴	1	1	1	1	1	1	1	1	1	1	1	1
Private Recreational Facilities ⁵	2 ^{b,d}	3 ^{b,c,e}	3 ^{b,c,d}	1 ^d	2 ^{c,e}	2 ^{c,d}	2 ^{a,d}	3 ^{a,c,e}	3 ^{a,c,d}	2 ^{a,d}	3 ^{a,c,e}	3 ^{a,c,d}
Schools ⁶	1	0	0	1	0	0	2	1	1	2	1	1
Churches with Impacts to Main Buildings	2	3	2	1	2	1	1	2	1	0	1	0
Churches with Impacts to Property and/or Outbuildings Only	3	3	1	4	4	2	2	2	0	2	2	0
Cemeteries Requiring Relocation	1	1	0	1	1	0	1	1	0	1	1	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 evaluate design improvements to lessen impacts.											
NOISE IMPACTS												
Total # of Impacted Receptors	302	271	245	298	267	241	272	231	204	309	278	276
ICE ² : Overall ambient noise increase	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects	Weak to moderate effects
NOISE MITIGATION												
Total Length of Noise Barriers (ft)	22,162	19,220	20,562	19,922	16,980	18,322	13,926	10,335	11,677	17,967	15,025	16,367
Total # of Noise Barriers ⁷	13	11	12	11	9	10	8	6	7	10	8	9

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Number of Benefitted Receptors	191	157	169	171	144	149	132	98	110	161	128	139
AIR QUALITY IMPACTS												
Transportation Conformity	The LRTPs and air quality conformity determinations for the MUMPO and GUAMPO regions will need to be updated prior to the completion of the Record of Decision so the project design concept and scope are consistent.											
Mobile Source Air Toxics (MSATs)	Qualitative assessment completed. Current tools and science not adequate to quantify the health impacts from MSATs.											
FARMLAND IMPACTS												
VAD ⁸ Acreage Impacted by right of way	44.7	49.2	49.2	44.7	49.2	49.2	68.8	138.4	138.4	64.0	68.5	68.5
Farm Relocations	0	1	1	0	1	1	0	2	2	0	1	1
ICE ² : Potential for indirect effects on agriculture and farmland	Least	Least	Least	Least	Least	Least	Moderate	Most	Most	Moderate	Moderate	Moderate
MITIGATION	None required.											
UTILITIES IMPACTS												
Power Transmission Line Crossings ¹⁰	14	13	14	14	13	14	18	17	17	17	15	17
Gas Transmission Pipeline Crossings ¹¹	4	4	4	4	4	4	4	4	4	4	4	4
Railroad Crossings	2	1	2	2	1	2	2	1	2	2	1	2
MITIGATION	Coordinate temporary and permanent changes in utility lines with each of the utility providers.											
VISUAL IMPACTS												
Changes in the Visual Landscape	Most visual impacts	Most visual impacts	Moderate visual impacts	Moderate visual impacts	Moderate visual impacts	Least visual impacts	Moderate visual impacts	Least visual impacts				

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MITIGATION	Implement a landscaping plan for the project. Investigate the feasibility and reasonableness of cost-effective treatments for the bridge sides, piers, and railings to enhance aesthetics.											
HAZARDOUS MATERIALS IMPACTS												
Hazardous Materials Sites within DSA Corridor	24	23	24	22	21	22	14	12	13	14	13	14
MITIGATION	A more detailed field reconnaissance will be conducted for the Preferred Alternative.											
FLOODPLAINS/FLOODWAYS IMPACTS												
Floodplain Crossings	12	13	13	12	13	13	11	12	12	10	11	11
Longitudinal Floodplain Encroachment	1	1	1	0	0	0	0	0	0	0	0	0
Floodway Crossings	10	10	10	9	9	9	7	7	7	7	7	7
Number of Major Culverts/Pipes (>72" diameter) ¹²	47	43	45	45	41	43	47	42	44	42	39	40
MITIGATION	The effect of all the DSAs can be mitigated through proper sizing and design of hydraulic structures (culverts, bridges, and channel stabilization). A detailed hydrologic and hydraulic analysis will be conducted for the Preferred Alternative.											
CULTURAL RESOURCES IMPACTS												
Historic Resources with No Adverse Effect ¹³	1 ^a	2 ^{b,c}	2 ^{b,c}	1 ^a	2 ^{b,c}	2 ^{b,c}	2 ^{a,e}	3 ^{b,d,e}	3 ^{b,d,e}	2 ^{a,e}	3 ^{b,c,e}	3 ^{b,c,e}
Overall Potential for Archaeological Sites	High	Moderate	Moderate	High	Low	Low	High	Moderate to High	Moderate to High	High	Moderate	Moderate
MITIGATION	During final design of the Preferred Alternative, the designs will be reviewed to ensure the applicable conditions are met to maintain the No Adverse Effect determinations. The Preferred Alternative, once defined, will be surveyed to determine if archaeological sites eligible for listing on the NRHP are present.											

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SECTION 4(F)/6(F) RESOURCES IMPACTS													
Section 4(f) Resources with <i>de minimis</i> Impact ¹⁴	1	1	1	1	1	1	2	2	2	2	2	2	
Section 6(f) Resources	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. The 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 IMPACTS¹⁵													
Disturbed/Clearcut (acres)	552	561	567	544	553	560	513	535	542	514	523	529	
Agricultural (acres)	121	142	177	121	142	177	153	220	256	128	148	184	
Upland Forested (acres)	913	902	882	982	972	951	1042	1008	987	965	955	935	
Successional (acres)	155	128	114	125	99	85	149	117	102	156	130	115	
Open Water (acres)	22	26	21	22	26	21	22	26	21	22	26	21	
ICE ² : Effects on wildlife and habitat through habitat fragmentation	Weak to moderate effects	Strong effects	Weak to moderate effects	Weak to moderate effects	Strong effects	Weak to moderate effects	Strong effects	Strong effects					
MITIGATION	An erosion and sedimentation 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. The NCTA will coordinate with the USFWS, USEPA, and the NCWRC on the feasibility and design of a wildlife passage at Stream S156 for all DSAs, and on designing bridge crossings to be wildlife friendly when feasible for all DSAs. Control measures will be implemented to reduce the potential for spreading non-native plant species.												

