APPENDIX D

NEPA/404 CONCURRENCE POINT #4 MATERIALS

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		12	1	10	9	8	7	ი	5	4	ຜ	N	-	Issue #
		385+00	345+00	340+00	330+00	320+00	305+00	295+00	295+00	280+00	266+00	223+00	207+00	Approx. Station
		Stream # 4-7 (First Broad River)	DFHL Site # 9 Stream # 3-9 (Brushy Creek) Stream # 3-10 (Also affects Stream # 4-4)	Stream # 3-9 (Brushy Creek)	Wetland Site # 228	Wetland Site # 22A	DFHL Site # 8	DFHL Site #7	Stream # 3-6	Stream # 3-5	Stream # 3-2	Stream # 2-27	Stream # 2-21 Wetland Sifes # 15 and 16	Affected Feature(s) (Wetland, DFHL, Stream)
* Leave vegetation	 * Drainage system on bridge for stormwater runoff * Coordinate with local water supply administrator * Hazardous spill basins 	Environmental Commitments: * Temporary causeway * Temporary causeway	Reconfigure NC 226 interchange to avoid/minimize impacts to Stream 3-10, and put distance between interchange & DFHL Site # 9; also be aware of Stream 3-9 proximity.	bilize banks; should cut trees stabilize banks.	ans.	Expand to Brushy Creek and use as mitigation.	Possible use as mitigation.	Possible use as mitigation.	Adjust fill slopes and minimize impacts.	Use 2:1 fill slopes to minimize impact; consider using as on-site mitigation.	Use 2:1 fill slopes to minimize impact, consider using as on-site mitigation.	Investigate bridging.	Investigate bridging.	
												×	×	No Action on Design Concept
			×						×	×	×			Implement Design Concept as Proposed
														Implement Design Concept as Proposed Implement/Incorporate Alternate Plan Correct as Appropriate
			· .		×									Correct as Appropriate (s)
		×		×		×	×	×		×	×			Defer/Implement Later
		Include in FEIS.	 west ramps can be replaced with east side loop ramps (anticipated traffic volumes will allow this). DFHL Site #9 will remain unimpacted, and ramps are no longer nearby. Impacts to Stream 3-9 remain the same (it will be bridged for hydraulic reasons), and ramps are no longer nearby. 	-	It was determined that Wetland Site #22B should be left in previously established location.	Defer until later mitigation discussions.	Defer until later mitigation discussions.	stream impacts. (Note: 2:1 were used originally, so no change.) Defer until later mitigation discussions.	Use of 2:1 slopes is feasible and will reduce linear	Use of 2:1 slopes is feasible and will reduce linear stream impacts. (Note: 2:1 were used originally, so no change.) Defer mitigation discussions until later.	Use of 2:1 slopes is feasible and will reduce linear stream impacts. (Note: 2:1 were used originally, so no change.) Defer mitigation discussions until later.	A 200-foot bridge would be required, which would have a net cost of approximately \$805,750 (see "Costs" table).		Reason/Clarification
		N/A ^e	(see footnote d)	N/A°	N/A	N/A	N/A	N/A	N/A ^b	N/A ^b	N/A ^P	N/A	N/A	Net A ROW Limits
		N/A ^e	(541 LF) (see footnote d)	NIAs	NIA	N/A	N/A	N/A	N/A ^b	N/A ^b	N/Aª	NIA	N/A	Net Avoidance/Minimization ^a Construction
		N/A ^e	(see footnote d)	N/A	NIA	N/A	N/A	N/A	N/A ^b	N/A ^b	N/A [®]	N/A	N/A	Feature

 Table D-1

 US 74 SHELBY BYPASS EIS (R-2707)

 Concurrence Point #4 - Avoidance and Minimization

 Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting

 Revised September 21, 2004

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					on on Design t	ent Design Concept - osed	e Plan	as Appropriate	plement Later				
5	Issue #	Approx. Station	Affected Feature(s) (Wetland, DFHL, Stream)	Comment/Request	No Actio Concept	as Propo	Implemei Alternate			Reason/Clarification	ROW Limits	Construction Limits	Feature
	3	425+00	DFHL Sites # 10 and 11 Stream # 4-13	Bridge stream and DFHL complex, or consider retaining wall to minimize fill; consider using DFHL sites as mitigation.			×		×	A 160-foot bridge would be required, which would have a net cost of approximately \$736,180 (see "Costs" table). A retaining wall would also not be cost-effective. It was decided to use 2:1 slopes instead; these will reduce impacts to the stream and the DFHL complex. Defer mitigation discussions until later.	N/A ^b	N/A ^b	N/A ^b
	4	453+00	Stream # 4-17	Investigate bridging.	×				= >	A 200-foot bridge would be required, which would have a net cost of approximately \$762,000 (see "Costs" table).	N/A	NIA	N/A
		510+00	Streams # 4-22, 4-23, 4-24, and 4-25	Investigate realigning Lithia Springs Road (SR 1842) to south or bridging.	×				5330 <i>2</i> 37	A 1,000-foot bridge would be required, which would have a net cost of approximately \$5,234,330 (see "Costs" table). Road could be shifted to south (see Issue #16); however, there would be a net increase of 1 business relocation and 9 residential relocations, and a net increase in stream impacts of 311 LF, which would not counterbalance the anticipated net decrease in wetlands of 0.14 acre.	NA	NA	NA
		530+00	Wetland Sites # 32, 33, 34, and 35 Streams # 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, and 5-10	Reconfigure NC 18 interchange by changing NE and SE quadrant ramps to loop ramps on west side of interchange, and/or shift alignment to south.	×				T > T	Ramps cannot be relocated due to anticipated traffic volumes. Road could be shifted to south, but ramifications are extensive (see Issue # 15).			
	17	554+00	Streams # 5-7 (Hickory Creek) and 5-9	Investigate bridging.	×				ta a A	A 180-foot bridge would be required, which would have a net cost of approximately \$705,500 (see "Costs" table).	N/A	N/A	N/A
	18	618+00	Wetland Site # 39	Avoid wetland completely or minimize involvement.	×				ਤੋਂ ਦ ਨੇ ਤੋਂ ਸ	Further investigations outside of the corridor limit indicated that the wetland site actually expanded in size to the southeast, so current location of realigned NC 180 would appear to be better in terms of minimizing impacts.	N/A	N/A	N/A

