

**Appendix D – Jurisdictional Streams, Wetlands, & Buffer Impacts Tables (D-1 through D-11)**

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D-1 Impacts to Wetlands Within the Development Footprint

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D-2 Carolina North Impacts to Wetlands and Streams Outside of the Development Footprint

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D-3 Summary of Impacts – Alternatives Analysis

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D-4 Summary of Criteria – Alternatives Analysis

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D-5 Summary of Impacts for Carolina North- Avoidance and Minimization

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D-6 Wetland Impacts Within the Approximately 947-acre Carolina North Boundary

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D-7 Stream Impacts Within the Approximately 947-acre Carolina North Boundary

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D-8 Summary Table of Jordan Lake Buffer Impacts

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D-9 Phase 1 Carolina North Stream and Wetland Impact

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D-10 Phase 2 Carolina North Stream and Wetland Impact – Table A

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D-11 Phase 2 Carolina North Stream and Wetland Impact – Table B

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**D-1 Carolina North – Impacts to Wetlands Within the Development Footprint**

<b>Impacts to Wetlands Within Development Footprint*</b>		
<b>Wetland</b>	<b>Acres</b>	<b>Mitigation Ratio</b>
AA	0.014	1:1
AB	0.572	1:1
XA	0.025	2:1
XB	0.06	2:1
Y	0.13	1:1
Z	1.214	1:1
<b>TOTAL</b>	<b>2.015 Acres</b>	

**\* No impacts to streams and buffers within the development footprint**

**D-2 Carolina North Impacts to Wetlands and Streams Outside the Development Footprint**

<b>Impacts to Wetlands Outside the Development Footprint</b>		
<b>Wetland</b>	<b>Acres</b>	<b>Mitigation Ratio</b>
A	0.099	1:1
X	0.143	2:1
2	0.005	2:1
3	0.011	2:1
T (5)	0.014	2:1
6	0.037	2:1
17	0.023	2:1
18	0.065	2:1
<b>TOTAL</b>	<b>0.397 Acres</b>	
<b>Impacts to Streams Outside the Development Footprint</b>		
<b>Stream</b>	<b>Linear Feet</b>	<b>Mitigation Ratio</b>
1	31	2:1
2	27	2:1
5A*	100	2:1
8	47	2:1
13	60	2:1
14A	174**	2:1
14B	20	2:1
Bolin Creek	21	2:1
Crow Br (Wetland A)	72	2:1
<b>TOTALS</b>	<b>378</b>	
* stream 5A was classified as "isolated" by regulatory agencies		
** 174 lf of stream, classified as "unimportant" by regulatory agencies, no mitigation required, not included in the total		

**Table D-3 Summary of Impacts – Alternatives Analysis**

	<b>Carolina North</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>No-Build</b>
<b>Impacts to streams</b>	378 feet	4,968 feet	7,500 feet	0 feet
<b>Impacts to wetlands</b>	2.5 acres	2.7 acres	2.6 acres	0 acres
<b>Impacts to Jordan Lake Buffers</b>	0.9 acres	9.6 acres	2.6 acres	0 acres

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**Table D-4 Summary of Criteria – Alternatives Analysis**

	<b>Adequate Acreage- supports 50 year growth plan</b>	<b>Access to Public Transportation</b>	<b>Site within 2 mile radius of Main Campus</b>
<b>Alternative 1</b>		√	√
<b>Alternative 2</b>	√		√
<b>Carolina North Property</b>	√	√	√
<b>No-build Alternative</b>	University needs space to grow, therefore not a viable alternative	n/a	n/a

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**Table D-5 Summary of Impacts for Carolina North – Avoidance and Minimization**

IMPACT TABLE**		
PLAN	WETLAND (acres)	STREAM (linear feet)
1998	4.83 *	9714 *
2000	3.56 *	5212 *
2001	4.77 *	9312 *
2004	1.53 *	1767 *
2007	2.95 *	807 *
Revised 2007 (on 947-acre site only)	2.32	203

(Summary of Figures A-16 through A-21 impacts)

\*Does not include impacts to wetlands and streams due to required off-site infrastructure improvements. (see Sections 8.2 and 8.3, Appendix C and Appendix A, Figure A-4 for information regarding total impacts, on and off site.)

\*\* Wetland acreage and linear footage of streams impacted were calculated in ESRI's ARCGIS ArcMap calculating lengths of stream and areas of wetland using the calculate tool in the attribute table.