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JURISDICTIONAL RESOURCES IMPACTS¹⁶												
Pond Impacts (acres)	6.3	5.1	4.1	5.1	3.9	2.9	5.5	3.1	2.1	5.5	6.1	3.3
Wetland Impacts (acres)	7.4	6.9	7.5	8.8	8.2	8.9	12.1	12.5	13.2	9.7	9.1	9.8
Perennial Stream Impacts (linear ft.)	48,296	42,733	38,894	50,100	44,609	40,766	50,739	40,915	37,223	46,105	40,033	36,771
Intermittent Stream Impacts (linear ft.)	9,048	9,501	10,101	8,953	9,406	10,006	9,505	9,537	9,986	9,364	9,678	10,417
Total Stream Crossings	106	99	91	111	105	97	120	112	103	111	105	97
Total Stream Impacts (linear ft.)	57,344	52,234	48,995	59,053	54,015	50,772	60,244	50,452	47,209	55,469	49,711	47,188
Total Impacts to Catawba River Buffers (sq ft) ¹⁷	4,145	22,590	20,615	4,145	22,590	20,615	4,145	22,590	20,615	4,145	22,590	20,615
ICE ² : Effects on water quality, wetlands, impaired waterways, and watersheds	Very Strong effects	Very Strong effects	Very Strong effects	Very Strong effects	Very Strong effects	Very Strong effects	Very Strong effects	Strong effects				
MITIGATION	The DSAs incorporate measures to avoid and minimize impacts to Waters of the US and the Catawba River buffers. The NCTA agreed to include several bridges in the preliminary 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 and Catawba River riparian buffers. Strict adherence to Best Management Practices will assist in minimizing project impacts.											

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PROTECTED SPECIES IMPACTS												
Schweinitz's Sunflower ¹⁸	May Affect/Not Likely to Adversely Affect	No Effect	No Effect	May Affect/Not Likely to Adversely Affect	No Effect	No Effect	May Affect/Not Likely to Adversely Affect	No Effect	No Effect	May Affect/Not Likely to Adversely Affect	No Effect	No Effect
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
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
Carolina Heelsplitter	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
MITIGATION	Concurrence needed from US Fish and Wildlife Service on the biological conclusion of May Affect/Not Likely to Adversely Effect. Once the Preferred Alternative is selected, additional surveys will be conducted as needed.											

Notes:

1. Source: Gaston Cost Estimate Support Memorandum, HNTB, December 2008
2. ICE = Indirect and/or cumulative effect
3. Neighborhoods not named/identified in available GIS mapping, but areas containing clusters of homes and considered rural communities
4. Berewick District Park (owned by Mecklenburg County)
5. a) Karyae YMCA Facility – impact to structures, entrance, and parking; b) Linwood Springs Golf Course - access change only; c) Carolina Speedway – right-of-way encroachment and impact to parking ; d) Duke Energy recreational fields – right-of-way encroachment, e) Daniel Stowe Botanical Garden – minor right-of -way encroachment
6. DSAs 4, 22, 58 and 76 encroach on Forestview High School's property edge and some parking areas. DSAs 58, 64, 68, 76, 77, and 81 encroach on Sadler Elementary School property with no impacts to school use or access.
7. Undeveloped lots behind the barrier must have a building permit issued by the Date of Public Knowledge for this barrier to be cost effective.
8. VAD – Voluntary Agricultural District
9. Acreages are calculated for the preliminary 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.
10. There may be one to three individual lines in a power transmission easement. This table reports the numbers of individual transmission line crossings.
11. The four gas transmission pipeline crossings are located in the two easements that cross US 321 near Crowders Creek Road.
12. Includes all of the multiple pipes/culverts required at interchanges.
13. a) Thomas Allison House; b) Harrison Family Dairy Farm; c) JBF Riddle House; d) William Clarence Wilson House; e) Wolfe Family Dairy Farm
14. *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. Berewick District Park would be minimally impacted by all DSAs and it appears there are grounds for a *de minimis* finding. *De minimis* impacts related to historic sites are defined as the determination of either "No Adverse Effect" or "No Historic Properties Affected" in compliance with Section 106 of the National Historic Preservation Act (NHPA). The Wolfe Family Dairy Farm would be impacted by DSAs 58, 64, 68, 76, 77, and 81. The State Historic Preservation Office has concurred that these impact would constitute a *de minimis* effect , and FHWA intends to use SHPO's concurrence as a basis of a *de minimis* finding for this property if DSA 58, 64, 68, 76, 77, or 81 is selected as the Preferred Alternative.
15. Acreages calculated within the DSA right-of-way limits.
16. These impacts were calculated using the preliminary engineering designs' construction limits, with an additional 25-foot buffer.
17. This includes impacts to buffer zones 1 and 2 for the Catawba River, South Fork Catawba River, and Catawba Creek. Mitigation is not required for impacts of less than one-third acre (14,505 square feet).
18. Due to its location on the northern edge of the DSA corridor, it is assumed all impacts to the observed Schweinitz's sunflower population will be avoided.