STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A5-B3-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A5-B3-(1)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n (f)			_	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and 	
67	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
Ephonora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	9	3	5	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	5	1	5			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)		-				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	Oocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r	right bank scores.	
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.12	1.30	1,48			
	Biogeochemical FCI + Habitat FCI						
	TOTAL FCU = SAR Length (67) X	0.09	0.11	0.12			
	Multiplication Factor (0.00125) X Total FCI	0.00	0.11	V.12			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A5-B4-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s): S2-TRIB3-A5-B4-(1),	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
S2-TRIB3-A5-(2)	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	 Created pools will retain water Protection, plantings, and measures 	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
198	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side)		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and r	ight bank agorog	
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal Habitat FCI = Subtotal / 120	44 0.37	54 0.45	62 0.52	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (198) X Multiplication Factor (0.00125) X Total FCI	0.28	0.33	0.37	· · · · · · · · · · · · · · · · · · ·	···· · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A5-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A5-TRIBA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	 Created pools will retain water Protection, plantings, and measures 	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
657	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side)		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and r	ight hank sooroo	
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal Habitat FCI = Subtotal / 120	45 0.38	55 0.46	63 0.53	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.34	1.52	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (657) X Multiplication Factor (0.00125) X Total FCI	0.95	1.10	1.25	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A6-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A6-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n <i>(f)</i>				species	- Protection, plantings, and measures	
	H3d. Channel Incision	3	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	24	30	37	- Adjustment of channel gradient by	 Woody debris, leaf litter, and 	
844	Hydrologic FCI = Subtotal / 100	0.24	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
Ephoniora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	D	7	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	5	'	9			
	WQ6b. Riparian Zone Vegetation	3	6	9			
	Protection/Completeness (e)	3	0	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	27	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.34	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-13	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Viality / Biazasahamiaal Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	3	5	7	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	37	47	58	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.31	0.39	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	0.89	1.15	1.44	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI		I		are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	TOTAL FCU = SAR Length (844) X	0.94	1.21	1.52			
	Multiplication Factor (0.00125) X Total FCI						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A6-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A6-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
445	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width on each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7			
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-13	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	8	8	8	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring bacques Agustic Variation das-	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.38	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (445) X Multiplication Factor (0.00125) X Total FCI	0.66	0.77	0.87	· · · · · · · · · · · · · · · · · · ·	····· · ,	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
S2-TRIB3-A7-(0)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water
	n (f)	2	2	3	species	- Protection, plantings, and measures
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
773	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity
	g)				- Creation of pools in combination with	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate	
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate	0	0	9	- Creation of protected natural area	
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge	-	7	0	- Monitoring and management	
	to field) (e)	5	7	9	5 5	
	WQ6b. Riparian Zone Vegetation		<u> </u>			
	Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46		
Re-Establishment	Water Quality / Biogeochemical FCI =	0.40	0.40	0.50		
	Subtotal / 80	0.40	0.49	0.58		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:	
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera	
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.	a sucan channer conullon within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality /				(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication
	Biogeochemical FCI + Habitat FCI	- 11/		1.53	factors for Perennial, Intermittent with Perennia	
				I	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.
	TOTAL FCU = SAR Length (773) X	1.13	1.30	1.48		
	Multiplication Factor (0.00125) X Total FCI	1.13	1.50	1.40		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A7-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	Name(s): H2c. Channel Bank Stability (e) 6 7	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
S2-TRIB3-A7-(1)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,318	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	inter the second	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.19	1.39	1.58	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1318) X Multiplication Factor (0.00125) X Total FCI	1.96	2.29	2.60	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S2-TRIB3-A7-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S2-TRIB3-A7-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,				
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and				
508	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation				
508	WQ1a. Bank Stability (e)	6	0.42	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and				
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoochomical Eurotions: "UP" -				
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53		ai stream cnannei condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.19	1.39	1.58	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams and 0.00005 0.0005 0.0005 region 0.0005 regression (0.0005 regression)					
	TOTAL FCU = SAR Length (508) X Multiplication Factor (0.00125) X Total FCI	0.76	0.88	1.00	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	actively.				

S2-TRIB3-A7-(3)	SWAMPIM METRICS (a, b, c, d) H1. Flow Regime and Groundwater Interaction	CONSTRUCTION	MONUTODINO				
S2-TRIB3-A7-(3)	H1 Flow Regime and Groundwater Interaction		MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
	The new regime and Groundwater interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
P	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A7-(3)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
I F	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures 	
	H3d. Channel Incision H4a. Pools	<u> </u>	<u> </u>	-	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	3	3	4 3	other native material for in-channel	improve bank stability, filter runoff,	
				-	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
700	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Zone A (WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition <i>(e,</i> g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral \	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i>	-	-	-	adjacent to riparian buffer zone		
t	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
1 1	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Violity / Diagoophamical Eurotiona: "UP" -	
. <u>1</u>	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB =	
1 1	HB6. Channel Flow Status	3	3	3	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
1 1	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately represe		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
I F	Habitat Subtotal	49	59	67	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
I F	Habitat FCI = Subtotal / 120	0.41	0.49	0.56	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.38	1.58	1.77	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (700) X Multiplication Factor (0.00125) X Total FCI	1.21	1.38	1.55	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A7-B2-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A7-B2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n (f)			_	species	- Protection, plantings, and measures	
	H3d. Channel Incision	4	6	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	25	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
534	Hydrologic FCI = Subtotal / 100	0.25	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	g) WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
Ephemeral	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	39	46			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-12	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Diagonabamical Eurotiona: "HD" -	
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	Quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	ight bank scores.	
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	39	46	55	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.33	0.38	0.46	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.01	1.17	1.41			
	TOTAL FCU = SAR Length (534) X	0.67	0.78	0.94	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A7-B3-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A7-B3-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n <i>(f)</i> H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
		-	-	÷	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
112	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitianation Zanas	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoophomical Eurotions: "HP" -	
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.29	1.46			
	TOTAL FCU = SAR Length (112) X Multiplication Factor (0.00125) X Total FCI	0.15	0.18	0.20	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Journey.	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED		
	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A7-B4-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A7-B4-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2		- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Fools H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	Hydrologic Subtotal	28	31	36	structures	and enhance water quality	
Proposed SAR Length (LF):	, , ,				- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
548	Hydrologic FCI = Subtotal / 100 WQ1a. Bank Stability (e)	0.28	0.31	0.36	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitianation Zanas		7	7	7	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	38	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.48	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-12	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiane: "HP" -	
	HB5. Sediment Deposition and Scouring	3	5	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	7	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	7	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	38	47	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.32	0.39	0.48	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.01	1.18	1.40			
	TOTAL FCU = SAR Length (548) X Multiplication Factor (0.00125) X Total FCI	0.69	0.81	0.96	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ecuvery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A7-B5-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A7-B5-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
353	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	5	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. ad in liqu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	acting bacques Aquetic Vegetation data and	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.30	1.48	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (353) X Multiplication Factor (0.00125) X Total FCI	0.49	0.57	0.65	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A8-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
2-TRIB3-A8-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	structures	and enhance water quality	
· · · · · · · · · · · · · · · · · · ·	, ,				- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
514	Hydrologic FCI = Subtotal / 100 WQ1a. Bank Stability (e)	0.39 6	0.40	0.42	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitingtian Zanas		6	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	5	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Diagoophamical Eurotiona: "HB" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.35	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (514) X Multiplication Factor (0.00125) X Total FCI	0.75	0.87	0.98	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	icouvery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S2-TRIB3-A8-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area downcutting and improve stre				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S2-TRIB3-A8-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures			
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	structures - Adjustment of channel gradient by	and enhance water quality			
359	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	 Woody debris, leaf litter, and overhanging herbaceous vegetation 			
309	WQ1a. Bank Stability (e)	6	0.39 7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and			
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotianes "HP" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.51					
	TOTAL FCU = SAR Length (359) X Multiplication Factor (0.00125) X Total FCI	0.52	0.60	0.68	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.			

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A8-B1-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A8-B1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1		- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n <i>(f)</i> H3d. Channel Incision	2	5	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
			-	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	23	29	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
169	Hydrologic FCI = Subtotal / 100	0.23	0.29	0.36	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Million di an 7 ang	WQ1a. Bank Stability (e)	7	7	7	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	37	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.39	0.46	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoophomical Eurotions: "HP" -	
	HB5. Sediment Deposition and Scouring	3	4	4	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	34	43	54	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.28	0.36	0.45	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.90	1.11	1.37			
	TOTAL FCU = SAR Length (169) X Multiplication Factor (0.00125) X Total FCI	0.19	0.23	0.29	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Joolivoiy.	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPINI METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A8-B2-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):		prevent uncontrolled access (cattle,	floodplain connectivity (through				
S2-TRIB3-A8-B2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	23	28	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
129	Hydrologic FCI = Subtotal / 100	0.23	0.28	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	37	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.46	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	3	Notes:		
A-15	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	4	4	4	Habitat Functions.	() ·g	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.	inter the second	
	HB8. Channel Sinuosity	3	3	3	 (e) Score shown is the average of the left and r (f) Instream bottom topography was globally us 		
	HB9. Bank Stability <i>(e)</i>	7	7	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	coring because Aquatic Vagatation doos act	
	Habitat Subtotal	36	45	54	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.30	0.38	0.45	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.93	1.12	1.37	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (129) X Multiplication Factor (0.00125) X Total FCI	0.15	0.18	0.22	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A9-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A9-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n (f)			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	36	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
130	Hydrologic FCI = Subtotal / 100	0.36	0.36	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material (rock or woody debris) where	from established buffer zones will enhance in-stream habitat and	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate - Creation of riparian buffer zones		
	Aquatic Vegetation (h)				around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	5	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	29	36	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.36	0.45	0.56	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	3	Notes:		
A-15	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	2	5	7	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	7	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	34	46	56	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.28	0.38	0.47	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.00	1.19	1.41	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (130) X Multiplication Factor (0.00125) X Total FCI	0.16	0.19	0.23	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Journay.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A9-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
2-TRIB3-A9-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
447	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
447	WQ1a. Bank Stability (e)	6	0.39	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Diagonabamical Eurotiona, "UP" -	
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.50	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (447) X Multiplication Factor (0.00125) X Total FCI	0.64	0.74	0.84	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Jecuvery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A10-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A10-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
105	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
105	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.50	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (105) X Multiplication Factor (0.00125) X Total FCI	0.15	0.17	0.20	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ecuvery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-A10-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
2-TRIB3-A10-(3)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
302	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
002	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
-	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	46	56	64	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.38	0.47	0.53	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (302) X Multiplication Factor (0.00125) X Total FCI	0.44	0.51	0.58	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ecuvery.	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-A10-B1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
1	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
123	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR	0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58	-		
1	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiana: "HP" -	
1	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB =	
1	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
1	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
1	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
1	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
1	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
1	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
1	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
1	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.50			
	TOTAL FCU = SAR Length (123) X Multiplication Factor (0.00125) X Total FCI	0.18	0.20	0.23	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S2-TRIB3-B1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S2-TRIB3-B1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	 Woody debris, leaf litter, and 	
283	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
Ephemeral	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Diagoophamical Eurotiona: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.51	Raiph Hail project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (283) X Multiplication Factor (0.00125) X Total FCI	0.41	0.47	0.53	are 6.0000, 6.00010, 6.0020, and 6.00120, resp		

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
T1-BAKER-(0)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	8	8	8	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2		- LWD will increase channel	
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	4	4	4	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	1	1	1	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
2,710	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
2,710	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	1	1	1	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	1	1	1	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	43	51			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.54	0.64			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-4, A-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
,	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Viality / Biazasahamiaal Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	47	57	65	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.39	0.48	0.54	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.33	1.54	1.72	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (2710) X Multiplication Factor (0.00125) X Total FCI	4.51	5.22	5.83	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED					
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel				
T1-BAKER-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T1-BAKER-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2		- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures 				
	H4a. Pools	4	4	0 4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	1	4	4	other native material for in-channel	improve bank stability, filter runoff,				
	Hydrologic Subtotal		47	49	structures	and enhance water quality				
Proposed SAR Length (LF):	, ,	46		-	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
1,540	Hydrologic FCI = Subtotal / 100 WQ1a. Bank Stability (e)	0.46	0.47	0.49	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will				
Mittan tine 7 and		6	7	8	(rock or woody debris) where	enhance in-stream habitat and				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	1	1	1	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	1	1	1	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	43	51						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.54	0.64						
	HB1. Flow Regime	2	2	2						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-5, A-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Diagoophamical Eurotiona: "HB" -				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	46	56	64	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.38	0.47	0.53	provide an accurate representation of ephemera	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.27	1.48	1.66	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCU = SAR Length (1540) X Multiplication Factor (0.00125) X Total FCI	2.44	2.85	3.20	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.				

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED					
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel				
T2-BAKER-(1)	H2a. Channel Condition/ Alteration	3	5	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	7	7	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T2-BAKER-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency)				
	H3b. Bottom Substrate Composition	1	1	1		- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	7	7	7	species	- Protection, plantings, and measures				
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	1	4	4	other native material for in-channel	improve bank stability, filter runoff,				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	41	46	structures - Adjustment of channel gradient by	and enhance water quality				
1,493	Hydrologic FCI = Subtotal / 100	0.39	0.41	40 0.46	installing grade control structures	 Woody debris, leaf litter, and overhanging herbaceous vegetation 				
1,493	WQ1a. Bank Stability (e)	0.39	0.41	0.46	(GCS) made from native material	from established buffer zones will				
Mitigation Zanas		1	/	1	(rock or woody debris) where	enhance in-stream habitat and				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	1	1	1	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	1	1	1	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	5	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	48						
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.60						
	HB1. Flow Regime	2	2	2						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:					
A-2	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamical Europticase "UD" -				
	HB5. Sediment Deposition and Scouring	2	4	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =				
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	2	4	7	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	6	7	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.					
	Habitat Subtotal	39	48	61	(h) Nutrient Enrichment was used globally for se					
	Habitat FCI = Subtotal / 120	0.33	0.40	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.30	1.57	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCU = SAR Length (1493) X Multiplication Factor (0.00125) X Total FCI	2.09	2.43	2.93	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.				

