

APPENDIX E
COSTS

Alternative	Proposed Timing	Dams and Reservoirs (\$)	Treatment Plants (\$)	PS + Intakes (\$)	Pipes (\$)	Storage Tanks (\$)	Transportation (\$)	Subtotal (\$)	Contingencies (20% of Subtotal) (\$)	Total Capital Cost (\$)	Regulatory Permitting (% of Total Cap) (\$)	Engineering Legal & Admin (20% of Total Cap) (\$)	Upfront Capital Cost (\$)	Total Project Cost (\$)	Cumulative Project Cost (\$)
Alternative 2 - Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels (add Alt. #10)															
	2010	0	0	2,000,000	0	0	0	2,000,000	400,000	2,400,000	1,000,000	480,000		3,880,000	3,880,000
Alternative 5 - Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam															
Raw	2010	0	0	0	0	0	0	0	0	0	1,500,000	0	7,000,000	8,500,000	8,500,000
Alternative 6 - Modify Normandy Reservoir Flood Rule Curve															
Raw	2010	0	0	0	0	0	0	0	0	0	1,500,000	0		1,500,000	1,500,000
Alternative 8 - Modify River Constraints to Preserve Storage in Normandy Reservoir															
Raw	2010	0	0	0	0	0	0	0	0	0	2,000,000	0		2,000,000	2,000,000
Alternative 9 - Raise Normandy Dam															
Raw	2010	8,030,000	0	0	0	0	11,100,000	19,130,000	3,826,000	22,956,000	1,500,000	4,591,200	260,000	29,307,200	29,307,200
Alternative 12 - Construct Fountain Creek Reservoir															
Raw	2010	24,000,000	0	9,500,000	13,305,600	0	0	46,805,600	9,361,120	56,166,720	1,500,000	11,233,344		68,900,064	68,900,064
Alternative 13 - Construct Fountain Creek Reservoir with Downstream Release															
Raw	2010	24,000,000	0	5,000,000	0	0	0	29,000,000	5,800,000	34,800,000	1,500,000	6,960,000		43,260,000	43,260,000
Alternative 15 - Build Offstream Storage Reservoir along Duck River (Pond 15)															
Raw	2010	4,296,000	0	9,000,000	9,504,000	0	0	22,800,000	4,560,000	27,360,000	1,000,000	5,472,000	14,000,000	47,832,000	47,832,000
Alternative 16 - Utilize Quarries															
Raw	2010	0	0	1,750,000	104,000	0	0	1,854,000	370,800	2,224,800	1,000,000	444,960		3,669,760	3,669,760
Alternative 17 - Construct Pipeline from Tennessee River															
Raw	2010	0	0	14,600,000	99,792,000	0	0	114,392,000	22,878,400	137,270,400	1,000,000	27,454,080		165,724,480	165,724,480
Alternative 18 - Construct Pipeline from Tims Ford Reservoir															
Raw	2010	0	0	6,500,000	10,137,600	0	0	16,637,600	3,327,520	19,965,120	1,000,000	3,993,024		24,958,144	24,958,144
Alternative 19 - Discharge Arnold Cooling Water to Normandy Reservoir															
Raw	2010	0	0	0	5,702,400	0	0	5,702,400	1,140,480	6,842,880	1,000,000	1,368,576		9,211,456	9,211,456
Finished	2020	0	6,600,000	0	3,168,000	0	0	9,768,000	1,953,600	11,721,600	234,432	2,344,320		14,300,352	14,300,352
Alternative 20 - Purchase Water from Nearby Systems															
Raw	2010	0	0	0	0	0	0	0	0	0	0	0		0	0
Alternative 22 - Pump Treated Wastewater from Columbia WWTP to Columbia Dam															
Raw	2010	0	0	3,000,000	5,702,400	0	0	8,702,400	1,740,480	10,442,880	1,000,000	2,088,576		13,531,456	13,531,456
Alternative 24 - Construct New Water Intake for Maury County near Williamsport															
Raw	2010	0	0	9,800,000	16,156,800	0	0	25,956,800	5,191,360	31,148,160	1,000,000	6,229,632		38,377,792	38,377,792
Finished	2020	0	11,500,000	9,800,000	14,256,000	0	0	35,556,000	7,111,200	42,667,200	1,000,000	8,533,440		52,200,640	52,200,640
Alternative 25 - Construct New Water Intake near Williamsport and Pump Back to Columbia Dam Pool															
Raw	2010	0	0	9,800,000	28,274,400	0	0	38,074,400	7,614,880	45,689,280	1,000,000	9,137,856		55,827,136	55,827,136
Alternative 26 - Construct Infrastructure to Return Treated Water from Tullahoma WWTP to Normandy Reservoir															
Raw	2010	0	3,000,000	1,500,000	5,702,400	0	0	10,202,400	2,040,480	12,242,880	1,500,000	2,448,576		16,191,456	16,191,456

