APPENDIX IV-A

Stream Wetland Impact by Alternative

APPENDIX TABLE IV-A1
Approximate Stream Impacts by Alternative (linear feet)[1]
Determination Level Data

		Alternatives North of Lincoln			Alternatives in Lincoln					Alternatives South of Lincoln		
Stream	**Stream Type[2]**	**Eastern Widening**	**Western Widening**		**Near East Bypass (LE-1)**	**Symmetrical Widening with Curb and Gutter**	**Eastern Widening with Open Drainage**	**Western Widening with Open Drainage**		**Eastern Widening**	**Western Widening**	**Hybrid Widening**
Cole Camp Creek (11 digit HUC 10290109-020)												
Carmen-1	Eph	30	10									
Carmen-2	Int	120	10									
Carmen-3	Per	150	10									
Carmen-4	Int	330										
Cole-1	Eph		130									
Cole-2	Eph				150	150	250	180				
Cole-3	Per				240	100	250	130				
Cole-4	Per				340	230	360	290				
Cole-5	Int				580		10	30				
Cole-6	Int				230							
Cole-7	Int						40					
Cole-8	Per				300							
Cole-9	Eph				340							
Duran-1	Eph					20						
Duran-2	Eph				80			120				
Duran Creek	Per				200	120	260	160				
Bird-1	Eph									170	120	160
Bird Branch	Per									200	210	350
Harry S. Truman Reservoir (11 digit HUC 10290105-080)												
Sterett-1	Eph											
Sterett-2	Eph									100	160	170
Sterett-3	Eph										140	150
Sterett-4	Per									100	200	190
Sterett-5	Int											170
Sterett-6	Int											50
Sterett-7	Per									160	130	180
Truman-1	Int									90	340	530
Osage River East /Lake of the Ozarks (11 digit HUC 10290109-040)												
LO-1	Int									290	2,770	2,460
LO-2	Eph									80		

APPENDIX TABLE IV-A1
Approximate Stream Impacts by Alternative (linear feet)[1]
Determination Level Data

		Alternatives North of Lincoln			Alternatives in Lincoln					Alternatives South of Lincoln		
Stream	**Stream Type[2]**	**Eastern Widening**	**Western Widening**		**Near East Bypass (LE-1)**	**Symmetrical Widening with Curb and Gutter**	**Eastern Widening with Open Drainage**	**Western Widening with Open Drainage**		**Eastern Widening**	**Western Widening**	**Hybrid Widening**
LO-3	Int									110		110
LO-4	Eph									110	30	110
LO-5	Per									10	60	60
LO-6	Int									120		130
LO-7	Int										620	
Number of Crossings		4	4		9	6	6	6		13[3]	15[3]	17[3]
Total		630	160		2,460	620	1,170	910		1,540	4,780	4,820

[1] Impacts were estimated excluding existing culverts, and rounded to the nearest ten feet.
[2] Stream Types – Ephemeral, Intermittent, Perennial based on initial field investigation.
[3] These alternatives include more than one crossing of some streams.

APPENDIX TABLE IV-A2
Approximate Wetland Impacts by Alternative (acres)
Determination Level Data

			Alternatives North of Lincoln			Alternatives in Lincoln					Alternatives South of Lincoln		
Wetland	**Class[1]**	**Total Wetland Area**	***Eastern Widening***	**Western Widening**		**Near East Bypass (LE-1)**	***Symmetrical Widening with Curb and Gutter***	**Eastern Widening with Open Drainage**	**Western Widening with Open Drainage**		**Eastern Widening**	**Western Widening**	***Hybrid Widening***
Cole Camp Creek (11 digit HUC 10290109-020)													
1	PEM	0.08		0.08									
2	PEM	0.02	0.02										
3	PSS1	0.22		0.22									
4	PSS1	0.04	0.04										
5	PEM	0.27				0.16	0.16	0.16					
6	PEM	0.26					0.01	0.01					
7	PEM	0.29											
8	PSS1	0.27				0.21							
9	PEM	0.22					0.01	0.03					
10	PF01	0.11				0.11							
11	PEM	0.11				0.11			0.11				
12	PEM/PSS1	0.48				0.06					0.29		0.07
Harry S. Truman Reservoir (11 digit HUC 10290105-080)													
13	PEM	0.25										0.25	0.25
14	PEM	0.03									0.03		
15	PEM	0.47									0.03	0.47	0.47
16	PEM	0.12									0.12		
Osage River East /Lake of the Ozarks (11 digit HUC 10290109-040)													
17	PEM	0.19										0.11	0.03
18	PEM	7.40										4.20	1.70
19	PEM	1.08										0.52	
20	PEM/PSS1	3.07									0.32		0.32
21	PEM	0.04											
Total			0.06	0.30		0.65	0.18	0.20	0.11		0.79	5.54	2.84

[1] Class according to Cowardin (USFWS): PEM = palustrine emergent marsh, PSS1 = deciduous scrub-shrub