Table D-1 US 74 SHELBY BYPASS EIS (R-2707) Concurrence Point #4 - Avoidance and Minimization Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting Revised September 21, 2004

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N/A	¥	2 23	22	21	ž	19	Issue #
157+00	910+00	905+00	827+00	764+00	/35+00	647+00	Approx. Station
Stream 2-11 (Beaverdam Creek)	UFHL Site # 32 Streams # 8-8, 8-9, and 8-11	Wetland Sites # 58 and 59 Streams # 8-6 and 8-7	DFHL Site # 31	DFHL Site # 25 Stream # 7-12	DFHL Site # 22 Streams # 7-1, 7-2, 7-3, 7-4, and 7-5 (Also affects Stream # 7-12 and DFHL Sites #24 and 25)	DFHL Site # 15 Stream # 6-14	Affected Feature(s) (Wetland, DFHL, Stream)
Investigate bridging (per NCDOT)	reduce DFHL and stream impacts.	ecial q		Investigate bridging; consider using remainder of DFHL site for mitigation.	Shift alignment even further south than was done previously to further reduce DFHL and stream impacts, while still avoiding Stream Site 7-5 and DFHL Site # 24 (Sheets 13 and 14).	avoid impacts to DFHL sit ment.	Comment/Request
	······································	×	×	×		×	No Action on Design Concept
×	· >	:			·		Implement Design Concept as Proposed
					×		Implement/Incorporate Alternate Plan Correct as Appropriate
							Correct as Appropriate
				×			Defer/Implement Later
Bridging is feasible. A 130-foot bridge would be required, which would have a net cost of approximately \$179,750 (see "Costs" table).	A 230-foot bridge would be required, which would have a net cost of approximately \$250,000 (see "Costs" table). SR 2245 shift is feasible and has been implemented; this eliminates the crossing of the confluence of Streams 8-8, 8-9 and 8-11. DFHL fragmentation was not lessened as originally thought because DFHL site extends well beyond corridor boundary, but construction limit impacts <u>are</u> decreased.	Due to need for service road in NE quadrant, eliminating ramp will not resolve problem	ps cannot be switched due to an mes.	A 150-foot bridge would be required, which would have a net cost of approximately \$716,700 (see "Costs" table). Defer mitigation discussions until later.	Further shifting of the alignment to the south is feasible, but would result in additional relocations of 4 NCDOT buildings and 1 residence. It was decided to lower the grade in this area instead. This reduced the footprint of the construction limits and subsequently those impacts (as shown at right), although ROW limits (and therefore ROW impacts) increased somewhat.	Alignment shift is constrained by NC 150 interchange to west. Some shifting might be achievable, but would not likely appreciably reduce impact to DFHL site.	Reason/Clarification
(353 LF)	60 LF 0.09 acre	N/A	N/A	N/A	10 LF 0.017 acre	N/A	Row Limits
(261 LF)	(496 LF) (0.115 acre)	N/A	N/A	N/A	(420 LF) (0.034 acre)	N/A_	Net Avoidance/Milnimization
Streams	Streams DFHL	N/A	N/A	N/A	Streams DFHL	N/A	Feature

 Table D-1

 US 74 SHELBY BYPASS EIS (R-2707)

 Concurrence Point #4 - Avoidance and Minimization

 Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting

 Revised September 21, 2004

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Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting Revised September 21, 2004	Concurrence Point #4 - Avoidance and Minimization	US 74 SHELBY BYPASS EIS (R-2707)	Table D-1
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N/A	N/A	Issue #	
N/A	160+00	Approx. Station	
General comment concerning entire project	Wetland Site # 6B	Affected Feature(s) (Wetland, DFHL, Stream)	
Use 2:1 fill slopes to minimize impacts at streams (also see lssues #3, 4, 5, and 13) .	May not actually be a wetland.	Comment/Request	
		No Action on Design Concept	
×		Implement Design Concept as Proposed	Prop
		Implement/incorporate Alternate Plan	Proposed Action(s)
	×	Correct as Appropriate	ion(s)
		Defer/Implement Later	
Use of 2:1 slopes at stream locations is feasible, which would result in a net decrease in stream impacts (varies from site to site); this is reflected in stream table.	It was ultimately decided that this was, in fact, a wetland, so it was included on final tables and in impacts evaluation.	Reason/Clarification	
NOT TOTALED HEF REFLECTED I		ROW Limits	Net A
NOT TOTALED HERE (INDIVIDUAL QUANTITIES WOULD BE REFLECTED IN "STREAMS" TABLE LINE ITEMS)	N/A	Construction Limits	Net Avoidance/Minimization ^a
ntities would be E line items)	N/A	Feature	ration ^a

ø This column shows the net composite final impact <u>change</u> (not the actual final impacted quantities themselves), based on NCDOT's proposed changes. This is the sum of the changes to the features in each category (stream, wetland, DFHL) identified for that issue. Parentheses indicate decrease in impact.

. Б There was no change in impacts due to the fact that 2:1 fill slopes were already in place prior to investigating this issue.

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This only reflects changes resulting from implementing Issue #10; it does not reflect avoidance/minimization resulting from the bridging of Brushy Creek (see "Streams" table).

d The total avoidance/minimization indicated here includes only those savings resulting from incorporating the proposed design change suggested in Issue #11; bridging of Brushy Creek will result in additional avoidance/minimization (see "Streams" table).

This only reflects changes resulting from implementing Issue #12; it does not reflect avoidance/minimization resulting from the bridging of First Broad River (see "Streams" table).

f Impacts of Issues 15 and 16 are addressed jointly because the previously proposed alignment shift would cause changes in impacts to affected features in both areas.