Alternative	Dams and Reservoirs			
	Unit	Quantity	Unit Cost (\$)	Cost (\$)
Alternative 2 - Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels (add Alt. #10)				
Phase 1				
Phase 2				
Alternative 5 - Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam				
Phase 1	acres	5,000	5,000	
Phase 2				
Alternative 6 - Modify Normandy Reservoir Flood Rule Curve				
Phase 1	acres	5,000	5,000	
Phase 2				
Alternative 8 - Modify River Constraints to Preserve Storage in Normandy Reservoir				
Phase 1				
Phase 2				
Alternative 9 - Raise Normandy Dam				
Phase 1	Lump Sum	1	8,000,000	8,000,000
Phase 2				
Alternative 12 - Construct Fountain Creek Reservoir				
Phase 1	Lump Sum	1	24,000,000	24,000,000
Phase 2				
Alternative 13 - Construct Fountain Creek Reservoir with Downstream Release				
Phase 1	Lump Sum	1	24,000,000	24,000,000
Phase 2				
Alternative 15 - Build Offstream Storage Reservoir along Duck River (Pond 15)				
Phase 1	Lump Sum	1	4,296,000	4,296,000
Phase 2				
Alternative 16 - Utilize Quarries				
Phase 1				
Phase 2				
Alternative 17 - Construct Pipeline from Tennessee River				
Phase 1				
Phase 2				
Alternative 18 - Construct Pipeline from Tims Ford Reservoir				
Phase 1				
Phase 2				
Alternative 19 - Discharge Arnold Cooling Water to Normandy Reservoir				
Phase 1				
Phase 2				
Alternative 20 - Purchase Water from Nearby Systems				
Phase 1				
Phase 2				
Alternative 22 - Pump Treated Wastewater from Columbia WWTP to Columbia Dam				
Phase 1				
Phase 2				
Alternative 24 - Construct New Water Intake for Maury County near Williamsport				
Phase 1				
Phase 2				
Alternative 25 - Construct New Water Intake near Williamsport and Pump Back to Columbia Dam Pool				
Phase 1				
Phase 2				
Alternative 26 - Construct Infrastructure to Return Treated Water from Tullahoma WWTP to Normandy Reservoir				
Phase 1				
Phase 2				

Alternative	Description	Treatment Plant				
		Capacity (mgd)	Unit	Quantity	Unit Cost (\$)	Cost (\$)
Alternative 2 - Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels (add Alt. #10)						
Phase 1						
Phase 2						
Alternative 5 - Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam						
Phase 1						
Phase 2						
Alternative 6 - Modify Normandy Reservoir Flood Rule Curve						
Phase 1						
Phase 2						
Alternative 8 - Modify River Constraints to Preserve Storage in Normandy Reservoir						
Phase 1						
Phase 2						
Alternative 9 - Raise Normandy Dam						
Phase 1						
Phase 2						
Alternative 12 - Construct Fountain Creek Reservoir						
Phase 1						
Phase 2						
Alternative 13 - Construct Fountain Creek Reservoir with Downstream Release						
Phase 1						
Phase 2						
Alternative 15 - Build Offstream Storage Reservoir along Duck River (Pond 15)						
Phase 1						
Phase 2						
Alternative 16 - Utilize Quarries						
Phase 1						
Phase 2						
Alternative 17 - Construct Pipeline from Tennessee River						
Phase 1						
Phase 2						
Alternative 18 - Construct Pipeline from Tims Ford Reservoir						
Phase 1						
Phase 2						
Alternative 19 - Discharge Arnold Cooling Water to Normandy Reservoir						
Phase 1						
Phase 2			Lump Sum	1	6,600,000	6,600,000
Alternative 20 - Purchase Water from Nearby Systems						
Phase 1						
Phase 2						
Alternative 22 - Pump Treated Wastewater from Columbia WWTP to Columbia Dam						
Phase 1			Lump Sum	1	-	-
Phase 2						
Alternative 24 - Construct New Water Intake for Maury County near Williamsport						
Raw						
Finished			Lump Sum	1	11,500,000	11,500,000
Alternative 25 - Construct New Water Intake near Williamsport and Pump Back to Columbia Dam Pool						
Phase 1						
Phase 2						
Alternative 26 - Construct Infrastructure to Return Treated Water from Tullahoma WWTP to Normandy Reservoir						
Phase 1			Lump Sum	1	3,000,000	3,000,000
Phase 2						

Alternative	Description	Transportation			
		Unit	Quantity	Unit Cost (\$)	Cost (\$)
Alternative 2 - Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels (add Alt. #10)					
Phase 1					
Phase 2					
Alternative 5 - Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam					
Phase 1					
Phase 2					
Alternative 6 - Modify Normandy Reservoir Flood Rule Curve					
Phase 1					
Phase 2					
Alternative 8 - Modify River Constraints to Preserve Storage in Normandy Reservoir					
Phase 1					
Phase 2					
Alternative 9 - Raise Normandy Dam					
Phase 1		Lump Sum	1	11,100,000	11,100,000
Phase 2					
Alternative 12 - Construct Fountain Creek Reservoir					
Phase 1					
Phase 2					
Alternative 13 - Construct Fountain Creek Reservoir with Downstream Release					
Phase 1					
Phase 2					
Alternative 15 - Build Offstream Storage Reservoir along Duck River (Pond 15)					
Phase 1					
Phase 2					
Alternative 16 - Utilize Quarries					
Phase 1					
Phase 2					
Alternative 17 - Construct Pipeline from Tennessee River					
Phase 1					
Phase 2					
Alternative 18 - Construct Pipeline from Tims Ford Reservoir					
Phase 1					
Phase 2					
Alternative 19 - Discharge Arnold Cooling Water to Normandy Reservoir					
Phase 1					
Phase 2					
Alternative 20 - Purchase Water from Nearby Systems					
Phase 1					
Phase 2					
Alternative 22 - Pump Treated Wastewater from Columbia WWTP to Columbia Dam					
Phase 1					
Phase 2					
Alternative 24 - Construct New Water Intake for Maury County near Williamsport					
Phase 1					
Phase 2					
Alternative 25 - Construct New Water Intake near Williamsport and Pump Back to Columbia Dam Pool					
Phase 1					
Phase 2					
Alternative 26 - Construct Infrastructure to Return Treated Water from Tullahoma WWTP to Normandy Reservoir					
Phase 1					
Phase 2					