**Table D-6 Wetland Impacts Within the Approximately 947-acre Carolina North Boundary**

<b>Wetland</b>	<b>Area (acres)</b>	<b>Impact (acres)</b>
A	0.861	0.099
A1	0.403	0
B	0.25	0
B1	0.041	0
C	1.64	0
C1	0.243	0
D	0.03	0
D1	0.041	0
E	0.02	0
F	0.57	0
G	0.16	0
H	0.22	0
I	1.34	0
J	0.01	0
K	0.36	0
L	0.24	0
LA	0.03	0
N	0.14	0
O	0.72	0
P	0.06	0
Q	0.04	0
R	0.04	0
S	0.28	0
T (5)	0.02	0.14
U	0.01	0
V	0.47	0
W	0.14	0
X	0.03	0.143
XA	0.025	0.025
XB	0.06	0.06
Y	0.13	0.13
Z	1.214	1.214
AA	0.014	0.014
AB	0.572	0.572
<b>Totals</b>	<b>10.42493</b>	<b>2.397</b>

**Table D-7 Stream Impacts Within the Approximately 947-acre Carolina North Boundary**

<b>Stream</b>	<b>Length (ft)</b>	<b>Impact (ft)</b>
Bolin Creek	6,821	0
Crow Branch	5,508	72
1	325	32
3	425	0
4	370	0
5A	245	100
5B	125	0
8	494	0
12A	232	0
14A	2,546	174*
16	1,881	0
19	449	0
20	247	0
21	131	0
22	932	0
23	1,086	0
24	1,312	0
25	1,017	0
26	2,057	0
27A	1,823	0
27B	1,054	0
<b>Totals</b>	<b>29,079</b>	<b>204</b>
*classified as unimportant by USACE, no impact		

**D-8 Summary Table of Jordan Lake Buffer Impacts**

<b>Jordan Lake Buffer Impacts Summary - Location and Amount</b>		
<b>Streams</b>	<b>Zone 1 Ft.<sup>2</sup></b>	<b>Zone 2 Ft.<sup>2</sup></b>
5A	6,255	3,110
Crow Branch (Wetland A)	5,211	2,642
2	2,805	2,966
8	3,825	2,799
13	3,700	1,915
Bolin Creek near Estes Drive Ext.	1,809	1,205
<b>TOTALS(Ft<sup>2</sup> )</b>	<b>23,605</b>	<b>14,637</b>
<b>TOTALS (Ac)</b>	<b>0.54</b>	<b>0.34</b>

**Phase 1: Carolina North Stream and Wetland Impact**

Wetlands				
Wetland	Impact (ac)	Mitigation Ratio	Mitigation Cost	
			\$62,210/acre	
2	0.005	2:1	0.010	\$622
<b>SUBTOTAL</b>	<b>0.005</b>		<b>0.010</b>	<b>\$622</b>
rounded up to the nearest .25 acre*			<b>0.250</b>	<b>\$15,553</b>

\*note-there is an overpayment for wetland mitigation credits in Phase 1 of \$14,931 (\$15,553-\$622) due to acreage rounding requirements of the mitigation credit supplier:

Streams				
Stream	Impact (lf)	Mitigation Ratio	Mitigation Cost	
			\$338/lf	
1	31	2:1	62	\$20,956
<b>SUBTOTAL</b>	<b>31</b>			<b>\$20,956</b>

Jordan Lake Buffer Impacts				
Stream	Impact (lf)	Zone 1 (ft <sup>2</sup> )	Zone 2 (ft <sup>2</sup> )	Mitigation Cost
		3:1	1.5:1	\$.96/sf
1*	0	0	0	\$0
total impact	0	0	0	\$0

\* Jordan Lake buffer rules do not apply to stream 1

<b>TOTAL WETLAND + STREAM + BUFFER =</b>	<b>\$36,509</b>
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**Phase 2: Carolina North Stream and Wetland Impact**

**Table A**

Wetlands					
Wetland	Impact (ac)	Mitigation Ratio		Mitigation Cost	
				\$62,210/acre	
A	0.099	1:1		0.099	\$6,159
AB	0.572	1:1		0.572	\$35,584
3	0.011	2:1		0.022	\$1,369
T (5)	0.014	2:1		0.028	\$1,742
6	0.037	2:1		0.074	\$4,604
17	0.023	2:1		0.046	\$2,862
18	0.065	2:1		0.130	\$8,087
<b>SUBTOTAL</b>	<b>0.821</b>			<b>0.971</b>	<b>\$60,406</b>
rounded up to the next .25 acre				<b>1.000</b>	<b>\$62,210</b>
<b>TOTAL (minus credit overpayment in Phase 1 of \$14,931)</b>					<b>\$47,279</b>