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دoncurrence Point #4 - Avoidance and Minimization Streams (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting and per S. Lund Stream Changes) & Preliminary Mitigation Estimates NRIDOR ا ا م ا م ا م ا م ا م ا

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4-25 Unnamed Tributary to 4-22	P	2,005	15/16			×	732		732			732	×	565		565			565			See footnote ††
1 5-1 Unner Segment to 5-3	P	1.124	15/16			×	828		828			828	×	819		819	_		819		×	
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5-6 Unnamed Tributary to 5-1		138	15/16													_	_			_		
5-7 Hickory Creek	P	2,180	15/16, 17			×	504		504			504	×	266		266			266		×	
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	_	174				×	160		160			160	×	182		182			182			See footnote ‡
Unnamed Tributary		1,004		×		×	566		566			566	×	499	_	499			499		×	
7-1 Unnamed Tributary to 7-5	P	4,225	20			×	2486		2,486			2,486	×	1617	(177)	1,440		(177) 1	,440		×	See footnote ##
		22	20			×	22		22			22	×	22		22		-	22	_		
7-3 Unnamed Tributary to 7-1		301	20	×																		
	-	256	20	×												;						
7-5 Upper Segment to 7-7	στ	2,364	20			×	994		994			994	>	10E	(877)	/33		(877)	133	+	> -	

 Table D-2

 US 74 SHELBY BYPASS EIS (R-2707)

 Concurrence Point #4 - Avoidance and Minimization

 Streams (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting and per S. Lund Stream Changes) & Preliminary Mitigation Estimates

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8-11	8 10	8-9	8-8	8-7	8-6	8-5	n 8-4	8-3	n 8-2	8-1	VATER	7-31	7-30	7-29	7-28	7-27	7-26	7-25	7-24	7-23	7-22	7-21	7-20	7-19	7-18	7-17	7-16	7-15	7-14	1 7-13	1 7-12	7-11	7-10	7-9	7-8	7-7	tream :			GE	
Upper Segment to 8-9	I impaged Tributary to 8-9	Unnamed Tributary to Potts Creek	Unnamed Tributary to 8-9	Unnamed Tributary to 8-8	Unnamed Tributary to 8-8	Upper Segment to 8-7	Unnamed Tributary to 8-5	Unnamed Tributary to 8-5	Upper Segment to 8-4	Unnamed Tributary to 8-2	WATERSHED 8 - POTTS CREEK	Unnamed Tributary to 7-27															1				2 Upper Segment to 7-13	Upper Segment to	.	Unnamed Tributary to 7-10	Unnamed Tributary to 7-7	Upper Segment to 7-10	Stream Segments Within Watershed			GENERAL DATA ON STREAM WITHIN CORRIDOR	
	-	-	-	-	-	1	-		_	-		P	_	-	Р	P	-	1		-	-	-		_	_	-			-	ס	-	-	Ψ	Ρ	P	P	Perennial / Intermittent		<u></u>	IIN COR	
285	2.442	2.870	1,266	69	204	301	43	43	440	74		183	2,063	46	326	1,209	943	149	63	387	11	761	76	973	261	1,130	2,677	193 ·	1,747	325	1,767	319	188	104	1,074	168	Channel Length (if)			RIDOR	
24		24	24	23	23																										20, 21				ļ		Issue Number			L <u></u>	
	×	×	х			×	×						×				_			×		×	×	×	×	×		×	×		×	×					Adjacent Wetlands, DFH (Intermittent Streams On	L, c ily)	or B	oth	.
									. ×																												Requires Mitigation Alth Adjacent to Wetlands / D (Intermittent Streams On	FH	IL Si		
×	×	×	Х	х	X	×	×	×	×	×		×	×		×	×	Х	×	×	X		×	×	×		×	×		×		×						Impacted?	AVOIDANCE			
27	100	67	591	69	204	301	43	43	440	74		57	1309		125	388	834	149	63	387		302	76	256		362	56		504		384						Impacted Length (If)	ANCE			
(27)		105	(18)													(388)															10						Change in Impact (if)	INI		Right-of-Way Impacts	
0	10	172	573	69	204	301	43	4 3	440	74		57	1,309		125	0	834	149	63	387		302	76	256		362	56		504		394						Revised Impact (If)	INITIAL	MINIMIZATION	f-Way I	Apri
															,																						Additional Change in Impact (If)	RE/	ATION	mpac	April 28, 2004
(27)		105	(18)													(388)															10						Total Change in Impact (If)	REVISED		s	04
0	100	172	573	69	204	301	43	4 3	440	74		57	1,309		125	0	834	149	63	387		302	76	256		362	56		504		394						FINAL IMPACT (LF)				
×	×	×	X	X	X	×	×	×	×	×			×		×	×	х	×		X		×	×	×		×			×		х						Impacted?	AVOID			
294	158	177	759	69	204	301	43	43	440	74			482		91	317	546	149		387		251	76	152		340			455		247						Impacted Length (If)	AVOIDANCE		Con	
(294)		(16)	(186)													(317)															(15)						Change in Impact (If)	INITIAL		structi	
0	158	161	573	69	204	301	₽ 3	43	440	74			0,482		91	0	546	149		387		251	76	152		340			455		232						Revised Impact (If)	'IAL	MINIMIZATION	on Lin	
																																					Additional Change in Impact (If)	REVISED	ZATION	Construction Limit Impacts	
(294)	ł	(16)	(186)							.						(317)														. -	(15)						Total Change in Impact (If)	SED		acts	

Table D-2 US 74 SHELBY BYPASS EIS (R-2707) Concurrence Point #4 - Avoidance and Minimization Streams (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting and per S. Lund Stream Changes) & Preliminary Mitigation Estimates April 28, 2004