Table IV-A3
Delineation Data for Selected Alternative
Wetland Impact Summary

Wetland I.D.	Total Area (ac)	Impact Area (ac)	NWI Mapping	Verified Wetland Type	Isolated/ Tributary to other waters	Wetland Functionality
4	0.03	0.03	Not mapped	Forested	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
5	0.05	0.05	PUBG	Emergent	Tributary	• Actively grazed, minimal functions
9	0.13	<0.01	Not mapped	Scrub-shrub/ emergent	Tributary	• Filter sediments and excessive nutrients • Wildlife cover and forage
12	0.13	0.00	PUBGh	Emergent	***Isolated***	• Wildlife cover and forage
23	0.06	0.02	Not mapped	Scrub-shrub/ emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
25	0.01	0.01	Not mapped	Emergent	***Isolated***	• Wildlife cover and forage
26	0.04	0.04	PF01A	Forested	***Isolated***	• Wildlife cover and forage
13	0.10	0.10	Not mapped	Emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients
15	0.07	0.00	Not mapped	Scrub-shrub/ emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
16	0.58	0.58	Not mapped	Emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
27	0.11	0.02	Not mapped	Emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage

Table IV-A3
Delineation Data for Selected Alternative
Wetland Impact Summary

Wetland I.D.	Total Area (ac)	Impact Area (ac)	NWI Mapping	Verified Wetland Type	Isolated/ Tributary to other waters	Wetland Functionality
17	0.08	<0.01	Not mapped	Emergent	***Isolated***	• Occasionally mowed, minimal functions
18	5.38	<0.01	Not mapped	Scrub-shrub/ emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
20A and 20B	3.00	0.17	PUBG (partly mapped)	Scrub-shrub/ emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
22	0.35	0.00	Not mapped	Emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
24	0.12	0.06	Not mapped	Scrub-shrub/ emergent	Tributary	• Desynchronize seasonal floodflows • Filter sediments and excessive nutrients • Wildlife cover and forage
Total	***10.24***	***1.11***				

Appendix Table IV-A4
Delineation Data for Selected Alternative
Stream Impact Summary

Stream Name	Stream Type	Watershed Area (sq. miles)	Impacts (linear feet)	Width (feet)	Expected Impact	Watershed
Carman #1	ephemeral	0.08	30	4-8	Culvert extension	Cole Camp Creek
Carman #2	intermittent	0.26	120	10-12	Culvert extension	Cole Camp Creek
Carman #3	intermittent	2.88	150	30	Culvert extension	Cole Camp Creek
Carman #4	intermittent	0.01	330	7-10	Relocation	Cole Camp Creek
Cole #1	ephemeral	0.13	50	5-7	Culvert extension	Cole Camp Creek
Cole #2	ephemeral	0.08	150	6	Culvert extension	Cole Camp Creek
Cole #3	intermittent	1.18	100	18-20	Culvert extension	Cole Camp Creek
Cole #4	intermittent	0.88	230	3-6	Culvert extension	Cole Camp Creek
Cole #5	intermittent	0.10	30	3	Culvert extension	Cole Camp Creek
Cole #7	intermittent	0.01	20	3	Culvert extension	Cole Camp Creek
Duran Creek	intermittent	0.46	120	15	Culvert extension	Cole Camp Creek
Bird #1	Intermittent	0.08	160	6	Culvert extension	Cole Camp Creek
Bird Branch	intermittent	0.49	410	8-15	Culvert extension	Cole Camp Creek
Sterett #1	ephemeral	<0.01	50	3-4	Culvert extension	Harry S. Truman Reservoir
Sterett #2	ephemeral	0.02	170	2-3	Culvert extension	Harry S. Truman Reservoir
Sterett #4	intermittent	0.40	290	8-20	Culvert extension	Harry S. Truman Reservoir
Sterett#5	intermittent	0.21	170	6	New culvert	Harry S. Truman Reservoir
Sterett #6	intermittent	0.16	50	2-3	Relocation	Harry S. Truman Reservoir
Sterett #7	intermittent	0.20	180	6-7	Culvert extension	Harry S. Truman Reservoir
Truman-1	Intermittent	0.11	370	2-6	Culvert extension, relocation	Harry S. Truman Reservoir
LO1	intermittent	0.41	2,720	7-14	Culvert extension, relocation	Osage River East /Lake of the Ozarks
LO3	intermittent	0.15	110	3-4	Culvert extension	Osage River East /Lake of the Ozarks

Appendix Table IV-A4
Delineation Data for Selected Alternative
Stream Impact Summary

Stream Name	Stream Type	Watershed Area (sq. miles)	Impacts (linear feet)	Width (feet)	Expected Impact	Watershed
LO4	ephemeral	0.05	110	3-4	Culvert extension	Osage River East /Lake of the Ozarks
LO5	intermittent	1.13	60	12-15	Culvert extension	Osage River East /Lake of the Ozarks
LO6	intermittent	0.16	130	4	Culvert extension	Osage River East /Lake of the Ozarks
LO 7	intermittent	0.19	160	3	Culvert extension	Osage River East /Lake of the Ozarks
TOTAL			**6,470**			