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIN METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T2-BAKER-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T2-BAKER-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,229	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
-,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-		Ũ	(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1229) X Multiplication Factor (0.00125) X Total FCI	1.80	2.10	2.40	and 0.0000, 0.00010, 0.0020, and 0.00120, lesp	oouvoy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T2-BAKER-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T2-BAKER-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability				
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
698	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7						
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9						
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us					
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.					
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	poring bosoupo Agustio Variation dasa ant				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (698) X Multiplication Factor (0.00125) X Total FCI	1.02	1.20	1.36	· · · · · · · · · · · · · · · · · · ·					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T2-BAKER-TRIB1-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
T2-BAKER-TRIB1-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel			
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability			
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	3	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	19	25	34	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
274	Hydrologic FCI = Subtotal / 100	0.19	0.25	0.34	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will			
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	4	5	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity			
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4					
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	26	34	45					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.33	0.43	0.56					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
A-2	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of			
	HB4. Pool Variability	1	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =			
	HB5. Sediment Deposition and Scouring	2	5	6	Habitat Functions.				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	2	5	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	Ignt bank scores. ed in lieu of Manning's N as it allows for a			
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.				
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake			
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	coring because Aquatic Vagatation doos act			
	Habitat Subtotal	30	43	54	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 				
	Habitat FCI = Subtotal / 120	0.25	0.36	0.45					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.77	1.04	1.35					
	TOTAL FCU = SAR Length (274) X Multiplication Factor (0.00125) X Total FCI	0.26	0.36	0.46	· · · · · · · · · · · · · · · · · · ·	····· · /			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T2-BAKER-TRIB1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T2-BAKER-TRIB1-(2),	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
T2-BAKER-(2)	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,080	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.(e) Score shown is the average of the left and r	ight hank sooroo	
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal Habitat FCI = Subtotal / 120	44 0.37	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1080) X Multiplication Factor (0.00125) X Total FCI	1.57	1.84	2.09			

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED					
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel				
- ()	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T3-BAKER-(7)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2		- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	4	<u> </u>	-	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	4	4	4	other native material for in-channel	improve bank stability, filter runoff,				
				-	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	46	47	49	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
430	Hydrologic FCI = Subtotal / 100	0.46	0.47	0.49	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will				
	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and				
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
	WQ2. Water Clarity	1	1	1	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	1	1	1	where appropriate - Creation of riparian buffer zones					
	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width					
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	43	51						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.54	0.64						
	HB1. Flow Regime	2	2	2						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical Functions, ThD =				
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	46	56	64	(h) Nutrient Enrichment was used globally for so					
	Habitat FCI = Subtotal / 120	0.38	0.47	0.53	provide an accurate representation of ephemera	ai stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.27	1.48	1.66	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams and 0.00026 0.00026 and 0.0005 presentiations.					
	TOTAL FCU = SAR Length (430) X Multiplication Factor (0.00125) X Total FCI	0.68	0.80	0.89	are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T3-BAKER-TRIB1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T3-BAKER-TRIB1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability				
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
155	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4						
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9						
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.(e) Score shown is the average of the left and r	ight hank sooroo				
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.					
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo					
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not				
	Habitat Subtotal Habitat FCI = Subtotal / 120	43 0.36	53 0.44	61 0.51	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.30	0.44	0.51	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (155) X Multiplication Factor (0.00125) X Total FCI	0.22	0.26	0.29	· · · · · · · · · · · · · · · · · · ·	····· · /				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T3-BAKER-TRIB1-(2)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T3-BAKER-TRIB1-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	32	32	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
190	Hydrologic FCI = Subtotal / 100	0.32	0.32	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	6	7	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	36	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.45	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-2	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	7	7	Habitat Functions.	(
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	7	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	coring boouse Aquatic Vagatation dass act	
	Habitat Subtotal	42	48	57	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.35	0.40	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.07	1.17	1.39	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (190) X Multiplication Factor (0.00125) X Total FCI	0.25	0.28	0.33	· · · · · · · · · · · · · · · · · · ·	····· · ,	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T3-BAKER-TRIB1-(3a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T3-BAKER-TRIB1-(3)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
923	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. ad in liou of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	acting bacques Aquetic Vegetation data and	
	Habitat Subtotal	42	52	60	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.50			
	TOTAL FCU = SAR Length (923) X Multiplication Factor (0.00125) X Total FCI	1.28	1.51	1.73	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T3-BAKER-TRIB1-(3b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T3-BAKER-TRIB1-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability				
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
201	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7						
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9						
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
A-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.(e) Score shown is the average of the left and r	ight hank sooroo				
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.					
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo					
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat Subtotal Habitat FCI = Subtotal / 120	44 0.37	54	62						
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (201) X Multiplication Factor (0.00125) X Total FCI	0.29	0.34	0.39	····, · ··· ·, · ···, ·····, ·····					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T3-BAKER-TRIB1-B1-(1)	H2a. Channel Condition/ Alteration	6	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
[3-BAKER-TRIB1-B1-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	 Created pools will retain water Protection, plantings, and measures 	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	31	33	34	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
289	Hydrologic FCI = Subtotal / 100	0.31	0.33	0.34	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
	g)				LWD and GCS and other locations		
Stream Classification:	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width on each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9			
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	29	37	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.36	0.46	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-2	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Vuality / Riagoophomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.	quality / blogeochemical Functions, FIB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	6	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	36	46	55	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.30	0.38	0.46	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.97	1.17	1.36	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (289) X Multiplication Factor (0.00125) X Total FCI	0.35	0.42	0.49	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectivery.	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	 Protection within large contiguous 	- GCS will reduce channel	
T3-BAKER-TRIB1-B2-(1)	H2a. Channel Condition/ Alteration	6	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T3-BAKER-TRIB1-B2-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	1	1	1	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	40	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
165	Hydrologic FCI = Subtotal / 100	0.38	0.40	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	3	3	3	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
•	Aquatic Vegetation (h)	3	3	3	 Creation of riparian buffer zones around channel (minimum of 60' width on each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9			
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	37	45	53			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.46	0.56	0.66			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-2	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	addity , Biogeochermour anotione, The	
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	7	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	 (e) Score shown is the average of the left and n (f) Instream bottom topography was globally us 		
	HB9. Bank Stability <i>(e)</i>	6	7	7	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	50	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.33	0.42	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.38	1.56	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (165) X Multiplication Factor (0.00125) X Total FCI	0.24	0.28	0.32		···· · ,	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	 Protection within large contiguous 	- GCS will reduce channel	
T3-BAKER-TRIB1-B2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	8	8	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T3-BAKER-TRIB1-B2-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	34	34	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
136	Hydrologic FCI = Subtotal / 100	0.34	0.34	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	8	8	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	3	4	around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	39	46			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-2	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	Viality / Biagagabamical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	5	6	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	8	8	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	50	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.42	0.48	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.25	1.42			
	TOTAL FCU = SAR Length (136) X Multiplication Factor (0.00125) X Total FCI	0.19	0.21	0.24	ano 0.0000, 0.00010, 0.0020, anu 0.00120, lesp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T4-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability				
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
302	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width on each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4						
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9						
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	 (d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and r 	ight honk sooroo				
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us					
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.					
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo					
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat Subtotal Habitat FCI = Subtotal / 120	44 0.37	54 0.45	62 0.52						
	Habitat FGI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.36	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (302) X Multiplication Factor (0.00125) X Total FCI	0.45	0.51	0.58						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T4-(3)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency)			
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 			
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water			
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures			
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will			
	H4b. Channel Flow Status	0	0	0	structures	improve bank stability, filter runoff, and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	35	35	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
549	Hydrologic FCI = Subtotal / 100	0.35	0.35	0.37	installing grade control structures	overhanging herbaceous vegetation			
549	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	0	1	(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	49					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Diagonabamical Eurotiona, "UP" -			
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	7	7	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	41	50	58	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	Habitat FCI = Subtotal / 120	0.34	0.42	0.48					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.28	1.46					
	TOTAL FCU = SAR Length (549) X Multiplication Factor (0.00125) X Total FCI	0.75	0.88	1.00	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Journay.			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T4-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 			
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water			
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
738	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area				
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -			
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Diogeochemical runctions, Thb -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	and a base of the Manual Contract of			
	Habitat Subtotal	44	54	62	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 				
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55					
	TOTAL FCU = SAR Length (738) X Multiplication Factor (0.00125) X Total FCI	1.07	1.25	1.43	are 6.0000, 6.00010, 6.0020, and 6.00120, 165p	sourcey.			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T4-(5)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,				
Proposed SAR Length (LF):	Hydrologic Subtotal	36	36	38	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and				
938	Hydrologic FCI = Subtotal / 100	0.36	0.36	0.38	installing grade control structures	overhanging herbaceous vegetation				
930	WQ1a. Bank Stability (e)	6	6	0.30 7	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:		0	0	1	(rock or woody debris) where	enhance in-stream habitat and				
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width					
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	49						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoophomical Eurotions: "HP" -				
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	7	7	7	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	41	50	58	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.34	0.42	0.48	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.29	1.47						
	TOTAL FCU = SAR Length (938) X Multiplication Factor (0.00125) X Total FCI	1.30	1.51	1.72	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Journay.				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T4-(6)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. Instream Bottom Topography OR Manning's	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	n <i>(f)</i>			-	species	- Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	 Woody debris, leaf litter, and 			
799	Hydrologic FCI = Subtotal / 100		0.42	0.44	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				 Creation of pools in combination with LWD and GCS and other locations 				
	WQ2. Water Clarity	0	0	0	where appropriate				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones				
	Aquatic Vegetation (h)			-	around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	9	9	0	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management				
	to field) <i>(e)</i>	5	'	3					
	WQ6b. Riparian Zone Vegetation	2	6	9					
	Protection/Completeness (e)		-	-					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49					
Re-Establishment	Water Quality / Biogeochemical FCl = Subtotal / 80	0.40	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -			
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Diogeochemical Functions, ThD =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	a stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality /				(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication			
	Biogeochemical FCI + Habitat FCI	118	1.38	1.57	factors for Perennial, Intermittent with Perennia				
			1	ц [are 0.0038, 0.00315, 0.0025, and 0.00125, resp	bectively.			
	TOTAL FCU = SAR Length (799) X	118	1.38	1.57					
	Multiplication Factor (0.00125) X Total FCI	l							

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T4-(7)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability				
	H3c. Instream Bottom Topography OR Manning's n (f)	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
1,047	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity				
	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width on each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 					
	WQ4. Composition of Organic Matter	3	5	7						
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9						
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us					
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo					
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	aning bacques Aquatis Variation data st				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.38	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (1047) X Multiplication Factor (0.00125) X Total FCI	1.54	1.81	2.05		···· · · · · ·				

STREAM ASSESSMENT	SWAMPIN METRICS (2, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T4-TRIB2-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. Instream Bottom Topography OR Manning's	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	n <i>(f)</i>	5	3	4	species	- Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
731	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				- Creation of pools in combination with				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations where appropriate				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones				
	Aquatic Vegetation (h)		0	0	around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management				
	to field) (e)	5	/	9					
	WQ6b. Riparian Zone Vegetation	2	6	9					
	Protection/Completeness (e)	Z	0	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
A-3	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =			
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	ight bank scores.			
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	bally instead of Channel Ordinary (Ordinary)			
	HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo				
	HB12. Riparian Habitat Condition	2	5	7	Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake				
	Habitat Subtotal	43	53	61					
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51					
		0.00	1		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication			
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.15	1.33	1.51	factors for Perennial, Intermittent with Perennia				
	Biogeochemical FCI + Habitat FCI		L		are 0.0038, 0.00315, 0.0025, and 0.00125, resp				
	TOTAL FCU = SAR Length (731) X								
	Multiplication Factor (0.00125) X Total FCI	1.05	1.22	1.38					
			L		1				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T4-TRIB2-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	n (f)	3	3	4	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
233	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				- Creation of pools in combination with					
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate					
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	0	0	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	-	7	0	- Monitoring and management					
	to field) (e)	5	7	9	5 5					
	WQ6b. Riparian Zone Vegetation		<u> </u>	<u> </u>						
	Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI =	0.40	0.40	0.50						
	Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.	ar Suleann channer conullion within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality /				(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication				
	Biogeochemical FCI + Habitat FCI	116	1.34	1.52	factors for Perennial, Intermittent with Perennia					
					are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ind 0.00125, respectively.				
	TOTAL FCU = SAR Length (233) X	0.34	0.39	0.44						
	Multiplication Factor (0.00125) X Total FCI	0.34	0.39	0.44						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T4-TRIB2-(1c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	n <i>(f)</i>	5	3	4	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
539	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				 Creation of pools in combination with LWD and GCS and other locations 					
	WQ2. Water Clarity	0	0	0	where appropriate					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones					
	Aquatic Vegetation (h)			0	around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)	I				
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	5	5	5	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management					
	to field) (e)	5	'	5						
	WQ6b. Riparian Zone Vegetation	2	6	9						
	Protection/Completeness (e)		-							
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us					
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.16	1.34	1.52	Raiph Hail project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
_	Biogeochemical FCI + Habitat FCI	1.10	1.34	1.52	are 0.0038, 0.00315, 0.0025, and 0.00125, resp					
	TOTAL FCU = SAR Length (539) X	0.78	0.90	1.02						
	Multiplication Factor (0.00125) X Total FCI	0.10	0.00							

REACH (SAR) INFORMATION			END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT			
	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous mititgation area	- GCS will reduce channel			
T4-TRIB2-(2)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 			
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water			
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
517	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones				
	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Violity / Diagoophamical Eurotiona: "HB" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally use visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately represent				
l I	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
l I	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for so				
l I	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	TOTAL FCU = SAR Length (517) X Multiplication Factor (0.00125) X Total FCI	0.74	0.87	1.00	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Jocuvoy.			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T5-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
666	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				 Creation of pools in combination with LWD and GCS and other locations 					
	WQ2. Water Clarity	0	0	0	where appropriate					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones					
	Aquatic Vegetation (h)			Ū	around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	9	9	3	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management					
	to field) <i>(e)</i>	0	,	3						
	WQ6b. Riparian Zone Vegetation	2	6	9						
	Protection/Completeness (e)		-							
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.					
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us					
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	anian harmon Annatia Manatatian data sat				
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake					
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.14	1.32	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	Biogeochemical FCI + Habitat FCI	1.17	1.52	1.50	are 0.0038, 0.00315, 0.0025, and 0.00125, resp					
	TOTAL FCU = SAR Length (666) X	0.95	1.10	1.25	1					
	Multiplication Factor (0.00125) X Total FCI	0.90	1.10	1.20						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T5-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
431	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition <i>(e,</i>	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately represents the channel condition within the Lake		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.31	1.49	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (431) X Multiplication Factor (0.00125) X Total FCI	0.61	0.71	0.80		····· · · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T5-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	n <i>(f)</i>			_	species	- Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	 Woody debris, leaf litter, and 			
508	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				 Creation of pools in combination with LWD and GCS and other locations 				
	WQ2. Water Clarity	0	0	0	where appropriate				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones				
	Aquatic Vegetation (h)				around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	9	9	3	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management				
	to field) <i>(e)</i>	0	,	3					
	WQ6b. Riparian Zone Vegetation	2	6	9					
	Protection/Completeness (e)		-						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	Documentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Functions: "HB" =			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.15	1.35	1.54					
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp				
	TOTAL FCU = SAR Length (508) X	0.73	0.86	0.98					
	Multiplication Factor (0.00125) X Total FCI	0.10	0.00	0.00					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T5-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
394	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	(
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	coring because Aquatic Vagatation dasa ant	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (394) X Multiplication Factor (0.00125) X Total FCI	0.57	0.67	0.76	· · · · · · · · · · · · · · · · · · ·	····· · ,	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T5-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
467	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	= Water Quality / Biogeochemical FCI Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	Raiph Hail project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (467) X Multiplication Factor (0.00125) X Total FCI	0.68	0.80	0.91			

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIN METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
T5-(5)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	8	8	8	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	1	1	1	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
3,856	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
Zone A	Channel Sediments or Substrate Composition <i>(e, g)</i>	7	7	7	- Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	1	1	1	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	1	1	1	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	43	51			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.54	0.64			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Diogeochermear rancions, The -	
	HB6. Channel Flow Status	1	1	1	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	47	57	65	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.39	0.48	0.54	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.32	1.53	1.71			
	TOTAL FCU = SAR Length (3856) X Multiplication Factor (0.00125) X Total FCI	6.36	7.37	8.24	····, · ··· ·, · ··· ·, ····· ·, ·······		