Page S-4 of 5 Pages

(294)		(16)	(186)							•				(317)													(15)			Total Change in Impact
0	158	161	573	69	204	301	43	43	440	74	0	482	ų	20	546	149	0	387		251	76	152	340	>	455	100	232			FINAL IMPACT (LF)
														×	ť															Site To Be Bridged (No Impact and No Mitigation Required) Site Identified by
		×				×	×		×			×	>	<				×	,	×	×	×	×		×		х			(No Impact and No Mitigation Required) Site Identified by US ACOE as Requiring Mitigation
See footnote ‡	See footnote ‡	See footnote ‡	See footnote ‡		•									Approximate bridge cost of \$2,032,800																COST OF AVOIDANCE AND MINIMIZATION / COMMENTS

Table D-2

US 74 SHELBY BYPASS EIS (R-2707)

Streams (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting and per S. Lund Stream Changes) & Preliminary Mitigation Estimates **Concurrence Point #4 - Avoidance and Minimization**

April 28, 2004

GENERAL DATA ON STREAM WITHIN CORRIDOR	N CORRIDOR		th			Rig	ht-ot-V	Right-of-Way Impacts	pacts			ç	Construction Limit Impacts	tion Lin	nit Impa	acts				
			or Bo				M	MINIMIZATION	TION					MINIM	MINIMIZATION			Mitigation	tion	
				FH	AVOIDA	DANCE	INITIAL	-	REVISED		A	AVOIDANCE		INITIAL	REVISED	SED		issues 🖤	4	
	nt			/D			_	_			F)					ct	F)		n	
				etlands /		gth (lf)	oact (lf)					gth (lf)	oact (lf)	ct (if)	ange in	in Impac		d No (uired)		-
	erennial / Inter	sue Number	djacent Wetlan ntermittent Str	equires Mitiga djacent to We ntermittent St	npacted?	pacted Lengt	hange in Impa	evised Impact	dditional Char 1pact (lf))	INAL IMPA	npacted Lengt	hange in Impa	evised Impact	dditional Char 1pact (If)	otal Change in		te To Be Bridg lo Impact and itigation Requ	ite Identified S ACOE as equiring Miti	COST OF AVOIDANCE AND
8-12 Unnamed Tributary to 8-11	172		×																	
8-13 Unnamed Tributary to 8-11	1 113	3															-			
WATERSHED 9 - BEASON CREEK																				
9-1 Unnamed Tributary to Beason Creek	1 315	5							 											
9-2 Unnamed Tributary to Beason Creek	1 139	9	X															L		
TOTAL PERENNIAL	63,420	20			14	14,811 (2	2,111) 12	12,700 ((353) (2,	(2,464) 12,347	347	11,203	3 (1,794)	9,409	(261)	(2,055)	9,148			
TOTAL INTERMITTENT	51,636	36			1	11,581	126 11	11,707	0 1	126 11,707	707	9,696	(455)	9,241	0	(455)	9,241			
TOTAL ALL STREAMS	115,056	56			26	26,392 (1	(1,985) 24	24,407 (3	(353) (2,	(2,338) 24,054	054	20,899) (2,249)	18,650	(261)	(2,510)	18,389			
LENGTH REQUIRED TO BE MITIGATED &			-							21,940	940						16,786			

(1) Notes: The purpose of this table is to illustrate efforts to avoid stream involvements prior to the 1/4/01 pre-Concurrence Point #4 agency meeting, and the changes in stream involvements (minimization) as a result of agency comments from that meeting.

2 Length of portion of stream within Preferred Alternative corridor; some or all of stream may be outside of construction limits and would therefore not be impacted.

ω "Issue Number" refers to the nomenclature used on the "Summary of Comments from 1/4/01 Field Review and Proposed Disposition" and "Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting" tables. All Issue #s are shown, even for those issues which do not affect avoidance/minimization totals or are not proposed by NCDOT at this time for implementation.

€ Only English units are used, for simplicity.

The data presented in the table are defined as follows:

5

Avoidance represents impacts based on preliminary design performed prior to the 1/4/01 field meeting (with the exception of bridging). Minimization represents attempts to lessen or eliminate impacts to streams. Bridging has been included in this category. Initial - Changes made prior to the 1/17/01 Concurrence Point #4 meeting in response to discussions at the 1/4/01 field meeting; would include changes resulting from implementation of design modifications identified in Issues 3, 4, 5, 11, 13, 20, and 24 and bridging of Brushy Creek, First Broad River, and Buffalo Creek.

Revised - Changes made after the 1/17/01 Concurrence Point #4 meeting, in response to discussions at the 1/17/01 concurrence point meeting; would include bridging of Beaverdam Creek, additional 2:1 slope changes, and any other later changes.

Final Impact is the resultant of all changes made by NCDOT for avoidance and minimization.

<u>6</u> A value in parentheses represents a decrease in linear stream impacts as a result of design changes

• Only the impacted streams fitting into these categories are denoted.

&1 Represents quantity of impact to be mitigated, not the quantity of mitigation to be provided. Mandated mitigation ratios may require that a greater quantity of the resource be provided as a replacement

Proposed for bridging for minimization reasons.

There was no change in impacts due to the fact that 2:1 fill slopes were already in place prior to investigating this issue

\$ Proposed for bridging due to hydraulic considerations.

#

Minimization impact reduction does not include approximately 1,100 feet of anticipated stream relocation for Streams 4-22 and 4-25.