Streams					
Stream	Impact (lf)	Mitigation Ratio		Mitigation Cost	
				\$338/lf	
2	27	2:1		54	\$18,252
8	47	2:1		94	\$31,772
13	60	2:1		120	\$40,560
14 (adjacent to Estes Drive)	20	2:1		40	\$13,520
Bolin Creek	21	2:1		42	\$14,196
Crow Branch (Wetland A)	72	2:1		144	\$48,672
<b>SUBTOTAL</b>	<b>247</b>				<b>\$166,972</b>

Jordan Lake Buffer Impacts **					
Stream	Impact (lf)	Zone (ft <sup>2</sup> )		Mitigation Cost	
		3:1	1.5:1	\$ .96/sf	
2	27	2,805	2,966		\$12,349
8	47	3,825	2,799		\$15,047
13	60	3,700	1,915		\$13,414
14 (adjacent to Estes Drive)	20				
Bolin Creek	21	1,809	1,205		\$6,945
Crow Branch (Wetland A)	72	5,211	2,642		\$18,812
<b>total impact</b>	<b>247</b>	<b>17,350</b>	<b>11,527</b>	<b>28,877</b>	<b>\$66,567</b>
total required mitigation		52,050	17,291	69,341	\$66,567
credit for stream restoration		22,680	15,120	37,800	\$36,288
<b>SUBTOTAL: net impact</b>		<b>29,370</b>	<b>2,171</b>	<b>31,541</b>	<b>\$30,279</b>

\*\* please refer to figures in Appendix C for individual buffer area calculations

<b>TOTAL WETLAND + STREAM + BUFFER =</b>	<b>\$244,530</b>
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**Phase 2: Carolina North Stream and Wetland Impact**

**Table B**

Wetlands					
Wetland	Impact (ac)	Mitigation Ratio		Mitigation Cost	
				\$62,210/acre	
A	0.099	1:1		0.099	\$6,159
X*	0.143	2:1		0.286	\$17,792
XA*	0.025	2:1		0.050	\$3,111
XB*	0.06	2:1		0.120	\$7,465
Y	0.13	1:1		0.130	\$8,087
Z	1.214	1:1		1.214	\$75,523
AA	0.014	1:1		0.014	\$871
AB	0.572	1:1		0.572	\$35,584
3	0.011	2:1		0.022	\$1,369
T (5)	0.014	2:1		0.028	\$1,742
6	0.037	2:1		0.074	\$4,604
17	0.023	2:1		0.046	\$2,862
18	0.065	2:1		0.130	\$8,087
<b>TOTALS</b>	<b>2.407</b>			<b>2.785</b>	<b>\$173,255</b>
rounded up to the next .25 acre				<b>3.000</b>	<b>\$186,630</b>
<b>TOTAL (minus credit overpayment in Phase 1 of \$14,931)</b>					<b>\$171,699</b>

\* isolated wetlands

Streams					
Stream	Impact (lf)	Mitigation Ratio		Mitigation Cost	
				\$338/lf	
2	27	2:1		54	\$18,252
5*	100	2:1		200	\$67,600
8	47	2:1		94	\$31,772
13	60	2:1		120	\$40,560
14 (adjacent to Estes Drive)	20	2:1		40	\$13,520
Bolin Creek	21	2:1		42	\$14,196
Crow Branch (Wetland A)	72	2:1		144	\$48,672
<b>SUBTOTAL</b>	<b>347</b>			<b>694</b>	<b>\$234,572</b>

\*isolated stream

Jordan Lake Buffer Impacts**					
Stream	Impact (lf)	Zone 1 (ft <sup>2</sup> )	Zone 2 (ft <sup>2</sup> )	Mitigation Cost	
		3:1	1.5:1	\$.96/lf	
2	27	2,805	2,966		\$12,349
5*	100	6,255	3,110		\$22,493
8	47	3,825	2,799		\$15,047
13	60	3,700	1,915		\$13,414
14 (adjacent to Estes Drive)	20				
Bolin Creek	21	1,809	1,205		\$6,945
Crow Branch (Wetland A)	72	5,211	2,642		\$18,812
<b>total impact</b>	<b>347</b>	<b>23,605</b>	<b>14,637</b>	<b>38,242</b>	<b>\$89,060</b>
total required mitigation		70,815	21,956	92,771	\$89,060
credit for stream restoration		22,680	15,120	37,800	\$36,288
<b>SUBTOTAL: net impact</b>		<b>48,135</b>	<b>6,836</b>	<b>54,971</b>	<b>\$52,772</b>

\*\* please refer to figures in Appendix C for individual buffer area calculations

<b>TOTAL WETLAND + STREAM + BUFFER =</b>	<b>\$459,043</b>
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