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	KATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T5-TRIB1-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
		-	-	-	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
569	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will				
	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-3, A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Biassachamical Eurotiana: "HP" -				
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.31	1.49						
	TOTAL FCU = SAR Length (569) X Multiplication Factor (0.00125) X Total FCI	0.80	0.93	1.06	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Jecuvery.				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T5-TRIB1-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	n (f)	Z	2	3	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
390	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				- Creation of pools in combination with					
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations where appropriate					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones					
	Aquatic Vegetation (h)		0	0	around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	5	5	5	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management					
	to field) (e)	5	'	5						
	WQ6b. Riparian Zone Vegetation	2	6	9						
	Protection/Completeness (e)		-							
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piazaaabamiaal Eurotions: "HP" -				
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	a stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality /				(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication				
	Biogeochemical FCI + Habitat FCI	1.13	1.31	1.49	factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (390) X									
	Multiplication Factor (0.00125) X Total FCI	0.55	0.64	0.73						
			Î.		1					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
T5-TRIB1-(1c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. Instream Bottom Topography OR Manning's	0	0	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability			
	n (f)	2	2	3	species	 Created pools will retain water Protection, plantings, and measures 			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
218	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				- Creation of pools in combination with				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate				
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	0	0	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	r.	7	0	- Monitoring and management				
	to field) (e)	5	7	9	5 5				
	WQ6b. Riparian Zone Vegetation		<u> </u>						
	Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Re-Establishment	Water Quality / Biogeochemical FCI =	0.40	0.40	0.50					
	Subtotal / 80	0.40	0.49	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:				
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -			
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.	quality / Diogeochemical runctions, ThD =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake				
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake			
	TOTAL ECL - Hydrologia ECL - Water Quality /				(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication			
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.13	1.31	1.49	factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemera				
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.			
	TOTAL FCU = SAR Length (218) X	0.31	0.26	0.41					
	Multiplication Factor (0.00125) X Total FCI	0.31	0.36	0.41					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T6-BAKER-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,015	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
.,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-	-		(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Diagonabamical Eurotiona: "HD" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56			
	TOTAL FCU = SAR Length (1015) X Multiplication Factor (0.00125) X Total FCI	1.48	1.74	1.98	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Journay.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
T6-BAKER-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
T6-BAKER-(1)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. Instream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,132	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:		
A-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	isht hank agarag	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. red in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (b) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.38	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1132) X Multiplication Factor (0.00125) X Total FCI	1.67	1.95	2.22	, , ,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
T6-BAKER-(1c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
T6-BAKER-(1)	H3a. Channel Sinuosity	8	8	8	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. Instream Bottom Topography OR Manning's n (f)	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
Proposed SAR Length (LF):	Hydrologic Subtotal	44	45	47	structures	and enhance water quality				
· · · · · · · · · · · · · · · · · · ·	, ,				- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
2,732	Hydrologic FCI = Subtotal / 100 WQ1a. Bank Stability (e)	0.44 6	0.45	0.47	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will				
Million di an 7 ang		6	7	8	(rock or woody debris) where	enhance in-stream habitat and				
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	3	3	3	Notes:					
A-4, A-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not					
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	provide an accurate representation of ephemera	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.22	1.42	1.61	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCU = SAR Length (2732) X	4.17	4.85	5.50	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.				
	Multiplication Factor (0.00125) X Total FCI		1	1						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area downcutti	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-(1)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
		8	8	8	species	- Protection, plantings, and measures	
	H3d. Channel Incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
		41	42	44	structures	and enhance water quality	
Proposed SAR Length (LF): 921	Hydrologic Subtotal	0.41		44 0.44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
921	Hydrologic FCI = Subtotal / 100	6	0.42	-	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	WQ1a. Bank Stability (e)	0	7	8	(rock or woody debris) where	enhance in-stream habitat and	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (921) X Multiplication Factor (0.00125) X Total FCI	1.36	1.58	1.78	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
591	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around abapted (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	and a second	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (591) X Multiplication Factor (0.00125) X Total FCI	0.87	1.01	1.15	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-(3)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
701	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate			-	on each side)		
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Variation data sat	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.63	1.80	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (701) X Multiplication Factor (0.00125) X Total FCI	1.25	1.43	1.58	· · · · · · · · · · · · · · · · · · ·	····· · ,	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-(4)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,292	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephemeral	Aquatic Vegetation (h)	2	2	2	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	adding y Biogeochermoury anotione, The	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.63	1.80	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (1292) X Multiplication Factor (0.00125) X Total FCI	2.31	2.63	2.91	· · · · · · · · · · · · · · · · · · ·	·	

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
AX-S2-TRIB1-A2-(1)	H2a. Channel Condition/ Alteration	2	4	7	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	2	4	7	prevent uncontrolled access (cattle,	floodplain connectivity (through
AX-S2-TRIB1-A2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	15	23	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
791	Hydrologic FCI = Subtotal / 100	0.15	0.23	0.36	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	2	4	7	(GCS) made from native material	from established buffer zones will
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	2	4	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity
	g)				LWD and GCS and other locations	
	WQ2. Water Clarity	0	0	0	where appropriate	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width	
	WQ4. Composition of Organic Matter	6	6	6	on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e)</i>	7	8	9	- Monitoring and management	
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	5	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	25	34	47		
Enhancement	= Water Quality / Biogeochemical FCI Subtotal / 80	0.31	0.43	0.59		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:	
A-14	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -
	HB5. Sediment Deposition and Scouring	3	4	6	Habitat Functions.	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	2	4	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	
	HB9. Bank Stability <i>(e)</i>	2	4	7	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate
	HB11. Riparian Zone <i>(e)</i>	7	8	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	4	7	Ralph Hall project watershed.	
	Habitat Subtotal	29	42	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral	
	Habitat FCI = Subtotal / 120	0.24	0.35	0.49	provide an accurate representation of epnemera Ralph Hall project watershed.	ai sucam channel condition within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.70	1.01	1.44	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp.	I Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (791) X Multiplication Factor (0.00125) X Total FCI	0.69	1.00	1.42	are 0.0030, 0.00310, 0.0020, and 0.00120, lesp	Joonvoy.

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A2-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
876	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
	g)				LWD and GCS and other locations		
	WQ2. Water Clarity	0	0	0	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	4	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (876) X Multiplication Factor (0.00125) X Total FCI	1.28	1.49	1.69	·····, · · ····, · · ····, · ·····, · ······		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A2-TRIBA-(1)	H2a. Channel Condition/ Alteration	2	4	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	2	4	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A2-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	13	21	34	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
342	Hydrologic FCI = Subtotal / 100	0.13	0.21	0.34	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	2	4	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	2	4	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	23	34	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.29	0.43	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-14	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	1	3	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	1	3	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	2	4	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	4	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	paring baseups Aquatia Vagatatian dasa act	
	Habitat Subtotal	21	36	54	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.18	0.30	0.45	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.60	0.94	1.38	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (342) X Multiplication Factor (0.00125) X Total FCI	0.26	0.40	0.59			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A3-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A3-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
227	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
l .	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	4	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.	a stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Raip Hail project watersnea. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (227) X Multiplication Factor (0.00125) X Total FCI	0.33	0.39	0.44	,,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-(1a)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-(1)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,071	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
A-14, A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.63	1.80	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1071) X Multiplication Factor (0.00125) X Total FCI	1.91	2.18	2.41			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area downce	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
652	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatis Variation data set	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.61	1.78	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (652) X Multiplication Factor (0.00125) X Total FCI	1.15	1.31	1.45		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBA-(1)	H3a. Channel Sinuosity	3 3 3 etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
295	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring boouse Aquatic Vagatation dass act	
	Habitat Subtotal	43	53	61	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.34	1.52	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (295) X Multiplication Factor (0.00125) X Total FCI	0.42	0.49	0.56	· · · · · · · · · · · · · · · · · · ·		

		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBB-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBB-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	27	29	35	- Adjustment of channel gradient by	 Woody debris, leaf litter, and 	
129	Hydrologic FCI = Subtotal / 100	0.27	0.29	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			_	where appropriate		
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	7	8	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	1	8	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	7	0	0	- Monitoring and management		
	to field) (e)	7	8	9	5 5		
	WQ6b. Riparian Zone Vegetation	4	0	0			
	Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	43	48			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.54	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-17	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water Q Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
1	HB11. Riparian Zone (e)	7	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
1	Habitat Subtotal	43	49	56	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.36	0.41	0.47	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
					(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI			1.42	factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (129) X Multiplication Factor (0.00125) X Total FCI	0.18	0.20	0.23			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
AX-S2-TRIB1-A4-TRIBB-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
AX-S2-TRIB1-A4-TRIBB-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
141	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -		
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / biogeochemical / unctions, Thb =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us			
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera			
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.	a sucan channer condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Raip Hail project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (141) X Multiplication Factor (0.00125) X Total FCI	0.20	0.24	0.27	,	·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBB-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBB-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
466	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14, A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	44	54	62	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (466) X Multiplication Factor (0.00125) X Total FCI	0.68	0.79	0.90			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBB-(2c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBB-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
592	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	and a base of the Manual Contract of	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (592) X Multiplication Factor (0.00125) X Total FCI	0.87	1.01	1.15	····, · ··· ·, · ··· ·, ···· ·, ···· · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBB-AA-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	5	6	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):		floodplain connectivity (through					
AX-S2-TRIB1-A4-TRIBB-AA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	5	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	31	33	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
206	Hydrologic FCI = Subtotal / 100	0.31	0.33	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e,	8	8	8	appropriate	biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
	Aquatic Vegetation (h)	-	-	-	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	7	8	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>		•	ů,	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	8	8	9	 Monitoring and management 		
	to field) (e)	•	ő	Ű			
	WQ6b. Riparian Zone Vegetation	5	7	9			
	Protection/Completeness (e)						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	41	44	48			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.51	0.55	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:	a comparatation (included in America) of	
A-14	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	 (d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and r 	isht hank agarag	
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	7	7	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	7	7	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	48	53	59	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.40	0.44	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.22	1.32	1.46	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (206) X Multiplication Factor (0.00125) X Total FCI	0.31	0.34	0.38			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBB-AB-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):		floodplain connectivity (through					
AX-S2-TRIB1-A4-TRIBB-AB-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	34	34	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
226	Hydrologic FCI = Subtotal / 100	0.34	0.34	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	7	8	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	40	42	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.50	0.53	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-14, A-17	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / biogeochemical / unctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.	ed in neu or manning's iv as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	7	7	7	Ralph Hall project watershed.	acting bacques Agustic Vegetation data at	
	Habitat Subtotal	47	51	58	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.39	0.43	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.23	1.30	1.44	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (226) X Multiplication Factor (0.00125) X Total FCI	0.35	0.37	0.41	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
AX-S2-TRIB1-A4-TRIBB-AC-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	6	7	7	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through
AX-S2-TRIB1-A4-TRIBB-AC-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	32	34	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
141	Hydrologic FCI = Subtotal / 100	0.32	0.34	0.37	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	7	7	7	(GCS) made from native material	from established buffer zones will
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	8	8	8	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate	
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	7	8	9	- Creation of protected natural area adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	8	8	9	- Monitoring and management	
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	41	44	48		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.51	0.55	0.60		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:	
A-17	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	
	HB9. Bank Stability <i>(e)</i>	7	7	7	visual assessment of the stream reach.	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake
	HB12. Riparian Habitat Condition	7	7	7	Ralph Hall project watershed.	acting bacques Aquetis Variation data at
	Habitat Subtotal	49	53	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemeral	
	Habitat FCI = Subtotal / 120	0.41	0.44	0.49	Ralph Hall project watershed.	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.24	1.33	1.46	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	I Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (141) X Multiplication Factor (0.00125) X Total FCI	0.22	0.23	0.26		·

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBC-(1)	H2a. Channel Condition/ Alteration	6	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBC-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	1	1	1	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	33	35	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
172	Hydrologic FCI = Subtotal / 100	0.33	0.35	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	40	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-17	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	7	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.	aaring bacques Agustis Versteling daar of	
	Habitat Subtotal	35	45	56	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.29	0.38	0.47	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.03	1.23	1.42	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (172) X Multiplication Factor (0.00125) X Total FCI	0.22	0.26	0.31		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A4-TRIBC-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A4-TRIBC-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
112	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	coring boouse Agustic Versitation door and	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.50	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (112) X Multiplication Factor (0.00125) X Total FCI	0.16	0.18	0.21		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
AX-S2-TRIB1-A4-TRIBD-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
AX-S2-TRIB1-A4-TRIBD-(1)		etc.) from outside conservation	increased overbank frequency)					
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
257	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -		
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s			
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai sucam channel condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.51	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (257) X Multiplication Factor (0.00125) X Total FCI	0.37	0.43	0.49	· · · · · · · · · · · · · · · · · · ·	····· · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
AX-S2-TRIB1-A4-TRIBE-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
221	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =		
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	addity , Biogeochermodi , anotiene, 112		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us			
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	aning bacques Aquatis Variation data at		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral			
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (221) X Multiplication Factor (0.00125) X Total FCI	0.31	0.36	0.41				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A5-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A5-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
254	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riagonahamical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.34	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (254) X Multiplication Factor (0.00125) X Total FCI	0.36	0.43	0.49	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iecuveiy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A6-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A6-(1)	H3a. Channel Sinuosity 5 5 5 etc.) from outside conservation	,	increased overbank frequency)				
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	28	32	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
439	Hydrologic FCI = Subtotal / 100	0.28	0.32	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	37	41	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.46	0.51	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	4	Notes:		
A-17	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonahamical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	46	52	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.43	0.51	Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.26	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (439) X Multiplication Factor (0.00125) X Total FCI	0.61	0.69	0.81	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A7-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A7-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
359	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiane: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
	TOTAL FCU = SAR Length (359) X Multiplication Factor (0.00125) X Total FCI	0.49	0.59	0.67	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Gouvery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB1-A7-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB1-A7-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
154	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-17	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	halls instead of Channel Cadimant/Oshatata	
	HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ents the charmer condition within the Earce	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.37	0.40	0.52	Ralph Hall project watershed.	a atraam'a flaw ragima, the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (154) X Multiplication Factor (0.00125) X Total FCI	0.22	0.26	0.30			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB2-B2-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	3	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB2-B2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	29	32	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
355	Hydrologic FCI = Subtotal / 100	0.29	0.32	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	3	5	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-16	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonahamical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	3	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	48	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.33	0.40	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	ai suearn channei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.05	1.21	1.45	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (355) X Multiplication Factor (0.00125) X Total FCI	0.47	0.54	0.64			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB2-B2-TRIBA-(1)	H2a. Channel Condition/ Alteration	3	4	6	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	3	4	6	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB2-B2-TRIBA-(1)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	17	23	33	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
384	Hydrologic FCI = Subtotal / 100	0.17	0.23	0.33	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	3	4	6	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	4	5	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abapted (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	37	46			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.46	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	4	Notes:		
A-16	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	3	4	6	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	acting bacques Aquetic Vegetation data and	
	Habitat Subtotal	42	47	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.35	0.39	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.93	1.08	1.40	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (384) X Multiplication Factor (0.00125) X Total FCI	0.45	0.52	0.67		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-(1)	S2-TRIB3-(1) H3a. Channel Sinuosity 1	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	19	25	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
211	Hydrologic FCI = Subtotal / 100	0.19	0.25	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	4	5	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
	g)			-	LWD and GCS and other locations		
	WQ2. Water Clarity	0	0	0	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.39	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagaaabamical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	4	5	7	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	4	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	7	7	Ralph Hall project watershed.		
	Habitat Subtotal	39	47	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.33	0.39	0.49	Ralph Hall project watershed.	a sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.91	1.10	1.44	Raiph Hall project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (211) X Multiplication Factor (0.00125) X Total FCI	0.24	0.29	0.38	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	4	4	4	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
804	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	addity , Biogeochermour , anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.20	1.39	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (804) X Multiplication Factor (0.00125) X Total FCI	1.21	1.40	1.58			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-(2)	H3a. Channel Sinuosity	7	7	7	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	4	4	4	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	44	45	47	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,036	Hydrologic FCI = Subtotal / 100	0.44	0.45	0.47	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	poring bosoupo Agustio Variation dasa ant	
	Habitat Subtotal	45	55	63	(n) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.23	1.42	1.60	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1036) X Multiplication Factor (0.00125) X Total FCI	1.59	1.84	2.07		·	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	3	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-(1)	H3a. Channel Sinuosity	3a. Channel Sinuosity 3 3 3 etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	25	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
139	Hydrologic FCI = Subtotal / 100	0.25	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	5	6	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	5	6	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	4	6	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	38	48			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.39	0.48	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-16	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonahamical Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	5	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	4	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	49	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.41	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.99	1.19	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (139) X Multiplication Factor (0.00125) X Total FCI	0.17	0.21	0.26		···· · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
242	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for si	paring bacques Aquatia Vagatatian dasa act	
	Habitat Subtotal	44	54	62	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (242) X Multiplication Factor (0.00125) X Total FCI	0.36	0.41	0.47			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	42	43	45	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
321	Hydrologic FCI = Subtotal / 100	0.42	0.43	0.45	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	acting bacause Aquatio Manatation data and	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.20	1.39	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (321) X Multiplication Factor (0.00125) X Total FCI	0.48	0.56	0.63	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(2c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
176	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Or each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Variation data sat	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.19	1.38	1.56	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (176) X Multiplication Factor (0.00125) X Total FCI	0.26	0.30	0.34	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(3)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-(3)	H3a. Channel Sinuosity	7	7	7	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	4	4	4	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	38	45	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
564	Hydrologic FCI = Subtotal / 100	0.36	0.38	0.45	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	Or each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	37	40	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.46	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	7	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	paring baseups Aquatis Variation data set	
	Habitat Subtotal	57	59	64	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.48	0.49	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.30	1.37	1.57	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (564) X Multiplication Factor (0.00125) X Total FCI	0.92	0.97	1.11		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
555	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 		
	WQ4. Composition of Organic Matter	5	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15, A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeoenennear rancions, The -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.	a sream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.21	1.38	1.56	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (555) X Multiplication Factor (0.00125) X Total FCI	0.84	0.96	1.08		···· · /	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
401	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring bassues Aquatia Vagatatian dass act	
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	 (i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp. 	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (401) X Multiplication Factor (0.00125) X Total FCI	0.56	0.66	0.74	····, · ··· ·, · ··· ·, ···· ·, ···· · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-(2)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBA-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	4	4	4	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	37	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
233	Hydrologic FCI = Subtotal / 100	0.37	0.37	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	41	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.51	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	7	7	7	Ralph Hall project watershed.	aaring bacques Agustis Venetation deer set	
	Habitat Subtotal	48	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.40	0.43	0.50	Ralph Hall project watershed.	a sa sam shanner condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.25	1.31	1.50	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (233) X Multiplication Factor (0.00125) X Total FCI	0.36	0.38	0.44	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBA-(3)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	structures	and enhance water quality	
97	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
57	WQ1a. Bank Stability (e)	6	0.37	8	(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area		
	Riparian Zone (e)				adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	 Monitoring and management 		
	to field) (e)						
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)		10	47			
Mitigation Design Type: Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI =	32 0.40	40 0.50	47 0.59			
	Subtotal / 80	1	1	1			
Reference Figure:	HB1. Flow Regime HB2. Epifaunal Substrate and Available Cover	1 4	1 4	1 4	Notes:		
A-15	HB2. Epilaurial Substrate and Available Cover HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
A-15	-	3	3	4	Mitigation Plan) for scoring methodology.		
	HB4. Pool Variability HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water 0	Quality / Biogeochemical Functions; "HB" =	
	HB5. Sediment Deposition and Scouring HB6. Channel Flow Status	0	0	0	Habitat Functions.		
	HB0. Channel Alteration	8	8	8	(c) FCl = Functional Condition Index. (d) FCU = Functional Capacity Unit.		
		0 1	<u>o</u> 1	0 1	(e) Score shown is the average of the left and r	iaht bank scores.	
	HB8. Channel Sinuosity HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us		
			-		visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i> HB12. Riparian Habitat Condition	2	5	9	Composition because it more accurately repres Ralph Hall project watershed.	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
		42 0.35	0.43	0.50	provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.30	1.48	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (97) X Multiplication Factor (0.00125) X Total FCI	0.13	0.16	0.18			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
457	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	coring boouse Aquatic Vagatation dass act	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.38	1.57	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia, are 0.0038, 0.00315, 0.0025, and 0.00125, resp	I Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (457) X Multiplication Factor (0.00125) X Total FCI	0.67	0.79	0.90	····, · · · · · · · · · · · · · · · · ·		