Construction limit impacts (before and/or after minimization) are greater than right-of-way impacts due to the presence of construction easements

Minimization impact reduction does not include approximately 950 feet of anticipated stream relocation for Stream 7-21.

a, b, c, d, e, f, g, h, i, j, k, l, m, n, o - Similarly lettered segments constitute one stream channel

Concurrence Point #4 - Avoidance and Minimization Wetlands (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting)	US 74 SHELBY BYPASS EIS (R-2707)	Table D-3
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					_	Venana			Diacua	May 19, 200-	9, 2004	Colora			(Runsen)	41		
GENERAL DATA ON CORRIDOR WIDE WETLAND SITE			AND SITE				Rigł	nt-of-Way Impacts	'ay Imp	oacts					Construction		Limit Impa	npa
									MINIMI	MINIMIZATION	*	N)					MINIMIZATIO	ATIO
					A	AVOIDANCE	1 M	N	INITIAL	REVIS	ISED	TIO	A	AVOIDANCE	Ĕ	INITIAL	IAL	곱
	letland Type	/etland Size (Acres)	/etland Quality	sue Number	npacted?	egree of Impact	npacted Area (Ac)	hange in Impact (Ac)	evised Impact (Ac)	dditional Change in npact (Ac)	otal Change in Impact Ac)	INAL IMPACT REQUIRING MITIGA AC)	npacted?	egree of Impact	npacted Area (Ac)	hange in Impact (Ac)	evised Impact (Ac)	dditional Change in npact (Ac)
	PSS1	0 23	Inw															
2 A, B, C, D	PF01	0.02	Low															
Β	PEM1	0.12	Medium															
	PEM1	0.13	Medium															
9 A, B, C, D		0.00			×	Partial	0.000		0.000			0.000	< >	Partial	0.030		0.030	
	PSS1	0.27	Low															
8 A, B	PSS1	1.20	Medium															
9	PF01	0.08	Low	-													_	
10	PEM1	0.03	Medium															۰. ۱
12 A. B. C. D. E. F. G	PEM1	0.67	Low													_	_	
	PF01	0.13	Medium															
14 A, B	PF01	0.06	Low															
15 A, B	PF01	0.38	Medium		×	Partial	0.200		0.200			0.200	×	Partial	0.075		0.075	
16	PFO1	0.29	Medium	-	×	Partial	0.003		0.003			0.003		_				
18 A B	PEM1	0.01	Medium															
	PSS1	0.10	Medium															
20	PF01	0.19	Low															
	PF01	0.03	Low															Į
22 A, B	PSS1.	2.05	Low	8, 9	×	Partial	0.670		0.670			0.670	× ×	Partial	0.500		0.500	
24	PEN1	0.00			>	lotai	0.000	(UCU.U)	0.000		(UCU)	0.000	>	Faruai	0.020	(0.020)	0.000	
25 A, B, C, D, E	PF01	0.05	Low															
ω	PF01	0.03	Low		×	Partial	0.020		0.020			0.020	×	Partial	0.020		0.020	
27 A, B	PF01	0.05	Low															
	PF01	0.02	Low		×	Total	0.020		0.020			0.020	×	Total	0.020		0.020	
29 A, B	PF01	0.01	Low		×	Partial	0.006		0.006			0.006	×	Partial	0.002		0.002	
	PEM1	0.05	Medium													 		
В С	PEM1	0.03	Low															
32 A, B, C. D		1.22	Medium	15/16	<	Dartia	0 200		0.300			0.300	<		0.380	_	0.380	
33	PF01	0.42	Medium	15/16	×	Partial	0.390		0.390			0.390	×	Partial	0.380		0.380	

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and and the second

Page W-1 of 3 Pages

											_	_	-		_			Impact (Ac)
						(0.020)												Total Change in Impact
0.000	0.380		0.002	0.020	0.020	0.000	0.500			0.075					0.240	0 035		FINAL IMPACT SUBJECT TO MITIGATION (AC)
						Approximate bridge cost of \$1,898,400												COST OF AVOIDANCE AND MINIMIZATION / COMMENTS

 Table D-3

 US 74 SHELBY BYPASS EIS (R-2707)

 Concurrence Point #4 - Avoidance and Minimization

 Wetlands (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting)

 May 19, 2004

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				-				>f Mon		5		-								
GENERAL DATA ON CORRIDOR-WIDE WETLAND SITE	ORRIDOR-WI	DE WETL	AND SITE					gilt-01-tray inipacts	IIIIpau	5				Construction		LIMIT Impacts	npacts			
							! 	M	MINIMIZATION *	* NOI						MINIMIZATION *	ATION *		Г 	
					A	AVOIDANCE		INITIAL		REVISED			AVOIDANCE	CH	INITIAL	Þ	ഗ		:C1	
		cres)					.c)			npact						.c)				
	tland Type	tland Size (Acr	tland Quality	ue Number	pacted?	pree of Impact	acted Area (Ac	inge in Impact (ised Impact (A	act (Ac) al Change in Im	AL IMPACT	;) acted?	ree of Impact	acted Area (Ac)	nge in Impact (/	sed Impact (Ac	tional Change act (Ac)	I Change in Imp	AL IMPACT SI MITIGATION (COST DE AVOIDANCE AND
			-		1		1			lı T	() F	(D	In	с	R	In	(A 	Т	MINIMIZATION / COMMENTS
34 A, B, C, D	PF01	0.10	Low	15/16		٨			_		_									
35 A, B, C	PF01	0.09	Low	15/16	×	Partial	0.040	0	0.040		0 040	2								
36	PEM1	0.11	Low					_												
37	PF01	0.17	Low			-		_		_		-								
38	PF01	0.20	Medium							-										
39	PF01	1.56	Medium	18	×	Partial	0.180	0	0.180	_	0.180	×	Partial	0 110		0 110				
40	PF01	0.02	Low																	
	PF01	0.92	Medium														-		-	
42	PUU PUU	0.04	LOW		×	Total	0.040	0	0.040		0.040	×	Total	0.040		0.040			0.040	
43	PFO1	0.02	LOW																	
45	D001		LOW					+-												
46 A. B	PF01	90.0	T DW		×	+			2			1								
47 A, B, C, D	PF01	0.06	Low		× ;	Partial	0.005		0.005	+	0.000	< >	Panial	0.012		0.012			0.012	
48 A, B	PF01	0.08	Low		_	+					0.000	+	Falual	0.000		CUUD			500	
49	PF01	0.04	Low			_		_				╁				-				
50	PF01	0.01	Low				_													
51 A, B	PF01	0.18	Medium		x	Partial (0.110	0	0.110	_	0.110	×	Partial	050 0	-	0 030			3	
52	PF01	0.09	Low										. 11 501	0.000		0.000			0.030	
	PEM1	0.216	Low		×	Total (0.216	0.:	0.216		0.216	×	Partial	0.214	_	0.214			0.214	
54 A, B	PF01	0.02	Low		×		0.020	0.0	0.020	_	0.020	╡	Total	0 00		0.020				
	PEM2	0.02	Low			_			_					0.010		0.020				
	PSS1	0.01	Low		X	Total (0.010	0.0	010		0.010					-	+			
57 A, B	PF01	0.04	Low		X		0.040	0.0	0.040		0.040	×	Total	0.040		0 040		5	8	
< ا	PSS1	0.62	Medium	23	X		0.620	0.0	520		0.620		Tota	0.620		0.620	_	-	0.040	
59	PF01	0.01	Medium	23	×		0.010	0.0	0.010	_	0.010	1	Total	010		0.010				
	PF01	0.03	Low			_											-			
61 A, B, C	PF01	0.05	Low						-							+				
62	PF01	0.04	Low						_							-				
63	PF01	0.08	Low			_			-						_	\downarrow	-			
64	PF01	0.01	Low		_		_			+									ļ	
65	PSS1	0.04	Low			_		_		_						+	+			
20	PF01	0.02	Low		_			_	+	+		╡				╇				
		0.02			-		-		_	_		-	-		=					