HEAD (SM) (MPC/MATUNE) TOWN HOUSE NO. Proceed SAR Name	STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
AK-S2-TRIB3-A7-TRIBA-A7 H20. Channel Condition' Alteration 8 8 8 militation area militation area downauting and improve Baseline SAR Name(s): H20. Channel Capacity (L) 6 7 8 - militation area convention Biochemical Convention 2 2 2 - Biochemical Convention Convention Convention Biochemical Convention 2 2 2 - Biochemical Convention Biochemical Convention Convention Convention Biochemical Convention Convention Convention Biochemical Convention Biochemical Convention Biochemical Convention Biochemical Convention Convention - L/WD will increase the increase	REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Ids. Channel Capacity to Flow Prepuency 8 8 6 7 7 1000000000000000000000000000000000000	Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
Baseline SAR Name(s) L2: Channel Bank Subinty (e) 6 7 7 9 100	AX-S2-TRIB3-A7-TRIBA-AA-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
Al-S2-TRIB3-A7-TRIBA-AA(1) H3s. Channel Sizuestry Increase of a sevenit		H2b. Channel Capacity to Flow Frequency	8	8	8		stability, sediment transport, and	
Concernation Concernation 1	Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8		floodplain connectivity (through	
Hab. Bottom Topography OR Manning an (f) 2 2 3 Hab. Channel Incision Hab. Stability (d) Hab. East Kabality (d) Hab. Channel Incision Hab. Stability (d) Hab. East Kabality (d) Hab. Channel Incision Hab. Stability (d) Hab. Channel Incision Hab. Channel Incision Hab. Stability (d) Hab. Channel Incision Hab. Channel Incision India Hab. Channel Incision Hab. Channel Incision Hab. Channel Inc	AX-S2-TRIB3-A7-TRIBA-AA-(1)	H3a. Channel Sinuosity	1	1	1	,		
Hise. In Steam Bottom 1 (pography UR H32. Channel Incision 2 2 3 H32. Channel Incision 8 7 39 -106 of 1000 to 1		H3b. Bottom Substrate Composition	2	2	2			
H3d Channel Incision 8 8 8 8 90-06-N			2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water	
H4. Pools 0 0 0 0 Proposed SAR Length (LF): Important Stability (P) Hydrologic School (P)			8	8	8		- Protection, plantings, and measures	
Image: constraint of the status 0 0 0 0 Proposed SAR Length (LF): Hydrologic Subtotal 36 37 39								
Proposed SAR Length (LF): Hydrologic Subtotal 38 37 39 - Adjustment of channel gradient by Installing grade control structures (GCS) made from native material (GCS) made from native material (GCS) made from native material (GCS) made from native material (GCS) mode from native from stream habitic (Composition of Organic Matter (DGB). Riparian Zone (P) (WOGB. Riparian Zone Vidith (from stream edge (GGB) mode from anagement (DfeGI) (P) (WOGB. Riparian Zone Vidith (from stream edge (GGB) material public zone (DfeGI) (P) (WOGB. Riparian Zone Vidith (from stream edge (GGB) material public zone (DfeGI) (P) (WOGB. Riparian Zone Vidith (from stream edge (GGB) material public zone (DfeGI) (P) (HB2. Epitamal Substrate and Available Cover (HB3. Stream Botom Substrate (DfeGI) (P) (HB3. From Stream Strutting (DfeGI) (P) (HB3. From Strutting (DfeGI) (P) (HB3. From Strutting (DfeGI) (P) (HB3. From Strutting (DfeGI) (P) (HB3. From Strutting (DfeGI) (P) (HB3. Channel Envoluting) (HB3. Channel Envoluting) (HB3. Channel Envoluting) (HB3. Channel Envoluting) (HB3. Channel Envoluting) (HB3. Channel Envoluting)				-	0			
122 Hydrologic FCI = subtotal / 100 0.36 0.37 0.39 installing grade control structures overhanging herbaceous Mitigation Zone: WQ1b. Eank Stability (d) 6 7 8 Zone A Channel Sediments or Substrate Composition (e, d) 7 7 7 Stream Classification WQ2. Water Clarity 0 0 0 Ephemoral WQ3. Nutlere Enrichment OR Presence of 0 0 0 0 Autipication Factor (i): WQ4. Composition of Organic Matter 4 5 6 0.00125 WQ4. Composition of Organic Matter 9 9 9 WQ4. Composition of Organic Matter 9 9 -Creation of protected natural area ach side) 0.00125 WQ4. Composition of Organic Matter 2 6 9 WQ4. Composition of Organic Matter 2 6 9 Protection/Complemense (e) WA1 0.51 0.660 WQ6. Riparian Zone Vegetation 2 6 9 Protection/Complemense 1 1 1 Reference Figure: H82. Enfatural Substrate and Available Cover 4 4 A-15 H83. Stream Butter Subtrate 4 4 H84. Pool Vatability 2 2 2 <td>Proposed SAR Length (LF):</td> <td></td> <td>36</td> <td></td> <td>39</td> <td></td> <td>- Woody debris, leaf litter, and</td>	Proposed SAR Length (LF):		36		39		- Woody debris, leaf litter, and	
Words Bank Stability (of Channel Sediments or Substrate Composition (e, g) 6 7 8 (GCS) made from native material (cor woody debits) where appropriate from established buffer 2 enhance in-stream habit biological productivity Stream Classification Ephemeral WQ2. Water Clarity 0 0 0 0 - <td< td=""><td></td><td></td><td></td><td>0.37</td><td>0.39</td><td>, , , , , , , , , , , , , , , , , , , ,</td><td>overhanging herbaceous vegetation</td></td<>				0.37	0.39	, , , , , , , , , , , , , , , , , , , ,	overhanging herbaceous vegetation	
Zone A Channel Sediments or Substrate Composition (e. g) 7 9 7 7 9 9 9 9 9 9 9 9 9 9 9			6	7	8	(GCS) made from native material	from established buffer zones will	
Zone A Channel Sediments or Substrate Composition (e, g) 7	Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Stream Classification WQ2. Water Clarity 0 0 0 Ephemeral WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h) 0 0 0 Multiplication Factor (i): WQ4. Composition of Organic Matter 4 5 6 0.00125 WQ4. Composition of Organic Matter 9 9 9 -Creation of riparian buffer zones around channel (minimum of 60 width on each side) 0.00125 WQ6a. Riparian Zone Vegetation (h) 2 6 9 -Creation of protection of protection of protection at trans and protection of protection at trans and protection of protection at trans and protection at trans and protection of protection at trans and protection at trans and protection of protection at trans and protectin at trans	Zone A	Channel Sediments or Substrate Composition (e,	7	7	7		biological productivity	
Ephemeral WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (n) 0 0 0 0 Multiplication Factor (i): WQ4. Composition of Organic Matter 4 5 6 -Creation of riparian buffer zones around channel (minimum of 60' width on each side) -Creation of protected natural area adjacent to riparian buffer zones 0.00125 WQ6. Riparian Zone (e) 9 9 9 -Creation of protected natural area adjacent to riparian buffer zones WQ6B. Riparian Zone Vegetation Protection/Completeness (e) 2 6 9 -Monitoring and management Mitigation Design Type: Water Quality / Biogeochemical Subtolal 33 41 48 Reference Figure: HB1. Flow Regime 1 1 1 Reference Figure: HB2. Sprand Substrate and Available Cover 4 4 4 A.15 HB3. Stram Bottom Substrate 4 4 4 4 HB4. Pool Variability 2 2 2 1 1 1 HB5. Sediment Deposition and Scouring 6 6 6 6 6 6 HB5. Channel Flow Status 0 0 0 0 1 1	Stream Classification		0	0	0			
Aquatic Vegetation (h) 0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Multiplication Factor (i): WG4. Composition of Organic Matter 4 5 6 0.00125 WG5. Land Use Pattern Beyond Immediate 9 9 9 WUQ6a. Riparian Zone (c) WC6a. Riparian Zone Width (from stream edge to field) (c) 5 7 9 Mitigation Design Type: WQ6b. Riparian Zone Vegetation Protection/Completeness (c) 2 6 9 Mitigation Design Type: Water Quality / Biogeochemical Subtotal 33 411 48 Reference Figure: HB1. Flow Regime 1 1 1 Reference Figure: HB2. Epifaunal Substrate and Available Cover 4 4 4 A.15 HB5. Steam Bottom Substrate 4 4 4 18 Refer to SWAMPIM Assessment Protocol Documentation (included in App Mitigation Pan) for scoring methodology. HB5. Steam Bottom Substrate 4 4 4 18 Refer to SWAMPIM Assessment Protocol Documentation (included in App Mitigation Pan) for scoring methodology. HB6. Channel Flow Status 0 0 0 0 0 16 (PC) = Functions. WCF Weter Quality / Biogeochemical Funct Habitat Functions. 17 = Hydrologic Cl = Functions Condition Inder. HB7. Statuant B (Hatteration 8	_p		0	0	0			
0.00125 WGS. Land Use Pattern Beyond Immediate 9 9 9 - Creation of protected natural area adjacent toriparian buffer zone WGS. Riparian Zone (e) WGS. Riparian Zone Width (from stream edge 5 7 9 - Oreation of protected natural area adjacent toriparian buffer zone Mitigation Design Type: Water Quality / Biogeochemical Subtolal 33 41 48 Restoration Water Quality / Biogeochemical FCI = 0.41 0.51 0.60 HB1. Flow Regime 1 1 1 1 A-15 HB3. Stream Bottom Substrate and Available Cover 4 4 4 4 A-15 HB3. Stream Bottom Substrate 4 </td <td>Multiplication Factor (i):</td> <td></td> <td>4</td> <td>5</td> <td>6</td> <td></td> <td></td>	Multiplication Factor (i):		4	5	6			
Riparian Zone (e) 9			<u> </u>	<u> </u>		,		
WQ6a. Riparian Zone Width (from stream edge to field) (e) 5 7 9 Mitigation Design Type: Restoration Water Quality / Biogeochemical Subtotal 33 41 48 Mitigation Design Type: Restoration Water Quality / Biogeochemical Subtotal 33 41 48 Water Quality / Biogeochemical FCI = Subtotal / 80 0.41 0.51 0.60 HB1. Flow Regime 1 1 1 Reference Figure: A-15 HB2. Epifaunal Substrate and Available Cover 4 4 4 MH3. Stream Bottom Substrate 4 4 4 4 Mitigation Plan) for scoring methodology. HB3. Stream Bottom Substrate 4 4 4 4 4 4 Hotes: Witigation Index. (0) F1 = Hydrologic Functions: "WC" = Water Quality / Biogeochemical Functions in the Stream Pach. Witigation Index. (0) F1 = Hydrologic Functions: "WC" = Water Quality / Biogeochemical Functions in the Stream Pach. Water Quality / Biogeochemical Functions in the Stream Pach. (0) F1 = Hydrologic Functions in the atransponter of the Stream Pach. (0) FC = Functional Condition Index. (0) FC = Functional Condition Index. (1) FC = Functional Condition Index. (1) FC = Functional Condition Index. (1) FC = Functional Condition Index. (2) FC = Functional Conditio		, , , , , , , , , , , , , , , , , , ,	9	9	9			
Initial formation Initial formation Initial formation Initial formation Mitigation Design Type: Water Quality / Biogeochemical Subtotal 33 41 48 Restoration Water Quality / Biogeochemical Subtotal 33 41 48 Restoration Water Quality / Biogeochemical FCI = Subtotal / 80 0.41 0.51 0.60 HB1. Flow Regime 1 1 1 1 1 Reference Figure: HB2. Epifaunal Substrate and Available Cover 4 4 4 4 A-15 HB3. Stream Bottom Substrate 4 4 4 4 4 4 HB5. Sediment Deposition and Scouring 6 </td <td></td> <td></td> <td>5</td> <td>7</td> <td>9</td> <td>, , ,</td> <td></td>			5	7	9	, , ,		
Protection/Completeness (e) 2 6 9 Mitigation Design Type: Water Quality / Biogeochemical Subtotal 33 41 48 Restoration Water Quality / Biogeochemical FCI = Subtotal / 80 33 41 48 Reference Figure: HB1. Flow Regime 1 1 1 A-15 HB3. Stream Bottom Substrate HB4. Pool Variability 2 2 2 (a) Refer to SWAMPIM Assessment Protocol Documentation (included in App. Mitigation Plan) for scoring methodology. HB4. Pool Variability 2 2 2 (b) 't'' = Hydrologic Functions; 'WQ'' = Water Quality / Biogeochemical Functi HB5. Sediment Deposition and Scouring 6 6 (b) 't'' = Hydrologic Functions; 'WQ'' = Water Quality / Biogeochemical Functi Habitat Functions. HB7. Channel Alteration 8 8 (d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and right bank scores. (f) Instream bottom topography was globally used in lieu of Manning's N as it a 'tag assessment of the stream reach. HB10. Vegetative Protection (e) 2 6 9 (g) Channel Bottom Bank Stability was used globally instead of Channel Scolin 'HB10. Vegetative Protection (e) 2 5 7 Raph Hall project watershed. <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
Mitigation Design Type: Water Quality / Biogeochemical Subtotal 33 41 48 Restoration Water Quality / Biogeochemical FCI = Subtotal / 80 0.41 0.51 0.60 HB1. Flow Regime 1 1 1 1 Reference Figure: HB2. Epifaunal Substrate and Available Cover 4 4 4 4 A-15 HB2. Pool Variability 2 2 2 10 Mitigation Plan) for scoring methodology. HB4. Pool Variability 2 2 2 10 H" = Hydrologic Fluctons: WQ" = Water Quality / Biogeochemical FLI = Biogeochemical FLI = Biogeochemical FLI = SAB Lancth (122) X HB5. Channel Flow Status 0 0 0 0 1 <t< td=""><td></td><td></td><td>2</td><td>6</td><td>9</td><td></td><td></td></t<>			2	6	9			
Restoration Water Quality / Biogeochemical FCI = Subtotal / 80 0.41 0.51 0.60 HB1. Flow Regime 1 1 1 1 Reference Figure: HB2. Epifaunal Substrate and Available Cover 4 4 4 Notes: A-15 HB3. Stream Bottom Substrate 4 4 4 4 Mitigation Plan) for scoring methodology. HB4. Pool Variability 2 2 2 0 0'' +'' = Hydrologic Functions; 'WQ'' = Water Quality / Biogeochemical Functi HB5. Sediment Deposition and Scouring 6 7 8 8 (6) FCI = Functional Condition Index. 6 6 7 8 8 6 (7) FCI = Functional Condition Index. 6 7 8 4 1 1 1 1 1 1 1 1 1 1 1 </td <td></td> <td></td> <td>22</td> <td>44</td> <td>40</td> <td>-</td> <td></td>			22	44	40	-		
HB1. Flow Regime 1 1 1 Reference Figure: HB2. Epifaunal Substrate and Available Cover 4 4 4 4 4 A-15 HB3. Stream Bottom Substrate 4 4 4 4 4 4 HB3. Stream Bottom Substrate 4 4 4 4 4 4 4 HB3. Stream Bottom Substrate 4	° ° ''	Water Quality / Biogeochemical FCI =			-			
Reference Figure: HB2. Epifaunal Substrate and Available Cover 4			1	1	1			
A-15 HB3. Stream Bottom Substrate 4						Notes:		
Hilds Sutean Duton Substate 4<							ocumentation (included in Appendix C of	
HB5. Sediment Deposition and Scouring 6 6 6 6 Habitat Functions; "WQ" = Water Quality'/ Biogeochemical Functions HB6. Channel Flow Status 0 0 0 0 0 0 0 HB7. Channel Alteration 8 8 8 (c) FCI = Functional Capacity Unit. 6 HB8. Channel Sinuosity 1 1 1 (e) Score shown is the average of the left and right bank scores. (f) Instream bottom topography was globally used in lieu of Manning's N as it a visual assessment of the stream reach. HB10. Vegetative Protection (e) 2 6 9 (g) Channel Bottom Bank Stability was used globally instead of Channel Sedin HB12. Riparian Zone (e) 5 7 9 Comment Environment Asset Ralph Hall project watershed. HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. HB12. Riparian Habitat FCI = Subtotal / 120 0.34 0.43 0.49 Habitat FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL FCI = Hydrologic FCI + Habitat FCI 1.11 1.31 1.48 acros for Perennial, Intermittent with Perennial Pools, Intermittent, and Epher are 0.0038, 0.00315, 0.0025, and 0.00125	A-13				-		, , , , , , , , , , , , , , , , , , ,	
HB6. Channel Flow Status 0 0 0 0 (c) FCI = Functional Condition Index. HB7. Channel Alteration 8 8 8 (d) FCU = Functional Capacity Unit. HB8. Channel Sinuosity 1 1 1 (e) Score shown is the average of the left and right bank scores. HB9. Bank Stability (e) 6 7 8 visual assessment of the stream reach. HB10. Vegetative Protection (e) 2 6 9 (g) Channel Bottom Bank Stability was used globally instead of Channel Sedin HB11. Riparian Zone (e) 5 7 9 Composition because it more accurately represents the channel condition with HB12. Riparian Habitat Condition 2 5 7 (h) Nutrient Enrichwent was used globally for scoring because Aquatic Vegeta Habitat Subtotal 41 51 59 provide an accurate representation of ephemeral stream channel condition with Habitat FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL ECIL = SAB L ength (122) X X 0.0315, 0.0025, and 0.00125, respectively.							Quality / Biogeochemical Functions; "HB" =	
HB7. Channel Alteration 8 8 8 6 7 6 7 6 Score shown is the average of the left and right bank scores. HB8. Channel Sinuosity 1 1 1 1 (e) Score shown is the average of the left and right bank scores. HB9. Bank Stability (e) 6 7 8 visual assessment of the stream reach. HB10. Vegetative Protection (e) 2 6 9 (g) Channel Bottom Bank Stability was used globally instead of Channel Sedin HB11. Riparian Zone (e) 2 5 7 9 Composition because it more accurately represents the channel condition with HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. (h) Nutrient representation of ephemeral stream channel condition with HB12. Riparian Habitat FCI = Subtotal / 120 0.34 0.43 0.49 (h) Nutrient representation of ephemeral stream channel condition with HB12. Riparian Habitat FCI = Subtotal / 120 0.34 0.43 0.49 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by 0.00125, respectively. TOTAL FCI = Hydrologic FCI + Habitat FCI		, v						
HBR Channel Sinuosity 1 1 1 HB8 Channel Sinuosity 1 1 1 (e) Score shown is the average of the left and right bank scores. HB9 Bank Stability (e) 6 7 8 visual assessment of the stream reach. HB10. Vegetative Protection (e) 2 6 9 (g) Channel Bottom Bank Stability was used globally instead of Channel Sedin HB11. Riparian Zone (e) 5 7 9 Composition because it more accurately represents the channel condition with HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. Habitat FCI = Subtotal / 120 0.34 0.43 0.49 Ralph Hall project watershed. TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL FCI = SAR Length (122) X 1.11 1.31 1.48 (i) The Multiplication Factor is determined by the stream's flow regime; the mult factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Epher are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			-	-	-			
HB9. Bank Stability (e) 6 7 8 HB9. Bank Stability (e) 6 7 8 HB10. Vegetative Protection (e) 2 6 9 HB11. Riparian Zone (e) 5 7 9 HB12. Riparian Habitat Condition 2 5 7 HB12. Riparian Habitat Subtotal 41 51 59 Habitat Subtotal 41 51 59 Habitat FCI = Subtotal / 120 0.34 0.43 0.49 TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48					-	(e) Score shown is the average of the left and r		
HB10. Vegetative Protection (e) 2 6 9 (g) Channell Bottom Bank Stability was used globally instead of Channel Sedin HB11. Riparian Zone (e) 5 7 9 (g) Channell Bottom Bank Stability was used globally instead of Channel Sedin HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. Habitat Subtotal 41 51 59 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegeta provide an accurate representation of ephemeral stream channel condition with Ralph Hall project watershed. TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL FCI = SAP Length (122) X 0.034 0.43 0.49 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by 0.00125, respectively.		·					ed in lieu of Manning's N as it allows for a	
HB11. Riparian Zone (e) 5 7 9 Composition because it more accurately represents the channel condition with HB12. Riparian Habitat Condition 2 5 7 8 Ralph Hall project watershed. Composition because it more accurately represents the channel condition with HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegeta provide an accurate representation of ephemeral stream channel condition with Ralph Hall project watershed. TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined point. Intermittent, and Epherare 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		5()			-		hally instead of Channel Sediment/Substrate	
HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. HB12. Riparian Habitat Condition 2 5 7 Ralph Hall project watershed. Habitat Subtotal 41 51 59 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegeta provide an accurate representation of ephemeral stream channel condition with Ralph Hall project watershed. TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL FCI = SAR Length (122) X 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		č						
Habitat Subtotal 41 51 59 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegeta provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide an accurate representation of ephemeral stream channel condition with Ralph Hall provide watershed. TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 TOTAL FCI = SAR Length (122) X Image: Condition Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multis flow stream'				-		Ralph Hall project watershed.		
Habitat FCI = Subtotal / 120 0.34 0.43 0.49 provide an accurate representation of ephemeral stream channel condition with representation of ephemeral stream channel conditin stream channel condition with representat				-	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined by the stream's flow regime; the multiplication Factor is determined. Intermittent with Perennial Pools, Intermittent, and Epherer 0.0038, 0.00315, 0.0025, and 0.00125, respectively. TOTAL FCIL = SAR Length (122) X Image: Comparison of the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplication factor is determined by the stream's flow regime; the multiplicat	I						al stream channel condition within the Lake	
IOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI 1.11 1.31 1.48 factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Epher are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					· · ···		e stream's flow regime; the multiplication	
TOTAL FCU = SAR Length (122) X 0.17 0.20 0.23			1.11	1.31	1.48	factors for Perennial, Intermittent with Perennia	Pools, Intermittent, and Ephemeral Streams	
Multiplication Factor (0.00125) X Total FCI			0.17	0.20	0.23			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-AB-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBA-AB-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	32	34	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
168	Hydrologic FCI = Subtotal / 100	0.32	0.34	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e,	5	6	7	appropriate	biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
	Aquatic Vegetation (h)		-	-	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	, 		Ŭ	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	8	8	9	- Monitoring and management		
	to field) (e)	•	5	Ŭ			
	WQ6b. Riparian Zone Vegetation	4	6	9			
	Protection/Completeness (e)			-			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:	a constantion (included in Americania Conf	
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	4	5	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	6	 (d) FCU = Functional Capacity Unit. (e) Score shown is the average of the left and r 	ight hank scores	
	HB8. Channel Sinuosity	3	3	3	(f) Instream bottom topography was globally us		
	HB9. Bank Stability (e)	5	6	7	visual assessment of the stream reach.	5	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres Ralph Hall project watershed.	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	6	6	7	(h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	41	47	58	provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.39	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.07	1.22	1.44	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (168) X Multiplication Factor (0.00125) X Total FCI	0.22	0.26	0.30			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-AC-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBA-AC-(1)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
79	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR		-		(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamical Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.32	1.50	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (79) X Multiplication Factor (0.00125) X Total FCI	0.11	0.13	0.15	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBA-AD-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):		floodplain connectivity (through					
AX-S2-TRIB3-A7-TRIBA-AD-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
86	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity	
	g)				- Creation of pools in combination with		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	0	0	<u>^</u>	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	_	-	<u> </u>	- Monitoring and management		
	to field) (e)	5	7	9	······································		
	WQ6b. Riparian Zone Vegetation	0	<u> </u>				
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functions, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (86) X Multiplication Factor (0.00125) X Total FCI	0.12	0.14	0.16			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBB-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBB-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
290	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Vagatatian dasa act	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (290) X Multiplication Factor (0.00125) X Total FCI	0.42	0.49	0.55			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBB-(2)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
134	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning s it as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	poring boogung Aquiptic Variation dags and	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia, are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (134) X Multiplication Factor (0.00125) X Total FCI	0.19	0.23	0.26			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBB-AA-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBB-AA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	structures	and enhance water quality	
275	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	 Adjustment of channel gradient by installing grade control structures 	 Woody debris, leaf litter, and overhanging herbaceous vegetation 	
275	WQ1a. Bank Stability (e)	6	0.36	0.40 8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	/	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonabaminal Eurotianas "LIP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.32	1.49	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (275) X Multiplication Factor (0.00125) X Total FCI	0.39	0.45	0.51		···· · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBC-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBC-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
179	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15, A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.	ar su eann channer conullion within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (179) X Multiplication Factor (0.00125) X Total FCI	0.26	0.30	0.34	,	•	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBD-(1)	H2a. Channel Condition/ Alteration	2	4	6	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	2	4	6	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBD-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	2	4	6	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	16	24	33	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
284	Hydrologic FCI = Subtotal / 100	0.16	0.24	0.33	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	2	4	6	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	2	4	6	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	7	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	5	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	24	34	45			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.30	0.43	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	2	Notes:		