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US 74 SHELBY BYPASS EIS (R-2707) Table D-3

Wetlands (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting) **Concurrence Point #4 - Avoidance and Minimization**

May 19, 2004

69 A, B 67 2 **MPACTS SUBJECT** FOTAL OF ALL IMPACTS Location Number **GENERAL DATA ON CORRIDOR-WIDE WETLAND SITE** TO MITIGATION PF01 PF01 PEM2 Wetland Type 14.216 14.216 0.05 0.05 Wetland Size (Acres) Low 5 Wetland Quality Issue Number Impacted? AVOIDANCE **Degree of Impact** 3.120 3.120 **Right-of-Way Impacts** Impacted Area (Ac) (0.050) 0.000 Change in Impact (Ac) NITIAL 3.120 3.070 **MINIMIZATION * Revised Impact (Ac)** 0.000 Additional Change in Impact (Ac) REVISED (0.050) 0.000 Total Change in Impact (Ac) FINAL IMPACT 3.070 3.120 (REQUIRING MITIGATION) (AC) Impacted? AVOIDANCE Degree of Impact **Construction Limit In** 2.393 393 Impacted Area (Ac) (0.020) 0.000 Change in Impact (Ac) NITIAL 2.373 MINIMIZ 2.393 **Revised Impact (Ac)**

Notes:

- Э The purpose of this table is to illustrate efforts to avoid wetland involvements prior to the 1/4/01 pre-Concurrence Point #4 agency meeting, and the changes in wetland involvements (minimization) as a result of agency comments from that meeting.
- 2 Area of portion of wetland within Preferred Alternative corridor; some or all of wetland may be outside of construction limits and would therefore not be impacted
- 3 "Issue Number" refers to the nomenclature used on the "Summary of Comments from 1/4/01 Field Review and Proposed Disposition" and "Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/02 Concurrence Point #4 Only English units are used, for simplicity. Meeting" tables. All Issue #s are shown, even for those issues which do not affect avoidance/minimization totals or are not proposed by NCDOT at this time for implementation.
- 5 4
- The data presented in the table are defined as follows:
- Avoidance represents impacts based on preliminary design performed prior to the 1/4/01 field meeting (with the exception of bridging) Minimization represents attempts to lessen or eliminate impacts to wetlands. Bridging has been included in this category.
- Initial -
- Revised Changes made after the 1/17/01 Concurrence Point #4 meeting, in response to discussions at the 1/17/01 concurrence point meeting; would include bridging 4, 5, 11, 13, 20, and 24 and bridging of Brushy Creek, First Broad River, and Buffalo Creek. Changes made prior to the 1/17/01 Concurrence Point #4 meeting in response to discussions at the 1/4/01 field meeting; would include changes resulting from implementation of design modifications identified in Issues 3,

Final Impact is the resultant of all changes made by NCDOT for avoidance and minimization. other later changes.

- 6 A value in parentheses represents a decrease in wetland impacts as a result of design changes.
- Э Wetland types are as follows:

PEM1 = Palustrine, emergent, persistent PEM2 = Palustrine, emergent, nonpersistent PFO1 = Palustrine forested, broad-leaved deciduous PSS1 = Palustrine scrub-shrub, broad-leaved deciduous

Impacts shown are those subject to mitigation (i.e., bridged wetlands have been excluded).

×

0.000	0.000		Additional Change in Impact (Ac)	REVISED	ZATION *	mpacts
(0.020)	0.000		 Total Change in Impact (Ac)	ISED		S
2.373	2.393		FINAL IMPACT SUBJ TO MITIGATION (AC)	EC	Т	
			COST OF AVOIDANCE AND MINIMIZATION / COMMENTS			