A-16	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	1	3	5	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	2	4	6	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	7	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring boouse Aquatic Vagatation dass act	
	Habitat Subtotal	27	40	53	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.23	0.33	0.44	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.69	1.00	1.33	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (284) X Multiplication Factor (0.00125) X Total FCI	0.24	0.36	0.47	····, · ··· ·, · ··· ·, ···· ·, ···· · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBD-AA-(1)	H2a. Channel Condition/ Alteration	2	4	6	mititgation area downcutti	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	2	4	6	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBD-AA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water	
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	2	4	6	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	14	22	31	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and 	
69	Hydrologic FCI = Subtotal / 100	0.14	0.22	0.31	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	2	4	6	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
Zone A	Channel Sediments or Substrate Composition (e,	2	4	6	- Creation of pools in combination with	biological productivity	
	g)				LWD and GCS and other locations		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
Multiplication Foster (i)	Aquatic Vegetation (h)	0	6	6	around channel (minimum of 60' width		
Multiplication Factor (i): 0.00125	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone		
	to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	5	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	25	34	45			
Enhancement	Water Quality / Biogeochemical Subtolar		-	_			
	Subtotal / 80	0.31	0.43	0.56			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	3	Notes:		
A-16	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	1	3	5	Habitat Functions.	addity - Diogeconomical Faholione, Fib	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	2	4	6	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not	
	Habitat Subtotal	27	39	52	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.23	0.33	0.43	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality /	0.68	0.98	1.30	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
	Biogeochemical FCI + Habitat FCI		I	I	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	TOTAL FCU = SAR Length (69) X	0.06	0.08	0.11			
	Multiplication Factor (0.00125) X Total FCI	0.00	0.00	0.11			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBE-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBE-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
895	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	paring baseups Aquatia Vagatatian dasa act	
	Habitat Subtotal	44	54	62	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (895) X Multiplication Factor (0.00125) X Total FCI	1.30	1.51	1.71	· · · · · · · · · · · · · · · · · · ·	-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A7-TRIBF-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A7-TRIBF-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
94	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
34	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge	_	_	_			
	to field) (e) WQ6b. Riparian Zone Vegetation	5	7	9			
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoophomical Eurotions: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (94) X Multiplication Factor (0.00125) X Total FCI	0.13	0.15	0.17	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	oouvoy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
AX-S2-TRIB3-A7-TRIBG-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
AX-S2-TRIB3-A7-TRIBG-(1)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
142	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
A-16	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riogeochemical Eurotions: "HB" -		
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r			
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for so			
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	ai sucam channel condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.32	1.50	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (142) X Multiplication Factor (0.00125) X Total FCI	0.20	0.23	0.27				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A10-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A10-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	26	30	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
218	Hydrologic FCI = Subtotal / 100	0.26	0.30	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	4	5	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.39	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonahamical Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	4	5	7	Habitat Functions.	quality / Diogeochemical runctions, TID =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	4	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	47	61	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	Habitat FCI = Subtotal / 120	0.33	0.39	0.51			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.98	1.15	1.49			
	TOTAL FCU = SAR Length (218) X Multiplication Factor (0.00125) X Total FCI	0.27	0.31	0.41			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A10-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A10-(2)	Hisa. Challel Sindosity 5 5 5	etc.) from outside conservation	increased overbank frequency) - LWD will increase channel				
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
235	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Oreation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	poring boogung Aquiptic Variation dags and	
	Habitat Subtotal	44	54	62			
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55			
	TOTAL FCU = SAR Length (235) X Multiplication Factor (0.00125) X Total FCI	0.34	0.40	0.46			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
AX-S2-TRIB3-A10-B1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
AX-S2-TRIB3-A10-B1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
70	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and		
Zone A	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s			
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	ai stream channel condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.00268, 0.0025 and 0.0025 reconstrictions			
	TOTAL FCU = SAR Length (70) X Multiplication Factor (0.00125) X Total FCI	0.10	0.12	0.13	are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A10-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
X-S2-TRIB3-A10-TRIBA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
289	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability (e)	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53			
	TOTAL FCU = SAR Length (289) X Multiplication Factor (0.00125) X Total FCI	0.42	0.49	0.55	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A11-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A11-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	27	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
429	Hydrologic FCI = Subtotal / 100	0.27	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	40	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.50	0.59			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	1	2	4	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	poring boours Aquatio Variation dass and	
	Habitat Subtotal	41	50	60	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.42	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.02	1.22	1.46	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (429) X Multiplication Factor (0.00125) X Total FCI	0.55	0.65	0.78			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A12-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	3	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A12-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	3	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	24	30	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
163	Hydrologic FCI = Subtotal / 100	0.24	0.30	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	48	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.33	0.40	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.97	1.18	1.46	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (163) X Multiplication Factor (0.00125) X Total FCI	0.20	0.24	0.30	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A13-(1)	H2a. Channel Condition/ Alteration	4	5	7		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	5	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A13-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	5	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	27	31	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
255	Hydrologic FCI = Subtotal / 100	0.27	0.31	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	4	5	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	37	47			
Enhancement	= Water Quality / Biogeochemical FCI Subtotal / 80	0.39	0.46	0.59			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	5	5	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.	poring boours Aquatio Variation dass and	
	Habitat Subtotal	40	46	56	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.33	0.38	0.47	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.99	1.15	1.44	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (255) X Multiplication Factor (0.00125) X Total FCI	0.32	0.37	0.46		- 	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A13-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A13-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
244	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	addity , Biogeochermour anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning s it as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for si	poring boours Aquatio Variation dass and	
	Habitat Subtotal	43	53	61	(n) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (244) X Multiplication Factor (0.00125) X Total FCI	0.35	0.41	0.47			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A14-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A14-(1)	H3a. Channel Sinuosity	a. Channel Sinuosity 3 3 3 etc.) from outside conservation	,	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	29	31	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
144	Hydrologic FCI = Subtotal / 100	0.29	0.31	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-		-	(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	0	0	0	on each side)		
	Riparian Zone <i>(e)</i>	5	7	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	4	5	7	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	48	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.33	0.40	0.49	Ralph Hall project watershed.	a sucan channel conulton within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.02	1.19	1.45	Raipn Hail project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (144) X Multiplication Factor (0.00125) X Total FCI	0.18	0.21	0.26	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A14-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A14-(2)		etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
345	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate				on each side)		
0.00120	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		•.•.			Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (345) X Multiplication Factor (0.00125) X Total FCI	0.50	0.59	0.67			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A15-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A15-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	31	33	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
93	Hydrologic FCI = Subtotal / 100	0.31	0.33	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	Oreation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	addity , Biogeochermour anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	aning bacques Aquatis Variation data st	
	Habitat Subtotal	41	49	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.41	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.05	1.22	1.47	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (93) X Multiplication Factor (0.00125) X Total FCI	0.12	0.14	0.17			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A16-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A16-(1)	TRIB3-A16-(1) H3a. Channel Sinuosity 3 3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	2	4	6	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	21	27	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
157	Hydrologic FCI = Subtotal / 100	0.21	0.27	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (e, g)	4	5	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	30	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.38	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	4	5	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	5	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	35	45	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.29	0.38	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.88	1.11	1.42	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (157) X Multiplication Factor (0.00125) X Total FCI	0.17	0.22	0.28	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A16-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A16-(2)	B3-A16-(2) H3a. Channel Sinuosity 3 3 3	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
327	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone A	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannel (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	a stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (327) X Multiplication Factor (0.00125) X Total FCI	0.47	0.55	0.63			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A17-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A17-(1)		etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
224	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.	Quality / Riagonabaminal Eurotianas "LIP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.34	1.53	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
	TOTAL FCU = SAR Length (224) X Multiplication Factor (0.00125) X Total FCI	0.32	0.38	0.43	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	actively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A18-(0)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
276	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition <i>(e,</i>	5	5	5	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	g)	0	0	0	LWD and GCS and other locations		
	WQ2. Water Clarity WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	5	7	on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	30	39	47			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.38	0.49	0.59			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (276) X Multiplication Factor (0.00125) X Total FCI	0.40	0.47	0.53	·····, · · ····, · · ····, · ·····, · ······		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
AX-S2-TRIB3-A18-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	2	4	7	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	3	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through
AX-S2-TRIB3-A18-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures
	H3d. Channel Incision	2	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality
Proposed SAR Length (LF):	Hydrologic Subtotal	17	25	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
103	Hydrologic FCI = Subtotal / 100	0.17	0.25	0.36	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	3	5	7	(GCS) made from native material	from established buffer zones will
Mitigation Zone: Zone A	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e.	4	5	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity
	g)	-	-		- Creation of pools in combination with	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			_	where appropriate	
1	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width	
0.00125	WQ5. Land Use Pattern Beyond Immediate	_	_		on each side) - Creation of protected natural area	
	Riparian Zone <i>(e)</i>	5	7	9	adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge	_	_	_	- Monitoring and management	
	to field) <i>(e)</i>	8	8	9	Monitoring and managomone	
	WQ6b. Riparian Zone Vegetation	_	_	_		
	Protection/Completeness (e)	4	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	30	37	47		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.38	0.46	0.59		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:	
A-15	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	4	5	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	3	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	
	Habitat Subtotal	35	44	57	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.29	0.37	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake
		-	-	· · · · ·	(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.84	1.08	1.43	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	I Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (103) X Multiplication Factor (0.00125) X Total FCI	0.11	0.14	0.18		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A19-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area downcutting and in	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A19-(1)	S2-TRIB3-A19-(1) H3a. Channel Sinuosity 3 3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
232	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for so	paring baseups Aquatia Vagatatian dasa act	
	Habitat Subtotal	43	53	61	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (232) X Multiplication Factor (0.00125) X Total FCI	0.33	0.39	0.45			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
AX-S2-TRIB3-A20-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
AX-S2-TRIB3-A20-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
205	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
A-15	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagaaabamical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53			
	TOTAL FCU = SAR Length (205) X Multiplication Factor (0.00125) X Total FCI	0.30	0.35	0.39	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S15-TRIB3-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	5	6	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S15-TRIB3-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	31	34	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
76	Hydrologic FCI = Subtotal / 100	0.31	0.34	0.39	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	5	6	7	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity			
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	7	8	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	39	47					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.39	0.49	0.59					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:				
B-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -			
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	5	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	7	8	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	40	50	61	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.33	0.42	0.51	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.03	1.24	1.49					
	TOTAL FCU = SAR Length (76) X Multiplication Factor (0.00125) X Total FCI	0.10	0.12	0.14					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-(2a)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-(2)	H3a. Channel Sinuosity 5 5 5 etc.) from outside conservation	etc.) from outside conservation easement	increased overbank frequency)				
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water	
	H3d. Channel Incision	7	7	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	28	33	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
736	Hydrologic FCI = Subtotal / 100		0.33	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-3	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores.	
	HB9. Bank Stability <i>(e)</i>	5	6	7	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.	aaring bacques Agustis Venetation deer set	
	Habitat Subtotal	39	49	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.33	0.41	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI		1.23	1.48	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (736) X Multiplication Factor (0.00125) X Total FCI		1.13	1.36		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-(2b)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	2	4	6	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water	
	H3d. Channel Incision	7	7	7	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	28	33	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
226	Hydrologic FCI = Subtotal / 100	0.28	0.33	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	5	6	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification:	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (<i>e</i>)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores. ed in lieu of Manning's N as it allows for a	
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.	action because Annotic Vanatation data at	
	Habitat Subtotal	39	49	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.33	0.41	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI		1.23	1.48	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (226) X Multiplication Factor (0.00125) X Total FCI		0.35	0.42	, , , , , , , , , , , , , , , , , , ,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-(3)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
476	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				- Creation of pools in combination with LWD and GCS and other locations		
	WQ2. Water Clarity	4	4	4	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	2	2	2	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	adding y Biogeochermour ranolione, The	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatis Variation data set	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.61	1.80	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (476) X Multiplication Factor (0.00125) X Total FCI	0.84	0.96	1.07	· · · · · · · · · · · · · · · · · · ·	-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-(4)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
15-TRIB3-(4)	H3a. Channel Sinuosity	8	8	8	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	45	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,115	Hydrologic FCI = Subtotal / 100	0.41	0.45	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	4	5	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	4	4	4	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	7	8	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	40	46	55			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.50	0.58	0.69			
	HB1. Flow Regime	2	2	2			
	HB2. Epifaunal Substrate and Available Cover	3	3	4	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	3	5	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for si	paring baseups Aquatia Vagatatian dasa act	
	Habitat Subtotal	45	54	66	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.45	0.55	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.29	1.48	1.77	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (1115) X Multiplication Factor (0.00125) X Total FCI	1.80	2.06	2.47			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A1-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
211	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate				on each side)		
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9		1	
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.00			Ralph Hall project watershed. (i) The Multiplication Factor is determined by th	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.51	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (211) X Multiplication Factor (0.00125) X Total FCI	0.30	0.35	0.40			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A1-(2)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A1-(2)	H3a. Channel Sinuosity	8	8	8	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	39	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
809	Hydrologic FCI = Subtotal / 100	0.36	0.39	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	6	7	9	Or each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.	anian haanna Annatia Manatatian daan aat	
	Habitat Subtotal	37	48	61	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.31	0.40	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.07	1.27	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (809) X Multiplication Factor (0.00125) X Total FCI	1.08	1.28	1.55		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel
S15-TRIB3-A1-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
S15-TRIB3-A1-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water
	H3d. Channel Incision	8	8	8	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
149	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate	
'	Aquatic Vegetation (h)	2	2	2	- Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate	-			- Creation of protected natural area	
	Riparian Zone (e)	9	9	9	adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge	_	_	_	- Monitoring and management	
	to field) <i>(e)</i>	5	7	9	Monitoring and management	
	WQ6b. Riparian Zone Vegetation	_	_	_		
	Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55		
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69		
	HB1. Flow Regime	2	2	2		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:	
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake
					(i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.79	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (149) X Multiplication Factor (0.00125) X Total FCI	0.26	0.30	0.33		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A1-TRIBA-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A1-TRIBA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	33	34	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
159	Hydrologic FCI = Subtotal / 100	0.33	0.34	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	35	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.44	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	3	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Diogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	40	48	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.33	0.40	0.49	provide an accurate representation of epnemera Ralph Hall project watershed.	ai sucam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.23	1.46	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (159) X Multiplication Factor (0.00125) X Total FCI	0.22	0.24	0.29	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A2-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	42	48	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
567	Hydrologic FCI = Subtotal / 100	0.40	0.42	0.48	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	4	4	4	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	2	5	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	5	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	35	43	55			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.44	0.54	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	2	4	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	2	5	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	32	46	64	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.27	0.38	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.34	1.70	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (567) X Multiplication Factor (0.00125) X Total FCI	0.78	0.95	1.20		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S15-TRIB3-A3-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	7	7	7	 Implementation of measures to 	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S15-TRIB3-A3-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	7	7	7	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	30	32	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
182	Hydrologic FCI = Subtotal / 100	0.30	0.32	0.35	installing grade control structures	overhanging herbaceous vegetation				
102	WQ1a. Bank Stability (e)	5	6	7	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	5	0	,	(rock or woody debris) where	enhance in-stream habitat and				
Zone B	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate		-	-	on each side)					
	Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	3	6	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	27	37	47						
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.34	0.46	0.59						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:					
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoochomical Eurotions: "UP" -				
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Biogeochemical Functions, HB -				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	5	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	3	6	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	33	45	58	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.28	0.38	0.48	provide an accurate representation of ephemera	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.91	1.16	1.42	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (182) X Multiplication Factor (0.00125) X Total FCI	0.21	0.26	0.32	ano 0.0000, 0.00010, 0.0020, and 0.00120, resp					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-(2)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
429	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Manatatian data sat	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for su		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI		1.36	1.55			
	TOTAL FCU = SAR Length (429) X Multiplication Factor (0.00125) X Total FCI		0.73	0.83	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-(3)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A3-(3)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	29	30	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
354	Hydrologic FCI = Subtotal / 100	0.29	0.30	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate			-	on each side)		
	Riparian Zone <i>(e)</i>	6	7	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	35	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.44	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	4	5	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	eu in neu or marining's in as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	35	44	57	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.29	0.37	0.48	Ralph Hall project watershed.	a sucan channel conullon within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.02	1.15	1.41	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
	TOTAL FCU = SAR Length (354) X Multiplication Factor (0.00125) X Total FCI	0.45	0.51	0.62	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	occurrory.	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-(4)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A3-(4)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	48	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
317	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.48	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	4	4	4	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	6	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	43	47	55			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.54	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	4	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Nuclity / Disease the missel Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	4	5	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	50	64	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120		0.42	0.53	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.33	0.42	0.00	Ralph Hall project watershed.	a stream's flow regime: the multiplication	
-	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.29	1.41	1.70	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (317) X Multiplication Factor (0.00125) X Total FCI	0.51	0.56	0.67	1		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-(5)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A3-(5)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
385	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality , Diogeochermour , anotione, The	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Variation dans and	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.61	1.80	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (385) X Multiplication Factor (0.00125) X Total FCI	0.68	0.77	0.87	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-TRIBA-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A3-TRIBA-(1)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	26	29	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
266	Hydrologic FCI = Subtotal / 100	0.26	0.29	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	2	5	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	8	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	5	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	8	8	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	2	5	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	1	4	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation doos not	
	Habitat Subtotal	34	44	57	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.28	0.37	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.96	1.13	1.41	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (266) X Multiplication Factor (0.00125) X Total FCI	0.32	0.38	0.47			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-TRIBB-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	3	5	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A3-TRIBB-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	7	7	7	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	25	29	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
59	Hydrologic FCI = Subtotal / 100	0.25	0.29	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	7	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	40	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-1	HB3. Stream Bottom Substrate	2	2	2	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	3	4	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.	ed in neu of marining's N as it allows for a	
	HB10. Vegetative Protection (e)	7	8	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	6	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	coring because Aquatic Vagatation door not	
	Habitat Subtotal	32	42	55	(n) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.27	0.35	0.46	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.94	1.14	1.40	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (59) X Multiplication Factor (0.00125) X Total FCI	0.07	0.08	0.10			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A3-TRIBB-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
311	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for si	coring because Aquatic Vegetation does not	
	Habitat Subtotal	41	51	59	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (311) X Multiplication Factor (0.00125) X Total FCI	0.43	0.51	0.58			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A4-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A4-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
186	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
100	WQ1a. Bank Stability (e)	6	0.37	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
Epitemetai	Aquatic Vegetation (<i>h</i>)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (186) X Multiplication Factor (0.00125) X Total FCI	0.26	0.30	0.35			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
S15-TRIB3-A5-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
S15-TRIB3-A5-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water		
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures to prevent uncontrolled access will 		
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
530	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and		
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width			
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoochomical Eurotions: "UP" -		
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r			
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not			
	Habitat FCI = Subtotal / 120		0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channei condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.32	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams			
	TOTAL FCU = SAR Length (530) X Multiplication Factor (0.00125) X Total FCI	0.74	0.87	0.99	are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A5-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A5-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
538	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamical Europticase "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54			
	TOTAL FCU = SAR Length (538) X Multiplication Factor (0.00125) X Total FCI	0.77	0.91	1.04	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectivery.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A5-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A5-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
300	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	· · · · · · · · · · · · · · · · · · ·	
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (300) X Multiplication Factor (0.00125) X Total FCI	0.41	0.49	0.56	· · · · · · · · · · ·	·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A6-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A6-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
830	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	4	5	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.52	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (830) X Multiplication Factor (0.00125) X Total FCI	1.20	1.40	1.58		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A7-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A7-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	30	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
457	Hydrologic FCI = Subtotal / 100	0.30	0.30	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR		0		(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
_p	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	-		-	on each side)		
	Riparian Zone <i>(e)</i>	8	8	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) <i>(e)</i>	1	5	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	8	8	9		1	
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-1	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	7	8	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	8	8	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	1	5	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	32	43	56	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.27	0.36	0.47	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		••=-	1		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.97	1.12	1.40	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (457) X Multiplication Factor (0.00125) X Total FCI	0.55	0.64	0.80			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A8-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A8-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
455	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1, B-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiane: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (455) X Multiplication Factor (0.00125) X Total FCI	0.65	0.76	0.86			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S15-TRIB3-A9-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S15-TRIB3-A9-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
126	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
0.00120	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-1	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.00		0.01	Ralph Hall project watershed. (i) The Multiplication Factor is determined by th	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.34	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (126) X Multiplication Factor (0.00125) X Total FCI	0.18	0.21	0.24			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-(1)	H3a. Channel Sinuosity	7	7	7	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	53	54	56	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
912	Hydrologic FCI = Subtotal / 100	0.53	0.54	0.56	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7		biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning s iv as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	anian harmon Annatia Manatatian data sat	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.44	1.64	1.83	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (912) X Multiplication Factor (0.00125) X Total FCI	1.64	1.87	2.09	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,305	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	addity , Biogeochermodi , anotiene, 112	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	aning bacques Aquatis Variation data at	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.79	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (1305) X Multiplication Factor (0.00125) X Total FCI	2.28	2.61	2.92	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	50	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
945	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.50	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				- Creation of pools in combination with LWD and GCS and other locations		
	WQ2. Water Clarity	4	4	4	where appropriate		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	2	2	2	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riagonahamical Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	50	60	68	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.42	0.50	0.57	provide an accurate representation of ephemera Ralph Hall project watershed.	a suearn channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.36	1.57	1.75	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (945) X Multiplication Factor (0.00125) X Total FCI	1.61	1.85	2.07	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	oouvoy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-(1)	H3a. Channel Sinuosity	7	7	7	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	53	54	56	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
613	Hydrologic FCI = Subtotal / 100	0.53	0.54	0.56	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	adding y Biogeochermoury anotione, The	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	4	4	4	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatia Manatatian data sat	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.44	1.64	1.83	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (613) X Multiplication Factor (0.00125) X Total FCI	1.10	1.26	1.40			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-(2)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	52	53	55	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
935	Hydrologic FCI = Subtotal / 100	0.52	0.53	0.55	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	2	2	2	where appropriate - Creation of riparian buffer zones		
	Aquatic Vegetation (h)				around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	5	7	on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonabamical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.52	0.58	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.63	1.82			
	TOTAL FCU = SAR Length (935) X Multiplication Factor (0.00125) X Total FCI	1.67	1.91	2.13			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,429	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
, ,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7		biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	Violity / Biogeophemical Eurotiana, "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.42	1.62	1.81	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (1429) X Multiplication Factor (0.00125) X Total FCI	2.54	2.89	3.23	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-(4)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H3d. Charmer incision H4a. Pools	4	4	4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	4	4 4	4	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	structures	and enhance water quality	
420	Hydrologic FCI = Subtotal / 100		0.52	0.54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
420	WQ1a. Bank Stability (e)	6		0.54 8	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Millionations Zamas		0	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / blogeochemical runctions, Thb =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI		1.62	1.81	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (420) X Multiplication Factor (0.00125) X Total FCI		0.85	0.95			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-(5)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-(5)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation easement	increased overbank frequency) - LWD will increase channel	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	roughness and improve bank stability	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,597	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	adanty i Biogeoconomica i anotione, inB	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for su		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.79			
	TOTAL FCU = SAR Length (1597) X Multiplication Factor (0.00125) X Total FCI	2.79	3.19	3.57			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A2-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
588	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagoochomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	a stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.30	1.47	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (588) X Multiplication Factor (0.00125) X Total FCI	0.82	0.96	1.08	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	oouvoy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A2-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
411	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate				on each side)		
0.00120	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		•.•.			Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.50	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (411) X Multiplication Factor (0.00125) X Total FCI	0.59	0.68	0.77			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	5	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	33	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
176	Hydrologic FCI = Subtotal / 100	0.30	0.33	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	5	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	1	5	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	8	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	29	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.36	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-4	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	2	4	6	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	5	6	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	8	8	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	1	5	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	4	7	Ralph Hall project watershed.		
	Habitat Subtotal	32	44	58	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.27	0.37	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.93	1.16	1.44	Rain Hail project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (176) X Multiplication Factor (0.00125) X Total FCI	0.20	0.26	0.32			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(2a)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
322	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
-	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piogaaahamiaal Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120		0.46	0.53	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.52	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (322) X Multiplication Factor (0.00125) X Total FCI	0.47	0.54	0.61			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
408	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	4	5	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeoenennear rancions, The -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.53	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (408) X Multiplication Factor (0.00125) X Total FCI	0.60	0.69	0.78			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(2c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-(2)		etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
492	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	addity , Biogeochermour , anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	anian haanna Annatia Manatatian daan aat	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.53	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (492) X Multiplication Factor (0.00125) X Total FCI	0.72	0.84	0.94	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(2d)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-(2)	H3a. Channel Sinuosity	7	7	7	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	42	43	45	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
570	Hydrologic FCI = Subtotal / 100	0.42	0.43	0.45	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Off each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality , Diogeochermour , anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	paring baseups Aquatis Variation data set	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.20	1.39	1.56	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (570) X Multiplication Factor (0.00125) X Total FCI	0.86	0.99	1.11			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area down	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
821	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 		
	WQ4. Composition of Organic Matter	4	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	aning bacques Aquatis Variation data at	
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (821) X Multiplication Factor (0.00125) X Total FCI	1.21	1.41	1.59		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	-		PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
(H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBA-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
407	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (407) X Multiplication Factor (0.00125) X Total FCI	0.60	0.70	0.79	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBA-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
607	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	and a base of the Manual Manual and	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.30	1.48	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (607) X Multiplication Factor (0.00125) X Total FCI	0.84	0.99	1.12		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBA-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBA-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
537	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification:	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piazooohomical Eurotions: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical / unclions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.52	Rain Hail project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (537) X Multiplication Factor (0.00125) X Total FCI	0.78	0.91	1.02	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	-		PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
S16-TRIB7-A3-TRIBA-AA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
S16-TRIB7-A3-TRIBA-AA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water		
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures		
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will		
	H4b. Channel Flow Status	0	0	0	structures	improve bank stability, filter runoff, and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
165	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-		-	(rock or woody debris) where	enhance in-stream habitat and		
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width			
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area			
	Riparian Zone <i>(e)</i>	-		-	adjacent to riparian buffer zone			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management			
	WQ6b. Riparian Zone Vegetation							
	Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46				
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
5 1	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s			
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.49	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams			
	TOTAL FCU = SAR Length (165) X	0.24	0.27	0.31	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.		
	Multiplication Factor (0.00125) X Total FCI							