of Beaverdam Creek, additional 2:1 slope changes, and any

	Т	Т	Г					7		Γ_				[]				[]				-		T		I						I				-1
ឩ៵	3 -	3 6	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	-1	1	9	òœ	7	6	5	4	ω	2		Site #			GENE	
1,012 48	2,002	184 אר כ	41	206	14	64	743	1,641	97	332	19	16	-	54	4	13	336	87	2,067	1,501	66	365	271	311	148	5	Guess of 4	ω	26	37	264	# of DFHL			GENERAL DATA ON CORRIDOR-WIDE	
0.044	1.94	1 0/	0.056	1.11	0.011	0.23	2.77	3.6	0.48	1.02	0.022	0.12	0.000099	0.049	0.001	0.053	0.2	0.1	2.78	2.1	0.31	0.6	0.3	0.4	0.4	0.0001	0.012	0.0035	0.097	0.126	0.54	Area of Site (Ac)		SILE	ON CORR	
1 00	1, 12	1 331	732	186	1,273	278	268	456	202	325	864	133	10,101	1,102	4,000	245	1,680	870	744	715	319	608	903	778	370	50,000	333	857	268	294	489	DFHL Density (#/Acre)			IDOR-WID	
	>	<												×					×	×			×	×								High-Quality?			E DFHL	
24	2 6	3					20, 21	20		20							19				13	13	11	7	6							Issue Number		- <u>4,</u>		=
>	: >	< ×		×	×		×	×		×	×	×	×	×	×	×	×				×	×		ľ	×	×						Impacted?		•		Dwar Revise
Partial	Iotal	Partial		Partial	Total		Partial	Partial		Partial	Total		Total		Total	Partial	Partial				Partial	Partial			Partial	Total						Degree of Impact	AVOIDANCE			f-Flowe d Octob
0.04	1.94	0.03		0.79	0.011		0.868	0.19		0.66	0.022	0.12	0.000099	0.049	0.001	0.047	0.06	7			0.05	0.23			0.06	0.0001					*	Impacted Area (Ac)		I I	Rigi	C Dwarf-Flowered Heartlea Revised October 11, 2004 t
0.09							0.017	ľ																								Change in Impact (Ac)	IX		Right-of-Way Impacts	Con urtleaf S 004 to In
0.13	1.94	0.03		0.79	0.011		0.885	0.19		0.66	0.022	0.12	0.000099	0.049	0.001	0.047	0.06			0.00	0.05	0 23			0.06	0.0001						Revised Impact (Ac)	INITIAL	MINIMI	ay Imp	US 7 oncurrenc f Sites (Re o Include C
				-																												Additional Change in Impact (Ac)	REVIS	MINIMIZATION	acts	Table D-4 US 74 SHELBY BYPASS EI Concurrence Point #4 - Avoidance af Sites (Revised Per Discussions to Include Construction Limits + 1
0.09							0.017																<u>.</u>									Total Change in Impact (Ac)	ISED			Table D-4 BY BYPAS(#4 - Avoida #7 Discussic tion Limits
0.13	1.94	0.03		0.79	0.011		0.885	0.19		0.66	0.022	0.12	9.000099	0.049	0.001	0.047	0.06			0.00	0.05	232			0.06	0.0001			·			FINAL IMPACT (AC	;)			D-4)ASS EIS pidance a ssions at nits + 10
×	×	-		_	×	┦	_	×	_	×	_	×		_	×	_	×			,	× ;	×			×	×						Impacted?	A			S (R-2707) and Minin at 1/17/01) Feet Imp
Partial	lotal	Partial		Partial	Total		Partial	Partial		Partial	_	Partial		Total	Total	Partial	Partial			aivai	Partial	Partial			Partial	Total						Degree of Impact	AVOIDANCE	•		ible D-4 BYPASS EIS (R-2707) Avoidance and Minimization scussions at 1/17/01 Concur Limits + 10 Feet Impacts fro
0.237	1.94	0.017		0.46	0.011	+	0.504	┿	4	4	0.022	0.00005		0.049	0.001	0.02	0.03			0.007	0.07	70 0			0 00	0.0001						Impacted Area (Ac)	щ		onstru	on :urrence from Bi
(0.115)						┉┼╸	0 013		+	(0.005)																						Change in Impact (Ac)	INITIAL		uction	∍ Point : ologica
0.122	1.94	0.017		0.46	0.011	0.01	0.517	0 014		0.406	0.022	0.00005	0.010	0.049	0 001	0 02	0 03			0.00/		20.07		0.04	0.000	0 0001						Revised Impact (Ac)	TAL	MINIMIZATION	Construction Limit Impacts	Table D-4 US 74 SHELBY BYPASS EIS (R-2707) Concurrence Point #4 - Avoidance and Minimization F Sites (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting) o Include Construction Limits + 10 Feet Impacts from Biological Assessment
																																Additional Change in Impact (Ac)	REVIS	ATION	mpact	ing) sment
6		1				10	۶ľa	3	1	6				1		ſ				1			ł	ł		ľ	1		- I *				S		S	

Page DFHL-1 of 2 Pages

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Construction Limits + 10-Foot Buffer (Ac) *
COST OF AVOIDANCE AND MINIMIZATION / COMMENTS

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•	Concurrence Point #4 - Avoidance and Minimization	US 74 SHELBY BYPASS EIS (R-2707)	Table D-4
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	Min	270	
	mi	3	
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	ion		

TOTAL	36	35	34	Site #			GENERAL DATA ON CORRIDOR-WIDE DFHL		
15,037	20	90	1,752	# of DFHL			L DATA C		
25.1211	0.0094	0.057	2	Area of Site (Ac)		SITE	DN CORR		
665	2,128	1,579	876	DFHL Density (#/Acre)			DOR-WID		
	Х		×	High-Quality?			E DFHL		
				Issue Number					
_				Impacted?				Revised	Dwan
				Degree of Impact	AVOIDANCE			Revised October 11, 2004 to	Dwart-Flowered Heartleat
5.168			2	Impacted Area (Ac)	Ĭ		Right-of-	r 11, 20	ed Hear
0.107				Change in Impact (Ac)	INITIAL		t-of-Wa		tlear Sit
5.275				Revised Impact (Ac)	Ā	MINIMIZATION	Way Impacts	Include Construction Limits + 10 Feet Impacts from Biological Assessment	ies (Rev
0.000				Additional Change in Impact (Ac)	REVISED	ATION	acts	onstruc	Ised Pe
0.107				Total Change in Impact (Ac)	SED			tion Lin	r Discus
5.275				FINAL IMPACT (AC	;)			nits + 10	ssions a
	×			Impacted?	AV) Feet In	at 1/17/0
	Partial			Degree of Impact	AVOIDANCE		0	ipacts f	1 Conci
3.863	0.0076			Impacted Area (Ac)	m	r <u>-191</u>	onstru	rom Bio	urrence
(0.149)				Change in Impact (Ac)	INITIAL		ction l	ological	Point #
3.714	0.0076			Revised Impact (Ac)	AL	MINIMIZATION	_imit Ir	Assess	Sites (Revised Per Discussions at 1/17/01 Concurrence Point #4 Meeting)
0.000 (-		Additional Change in Impact (Ac)	REVISED	ATION	Construction Limit Impacts	ment	ng)
(0.149)				Total Change in Impact (Ac)	ËD				
3.714	0.0076			FINAL IMPACT (AC)				
4.067	0.0094 S			Construction Limits - Buffer (Ac) *	• 10)-Fo	ot		
	See footnote **			COST OF AVOIDANCE AND MINIMIZATION / COMMENTS					

Notes:

(1) The purpose of this table is to illustrate efforts to avoid DFHL involvements prior to the 1/4/01 pre-Concurrence Point #4 agency meeting, and the changes in DFHL involvements (minimization) as a result of agency comments from that meeting.