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	-		PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
S16-TRIB7-A3-TRIBA-AB-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
S16-TRIB7-A3-TRIBA-AB-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water		
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures		
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will		
	H4b. Channel Flow Status	0	0	0	structures	improve bank stability, filter runoff, and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
215	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation		
2.0	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and		
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47				
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s			
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannei condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (215) X Multiplication Factor (0.00125) X Total FCI	0.31	0.36	0.41	ano 0.0000, 0.00010, 0.0020, anu 0.00120, lesp	oouvory.		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBB-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBB-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	41	42	44	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
167	Hydrologic FCI = Subtotal / 100	0.41	0.42	0.44	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical / unclions, / HD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's iv as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	poring boogupo Agustic Versitation door and	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (167) X Multiplication Factor (0.00125) X Total FCI	0.24	0.28	0.32		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBC-(1)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBC-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	structures	and enhance water quality	
249	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
249	WQ1a. Bank Stability (e)	6	0.37	8	(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zone:		0	'	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.28	1.46	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (249) X Multiplication Factor (0.00125) X Total FCI	0.34	0.40	0.45	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBD-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBD-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
121	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
121	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management -		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (121) X Multiplication Factor (0.00125) X Total FCI	0.17	0.20	0.23	are 0.0000, 0.00010, 0.0020, and 0.00120, tesp	occurrory.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBE-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBE-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
151	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.	a sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (151) X Multiplication Factor (0.00125) X Total FCI	0.22	0.25	0.29		···· · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBE-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBE-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
291	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	aaring bacques Agustis Venetation deer set	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (291) X Multiplication Factor (0.00125) X Total FCI	0.42	0.49	0.56		·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBE-(1c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBE-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
220	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for suppovide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Provide an accurate representation of ephemera Ralph Hall project watershed.	a sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (220) X Multiplication Factor (0.00125) X Total FCI	0.32	0.37	0.42	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBF-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBF-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	28	30	36	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
453	Hydrologic FCI = Subtotal / 100	0.28	0.30	0.36	installing grade control structures	overhanging herbaceous vegetation	
-00	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	0	1	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	8	8	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge	2	5	9			
	to field) <i>(e)</i> WQ6b. Riparian Zone Vegetation	8	8	9			
	Protection/Completeness (e)	0		-			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-7	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	7	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability (e)	6	6	7	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	8	8	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	2	5	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	4	7	Ralph Hall project watershed.	and a first of the second s	
	Habitat Subtotal	38	46	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.32	0.38	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.00	1.15	1.44	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (453) X Multiplication Factor (0.00125) X Total FCI	0.57	0.65	0.82		····· · · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBF-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBF-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
573	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	4	5	on each side)		
-	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	Annalis because Annalis Marcala Cara da a	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.34	1.51	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (573) X Multiplication Factor (0.00125) X Total FCI	0.82	0.96	1.08	·····, · · ····, · · ····, · ·····, · ······		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	-		PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
S16-TRIB7-A3-TRIBF-AA-(1)	H2a. Channel Condition/ Alteration	6	6	6	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	6	prevent uncontrolled access (cattle,	floodplain connectivity (through		
S16-TRIB7-A3-TRIBF-AA-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water		
	H3d. Channel Incision	6	6	6	species	 Protection, plantings, and measures to prevent uncontrolled access will 		
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	34	34	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and		
369	Hydrologic FCI = Subtotal / 100	0.34	0.34	0.35	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	6	6	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and		
Zone B	Channel Sediments or Substrate Composition (e, g)	6	6	6	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	45				
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.56				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.	Quality (Diagonabamical Eurotiona, "UP" -		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	quality / Biogeochemical Functions; HB =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	7	7	7	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability <i>(e)</i>	6	6	6	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	42	51	58	(h) Nutrient Enrichment was used globally for s			
	Habitat FCI = Subtotal / 120	0.35	0.43	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.09	1.25	1.40	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (369) X Multiplication Factor (0.00125) X Total FCI	0.50	0.58	0.65	and 0.000720, 0.00070, 0.0020, and 0.00720, 165,			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBG-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBG-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
403	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.49	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (403) X Multiplication Factor (0.00125) X Total FCI	0.57	0.67	0.75			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBH-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBH-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
259	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Rainh Hall project watershed	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.49	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (259) X Multiplication Factor (0.00125) X Total FCI	0.37	0.43	0.48	2. 2. 2. 2000, 0. 000 re, 0. 0020, and 0. 00 r20, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A3-TRIBI-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A3-TRIBI-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
366	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	paring bassues Aquatia Vagatatian dass act	
	Habitat Subtotal	43	53	61	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (366) X Multiplication Factor (0.00125) X Total FCI	0.53	0.62	0.70		·	