(2) Area of portion of DFHL site within Preferred Alternative corridor; some or all of DFHL site may be outside of construction limits and would therefore not be impacted.

(3) "Issue Number" refers to the nomenclature used on the "Summary of Comments from 1/4/01 Field Review and Proposed Disposition" and "Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting" tables. All Issue #s are shown, even for those issues which do not affect avoidance/minimization totals or are not proposed by NCDOT at this time for implementation.

(4) Only English units are used, for simplicity.

(5) The data presented in the table are defined as follows:

Avoidance represents impacts based on preliminary design performed prior to the 1/4/01 field meeting (with the exception of bridging)

Minimization represents attempts to lessen or eliminate impacts to DFHL sites. Bridging has been included in this category. Initial - Changes made prior to the 1/17/01 Concurrence Point #4 meeting in response to discussions at the 1/4/01 field meeting; would include changes resulting from implementation of design modifications identified in Issues 3, 4, 5, 11, 13, 20, and 24 and bridging of Brushy Creek, First Broad River, and Buffalo Creek.

Revised - Changes made after the 1/17/01 Concurrence Point #4 meeting, in response to discussions at the 1/17/01 concurrence point meeting; would include bridging of Beaverdam Creek, additional 2:1 slope changes, and any other later

Final Impact is the resultant of all changes made by NCDOT for avoidance and minimization. changes.

(6) A value in parentheses represents a decrease in DFHL impacts as a result of design changes.

* Taken from January 13, 2004 Revised Biological Assessment (Table B-4); includes construction fill, excavation, mechanized clearing, and drainage

Construction limit impact is greater than right-of-way impacts due to the presence of construction easements.

*

Concurrence Point #4 - Avoidance and Minimization US 74 SHELBY BYPASS EIS (R-2707) Table D-5

Cost of Bridging Versus Cost of Culvert/Stream Mitigation May 3, 2001 (Revised September 2, 2004)

				Length of		COST	ST	
	Feature(s) Included in	Length of	Alternate Structure	Impacted Stream			Stream	
lssue # (1)	Bridging	Bridge (ft)	(Culvert)	(LF) (2)	Bridge	Culvert	Mitigation (3)	Net Total (4)
1	Stream 2-21	140	220' - 72-inch pipe	304	\$784,000	\$28,820	\$76,000	\$679,180
J	Stream 2_27	200	300' - 1 - 8' × 8' 0000	<i>A</i> 07	¢1 100 000	\$100 000	110 K434 350	CONE 750
		100			♥ 1, 1±0,000	\$100,000	4.1.1.1CC	\$000, i 00
13	Stream 4-13	160	220' - 72-inch nine	594	000 968\$	\$28 820	\$131 000	\$736 180
Ċ	DFHL Sites 10 & 11	100		U24	000,000	\$20,020	000,101¢	\$/ JO, 100
14	Stream 4-17	200	350' - 1 - 7' x 7' RCBC	492	\$1,120,000	\$235,000	\$123,000	\$762,000
15*	Streams 4-22, 4-23, 4-24, 4-25	1,000	260' - 54-inch pipe and 350' - 72-inch pipe	1,168	\$5,600,000	\$73,670	\$292,000	\$5,234,330
17	Streams 5-7 and 5-9	180	225' - 1 - 7' x 7' RCBC	730	000,800,1\$	\$120,000	\$182,500	\$705,500
21	Stream 7-12 DFHI Site 25	150	210' - 60-inch pipe	384	\$840,000	\$27,300	000,96\$	\$716,700
24**	Streams 8-8, 8-9, 8-11 DFHL Site 32	230	300' - 1 - 7' x 7' RCBC	172	\$483,000	\$190,000	\$43,000	\$250,000
N/A	Stream 2-11	130	220' - 3 - 9' x 8' RCBC	353	\$728,000	\$460,000	\$88,250	\$179,750
STRUCTU	STRUCTURES REQUIRED BASED ON HYDRAULIC CONSIDERATIONS***	DRAULIC CON	SIDERATIONS***					
N/A	Stream 3-9 (Brushy Creek)	339	N/A	673	\$1,898,400	N/A	N/A	N/A
N/A	Stream 4-7 (First Broad River)	265	N/A	339	\$1,484,000	N/A	N/A	N/A
N/A	Stream 7-27 (Buffalo Creek)	363	N/A	388	\$2,032,800	N/A	N/A	N/A

Note: Includes all sites examined for bridging, whether currently proposed by NCDOT for implementation or not

- (1) "Issue #" refers to the nomenclature used on the "Summary of Comments from 1/4/01 Field Review and Proposed Disposition" and "Proposed Resolution of Comments from 1/4/01 Field Review and 1/17/01 Concurrence Point #4 Meeting" tables
- (2) Based on ROW data.
 (3) Stream mitigation was computed at 2 x \$125/foot x impacted length of stream.
 (4) Net Total = Cost of Bridge Cost of Culvert Stream Mitigation Cost.
- Stream length impacted is based on a reduction of approximately 1,100 linear feet due to required stream relocation.
- * Stream length impacted is based on SR 2245 shift in lieu of bridging, which would result in only Stream 8-9 being impacted at SR 2245
- *** Since these were implemented for hydraulic reasons, alternate culvert sizes were never computed

Added to December 5, 2000 Preferred Alternative preliminary design construction cost estimate to generate revised construction cost.