S16-TRIB7-A4-(1) H. Baseline SAR Name(s): H. S16-TRIB7-A4-(1) H. H H.	SWAMPIM METRICS (a, b, c, d) 11. Flow Regime and Groundwater Interaction 12a. Channel Condition/ Alteration 12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability (e) 13a. Channel Sinuosity 12b. Battam Substrate Compacition	CONSTRUCTION 2 8 8	MONITORING 2 8	MATURITY 2	PERFORMED - Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A4-(1) H. H H. Baseline SAR Name(s): H. S16-TRIB7-A4-(1) H.	12a. Channel Condition/ Alteration 12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability <i>(e)</i> 13a. Channel Sinuosity	8 8		2	- Protection within large contiguous	CCC will reduce channel	
H Baseline SAR Name(s): H S16-TRIB7-A4-(1) H	12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability <i>(e)</i> 13a. Channel Sinuosity	8	8		i retection mann auge contiguous	- GCS will reduce channel	
Baseline SAR Name(s): H. S16-TRIB7-A4-(1) H: H:	12c. Channel Bank Stability (e) 13a. Channel Sinuosity		Ū.	8	mititgation area	downcutting and improve stream	
S16-TRIB7-A4-(1)	13a. Channel Sinuosity		8	8	- Implementation of measures to	stability, sediment transport, and	
H:	,	8	8	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
	12h Bottom Substrate Composition	1	1	1	etc.) from outside conservation	increased overbank frequency)	
I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	13b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n (f)	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	13d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	14a. Pools	4	4	4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	14b. Channel Flow Status	4	4	4	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	47	48	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
436	Hydrologic FCI = Subtotal / 100	0.47	0.47	0.48	installing grade control structures	overhanging herbaceous vegetation	
	VQ1a. Bank Stability (e)	8	8	8	(GCS) made from native material	from established buffer zones will	
1		0	0	0	(rock or woody debris) where	enhance in-stream habitat and	
5	VQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, 1)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
	VQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	VQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	4	4	4	- Creation of riparian buffer zones		
	VQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	VQ5. Land Use Pattern Beyond Immediate		-	-	on each side)		
R	Riparian Zone <i>(e)</i>	6	7	9	- Creation of protected natural area adjacent to riparian buffer zone		
to	VQ6a. Riparian Zone Width (from stream edge o field) <i>(e)</i>	4	6	9	- Monitoring and management		
	VQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	8	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	46	50	57			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.58	0.63	0.71			
н	B1. Flow Regime	2	2	2			
	B2. Epifaunal Substrate and Available Cover	3	4	5	Notes:		
	B3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
н	HB4. Pool Variability	3	3	4	Mitigation Plan) for scoring methodology.		
	B5. Sediment Deposition and Scouring	8	8	8	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	quality / Biogeochemical Functions; HB =	
н	B6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	B7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
н	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and ri		
	HB9. Bank Stability <i>(e)</i>	8	8	8	(f) Instream bottom topography was globally use	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	8	8	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	4	6	9	Composition because it more accurately represe		
	HB12. Riparian Habitat Condition	7	7	7	Ralph Hall project watershed.		
í Hinda Hinda	Habitat Subtotal	54	59	67	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
-	Habitat FCI = Subtotal / 120	0.45	0.49	0.56			
T T	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.50	1.59				
	TOTAL FCU = SAR Length (436) X Multiplication Factor (0.00125) X Total FCI	0.82	0.87	0.95	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A4-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
359	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-5, B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Functions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / biogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us	ight bank scores.	
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of epnemera Ralph Hall project watershed.	a sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI		1.37	1.56	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (359) X Multiplication Factor (0.00125) X Total FCI		0.61	0.70			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A4-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A4-(3)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
237	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-	-	-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i> WQ6a. Riparian Zone Width (from stream edge	-			adjacent to riparian buffer zone - Monitoring and management		
	to field) <i>(e)</i> WQ6b. Riparian Zone Vegetation	5	7	9	_		
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.	ar su eann channer conoilíon within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams 		
	TOTAL FCU = SAR Length (237) X Multiplication Factor (0.00125) X Total FCI	0.35	0.41	0.46	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Jooliyojy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A5-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A5-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	31	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
451	Hydrologic FCI = Subtotal / 100	0.30	0.31	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate			-	on each side)		
	Riparian Zone <i>(e)</i>	5	7	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	3	6	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	29	37	47			
Enhancement	= Water Quality / Biogeochemical FCI Subtotal / 80	0.36	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-7	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Diogeochermear rancions, The -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	(i) Instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	3	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	33	43	55	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.28	0.36	0.46	Ralph Hall project watershed.	a sucan channer conullon within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.94	1.13	1.40	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (451) X Multiplication Factor (0.00125) X Total FCI	0.53	0.64	0.79	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	inclusely.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A6-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A6-(1)	H3a. Channel Sinuosity	hannel Sinuosity 1 1 1 etc.) from outside conservation	etc.) from outside conservation easement	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
559	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.28	1.46	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (559) X Multiplication Factor (0.00125) X Total FCI	0.77	0.89	1.02		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A6-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A6-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
461	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.	ar stream channer condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.28	1.46	Raipn Hail project watersnea. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (461) X Multiplication Factor (0.00125) X Total FCI	0.63	0.74	0.84	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	oouvoy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A6-TRIBB-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A6-TRIBB-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
373	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai sucam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.32	1.49	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (373) X Multiplication Factor (0.00125) X Total FCI	0.53	0.62	0.69	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB7-A7-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	8	8	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB7-A7-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	5	5	5	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	52	52	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
664	Hydrologic FCI = Subtotal / 100	0.52	0.52	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	8	8	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	4	4	4	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
0.00120	Riparian Zone <i>(e)</i>	6	7	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	7	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	49	52	58			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.61	0.65	0.73			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-7	HB3. Stream Bottom Substrate	6	6	6	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	6	6	6	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	8	8	8	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	8	8	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	7	8	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	66	68	72	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.55	0.57	0.60	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.00			Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.68	1.74	1.86	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (664) X Multiplication Factor (0.00125) X Total FCI	1.39	1.44	1.54			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	28	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
708	Hydrologic FCI = Subtotal / 100	0.28	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	4	6	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-3	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piazooohomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	5	6	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	4	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	39	47	59	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.33	0.39	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	a stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.02	1.17	1.45	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (708) X Multiplication Factor (0.00125) X Total FCI	0.90	1.04	1.28	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
276	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piogaaahamiaal Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.60	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (276) X Multiplication Factor (0.00125) X Total FCI	0.49	0.55	0.61			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
388	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of			_	where appropriate		
1	Aquatic Vegetation (h)	2	2	2	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate				on each side)		
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
В-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		••			Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.59	1.75	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (388) X Multiplication Factor (0.00125) X Total FCI	0.68	0.77	0.85			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-(2c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f</i>)	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,171	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate				on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / biogeochemical Functions, FIB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.60	1.76	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (1171) X Multiplication Factor (0.00125) X Total FCI	2.06	2.34	2.58			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area downcutting	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
511	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:		0	0	0	LWD and GCS and other locations		
	WQ2. Water Clarity WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (<i>e</i>)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	= Water Quality / Biogeochemical FCI Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.	a stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	Raiph Hall project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (511) X Multiplication Factor (0.00125) X Total FCI	0.70	0.84	0.95		···· · · ·	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A1-(2)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A1-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	33	34	36	structures - Adjustment of channel gradient by	and enhance water quality	
139	Hydrologic FCI = Subtotal / 100	0.33	0.34	0.36	installing grade control structures	 Woody debris, leaf litter, and overhanging herbaceous vegetation 	
155	WQ1a. Bank Stability (e)	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	· · · · ·	1	1	1	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	7	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	42	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.53	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-2	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamical Europticase (110) -	
	HB5. Sediment Deposition and Scouring	6	6	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	7	8	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	48	57	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.35	0.40	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	ai suearn channei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.27	1.42	Raiph Hall project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (139) X Multiplication Factor (0.00125) X Total FCI	0.20	0.22	0.25			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A1-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A1-(3)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
221	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	5	7	on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riagonahaminal Eurotiona: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical runctions, TID =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120		0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.33	1.51	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (221) X Multiplication Factor (0.00125) X Total FCI	0.31	0.37	0.42	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A2-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	3	5	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	5	6	7	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	26	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
721	Hydrologic FCI = Subtotal / 100	0.26	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	0	1	(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	8	8	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	36	39	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.45	0.49	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-2	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	Nuclity / Disease the missel Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	5	6	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	38	46	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.38	0.48	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication		
	Biogeochemical FCI + Habitat FCI	1.03	1.17	1.44	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (721) X Multiplication Factor (0.00125) X Total FCI	0.93	1.05	1.30			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A2-(2)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
411	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-	-	-	(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonahaminal Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.33		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (411) X Multiplication Factor (0.00125) X Total FCI	0.58	0.68	0.78	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A3-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A3-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	32	36	structures - Adjustment of channel gradient by	and enhance water quality	
356	Hydrologic FCI = Subtotal / 100	0.30	0.32	0.36	installing grade control structures	 Woody debris, leaf litter, and overhanging herbaceous vegetation 	
550	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	0	1	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephonicial	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate				on each side) - Creation of protected natural area		
	Riparian Zone (e)	8	8	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge		<u> </u>	<u> </u>	- Monitoring and management		
	to field) (e)	3	6	9			
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	38	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-2	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	4	5	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	3	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.		
	Habitat Subtotal	35	45	57	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.29	0.38	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
		-		· · · ·	(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.00	1.17	1.42	(i) The Multiplication Factor is determined by the stream's now regime, the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (356) X Multiplication Factor (0.00125) X Total FCI	0.45	0.52	0.63			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A3-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
171	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		0	0	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(i) instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (171) X Multiplication Factor (0.00125) X Total FCI	0.24	0.28	0.32			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A3-(3)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A3-(3)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	- Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	31	33	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
129	Hydrologic FCI = Subtotal / 100	0.31	0.33	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	6	6	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	Off each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	7	8	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	37	40	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.46	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-2	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	5	6	6	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	2	4	6	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	7	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.		
	Habitat Subtotal	41	49	58	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.41	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.24	1.44	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (129) X Multiplication Factor (0.00125) X Total FCI	0.18	0.20	0.23		····· · ,	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A4-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A4-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):		34	34	36	structures	and enhance water quality	
596	Hydrologic Subtotal Hydrologic FCI = Subtotal / 100	0.34	0.34	0.36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
590	WQ1a. Bank Stability (e)	0.34	0.34	0.30	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zone:	· · · · ·	1	1	1	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
Epitemetai	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	8	8	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge		ł		adjacent to riparian buffer zone		
	to field) (e)	3	6	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation		-				
	Protection/Completeness (e)	7	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	42	47			
Enhancement	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.53	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-3	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	3	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	7	8	9	visual assessment of the stream reach.	abolly instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	ents the charmer condition within the Earce	
	Habitat Subtotal	45	52	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.38	0.43	0.49	provide an accurate representation of ephemeral stream channel condition within the Lake		
		0.00	0.40	0.73	Ralph Hall project watershed.	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.19	1.30	1.44	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (596) X Multiplication Factor (0.00125) X Total FCI	0.89	0.97	1.07			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A4-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A4-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
185	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
100	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephomora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
0.00120	Riparian Zone (e)	9	9	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone - Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
2 0	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	hally instead of Channel Sadiment/Sylbatrate	
	HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entranter contanter waarn are Lake	
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.04	0.45	0.43	Ralph Hall project watershed.	a straam's flow regime, the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (185) X Multiplication Factor (0.00125) X Total FCI	0.25	0.30	0.34			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A5-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A5-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
849	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
2 0	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	halls instead of Channel Cadimant/Oshatata	
	HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ents the charmer condition within the Earce	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.37	0.40	0.52	Ralph Hall project watershed.	a atraam'a flaw ragima, the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (849) X Multiplication Factor (0.00125) X Total FCI	1.22	1.43	1.63			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB8-A6-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB8-A6-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	species	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	31	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
113	Hydrologic FCI = Subtotal / 100	0.30	0.31	0.37	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR		<u> </u>		(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	8	8	9	on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i>	0	0	5	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	3	6	9	- Monitoring and management		
	to field) <i>(e)</i>	5	0	9			
	WQ6b. Riparian Zone Vegetation	3	6	9			
	Protection/Completeness (e)	5	0	-			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	31	38	47			
Enhancement	= Water Quality / Biogeochemical FCI Subtotal / 80	0.39	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
B-3	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	5	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	5	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	6	7	visual assessment of the stream reach.	ed in neu of Marining's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	(g) Channel Bottom Bank Stability was used glo	bbally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	3	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.		
	Habitat Subtotal	34	45	56	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.28	0.38	0.47	provide an accurate representation of ephemera Ralph Hall project watershed.	ai sucam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.97	1.16	1.42	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (113) X Multiplication Factor (0.00125) X Total FCI	0.14	0.16	0.20	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel
S16-TRIB10-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
S16-TRIB10-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
1,187	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation
.,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate	
Ephoniolai	Aquatic Vegetation (h)	2	2	2	- Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width	
0.00125	WQ5. Land Use Pattern Beyond Immediate				on each side)	
0.00120	Riparian Zone (e)	9	9	9	- Creation of protected natural area	
	WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone - Monitoring and management	
	to field) (e)	5	7	9	- Monitoring and management	
	WQ6b. Riparian Zone Vegetation					
	Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55		
Restoration	Water Quality / Biogeochemical Cubicial Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69		
	HB1. Flow Regime	2	2	2		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:	
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
2.0	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadimant/Sylastrata
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se	
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake
		0.10			Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.79	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (1187) X Multiplication Factor (0.00125) X Total FCI	2.08	2.37	2.66		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB10-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB10-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	50	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
429	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.50	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Riagonahamical Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	50	60	68	 (h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	Habitat FCI = Subtotal / 120	0.42	0.50	0.57			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.36	1.57	1.75			
	TOTAL FCU = SAR Length (429) X Multiplication Factor (0.00125) X Total FCI	0.73	0.84	0.94	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB10-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB10-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
517	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-8, B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.		
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.61	1.80	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (517) X Multiplication Factor (0.00125) X Total FCI	0.91	1.04	1.16	,, ,, ,, ,, ,, , _, ,, ,, ,, ,, ,, , , , , , , , , , , , , , , , , , , ,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB10-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
490	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Or each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoochomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.34	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (490) X Multiplication Factor (0.00125) X Total FCI	0.70	0.82	0.94	and 0.0030, 0.00310, 0.0020, and 0.00120, lesp	occurrory.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB10-A1-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f</i>)	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
378	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piogaaahamiaal Eurotiana: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / biogeochemical Functions, FIB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai suearn channei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (378) X Multiplication Factor (0.00125) X Total FCI	0.55	0.65	0.74			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB10-A1-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB10-A1-(2)	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	- Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
599	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Off each side) Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality , Elogooononnoan anotiono, "HE	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for se provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.13	1.33	1.52	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (599) X Multiplication Factor (0.00125) X Total FCI	0.85	1.00	1.14		-	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel
S16-TRIB11-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
S16-TRIB11-(1)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	52	53	55	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
1,108	Hydrologic FCI = Subtotal / 100	0.52	0.53	0.55	installing grade control structures	overhanging herbaceous vegetation
.,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate	
	Aquatic Vegetation (h)	2	2	2	- Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width	
0.00125	WQ5. Land Use Pattern Beyond Immediate				on each side)	
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 	
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management	
	to field) (e)	5	7	9	- Monitoring and management	
	WQ6b. Riparian Zone Vegetation					
	Protection/Completeness (e)	2	6	9		1
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55		
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69		
	HB1. Flow Regime	2	2	2		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:	
В-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake
					Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.63	1.82	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (1108) X Multiplication Factor (0.00125) X Total FCI	1.98	2.26	2.52		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,040	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	on each side) - Creation of protected natural area		
	Riparian Zone (e)				adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piazooohomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.42	1.62	1.81			
	TOTAL FCU = SAR Length (1040) X Multiplication Factor (0.00125) X Total FCI	1.85	2.11	2.35	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iocuvoiy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	8	8	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A1-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	7	7	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	39	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
126	Hydrologic FCI = Subtotal / 100	0.39	0.39	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	8	8	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		-		where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate		-	-	on each side)		
	Riparian Zone (e)	8	8	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	8	8	9		1	
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	44	45	49			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.55	0.56	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-8	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	8	8	8	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	8	8	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	8	8	9	visual assessment of the stream reach.	halls instead of Channel Cadiment/Oshatata	
	HB11. Riparian Zone (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	one are channel contation within the Lake	
	Habitat Subtotal	56	59	64	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.47	0.49	0.53	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.47	0.43	0.00	Ralph Hall project watershed.	a atraam'a flaw ragima, the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.44	1.55	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (126) X Multiplication Factor (0.00125) X Total FCI	0.22	0.23	0.24			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A1-(2),	H3a. Channel Sinuosity	2	2	2	etc.) from outside conservation	increased overbank frequency)	
S16-TRIB11-(2)	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
95	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Oreation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	acting bacques Aquatic Vagatation data and	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for suppovide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.33	1.51	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (95) X Multiplication Factor (0.00125) X Total FCI	0.13	0.16	0.18			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A2-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	8	8	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A2-(1)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
72	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
12	WQ1a. Bank Stability (e)	8	8	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:		0	0	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of		-	-	where appropriate		
Lphemeral	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone <i>(e)</i>	8	8	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	6	7	9		1	
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	44	45	49			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.55	0.56	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
В-8	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
2.0	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	8	8	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	visual assessment of the stream reach.	abally instead of Channel Sodimont/Substrate	
	HB11. Riparian Zone (e)	8	8	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.		
	Habitat Subtotal	54	57	62	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.45	0.48	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.10			Ralph Hall project watershed. (i) The Multiplication Factor is determined by th	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.38	1.43	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (72) X Multiplication Factor (0.00125) X Total FCI	0.12	0.13	0.14			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A2-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
79	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	 on each side) Creation of protected natural area 		
	Riparian Zone <i>(e)</i>	-		-	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	 Monitoring and management 		
	to field) (e)	•	'	Ű			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)		-	-			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.	ed in neu or manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for suppovide an accurate representation of ephemeral		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.	a sucan channel conulton within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	Raiph Hall project watersned. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (79) X Multiplication Factor (0.00125) X Total FCI	0.11	0.13	0.15	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A3-(1)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A3-(1)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	39	40	- Adjustment of channel gradient by	and enhance water quality	
65	Hydrologic FCI = Subtotal / 100	0.39	0.39	0.40	installing grade control structures	 Woody debris, leaf litter, and overhanging herbaceous vegetation 	
00	WQ1a. Bank Stability (e)	7	0.39 7	0.40	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	· · · · ·	1	'	'	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	8	8	8	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of		-		where appropriate		
Ephemeral	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-	-	on each side)		
0.00120	Riparian Zone (e)	8	8	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) (e)	6	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	7	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	42	44	48			
Enhancement	Water Quality / Biogeochemical Cubicial Water Quality / Biogeochemical FCI = Subtotal / 80	0.53	0.55	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-8	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	8	8	8	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	7	7	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	7	8	9	visual assessment of the stream reach.	halls instead of Channel Cadimant/Oshatata	
	HB11. Riparian Zone (e)	6	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	one are channel contation within the Lake	
	Habitat Subtotal	53	57	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.44	0.48	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.44	0.40	0.52	Ralph Hall project watershed.	a atraam'a flaw ragima; the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.36	1.42	1.52	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (65) X Multiplication Factor (0.00125) X Total FCI	0.11	0.12	0.12			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A3-(2)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A3-(2)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	30	32	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
291	Hydrologic FCI = Subtotal / 100	0.30	0.32	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	•	0		(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	4	5	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	8	8	9	on each side) - Creation of protected natural area		
	Riparian Zone <i>(e)</i>	0	0	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	4	6	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	6	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	37	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.46	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-8	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
-	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	5	6	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	4	5	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	6	7	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	4	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	6	7	7	Ralph Hall project watershed.		
	Habitat Subtotal	39	48	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.40	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.03	1.18	1.48	Raipn Hail project watersnea. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (291) X Multiplication Factor (0.00125) X Total FCI	0.37	0.43	0.54	····, · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB11-A3-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB11-A3-(3)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
106	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR		_		(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
Zone B	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	- Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Violity / Biogeophemical Eurotiana, "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120		0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.31	1.49	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (106) X Multiplication Factor (0.00125) X Total FCI	0.15	0.17	0.20			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB12-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB12-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
581	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephomora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate				on each side)		
0.00120	Riparian Zone (e)	9	9	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone - Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49	-		
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
5.5	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water Q	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	ight bank scores.	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	hally instead of Channel Cadimant/Orchaterta	
	HB10. Vegetative Protection (e) HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake		
		0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (581) X Multiplication Factor (0.00125) X Total FCI	0.84	0.98	1.12			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB12-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB12-(1)	6-TRIB12-(1) H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
822	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate		
Ephomora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
0.00120	Riparian Zone (e)	9	9	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone - Monitoring and management		
	to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
5.5	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	Habitat Functions. (c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	ight bank scores.	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e) HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB11. Riparian Habitat Condition	2	5	9 7	Ralph Hall project watershed.	ons are channel contation within the Lake	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemeral stream channel condition within the Lake		
		0.37	0.45	0.52	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (822) X Multiplication Factor (0.00125) X Total FCI	1.18	1.39	1.58			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB13-(1)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB13-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f</i>)	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	species	- Protection, plantings, and measures	
	H4a, Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	to prevent uncontrolled access will improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	32	32	35	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
699	Hydrologic FCI = Subtotal / 100	0.32	0.32	0.35	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	,			(rock or woody debris) where	enhance in-stream habitat and	
Zone B	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephoniolai	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate			-	on each side)		
0.00120	Riparian Zone (e)	8	8	9	- Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge				adjacent to riparian buffer zone - Monitoring and management		
	to field) (e)	8	8	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	7	8	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	43	44	47			
Enhancement	Water Quality / Biogeochemical Cubicial Water Quality / Biogeochemical FCI = Subtotal / 80	0.54	0.55	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	3	4	Notes:		
B-8	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
2.0	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	8	8	8	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	7	8	9	visual assessment of the stream reach.	hally instead of Channel Sadimant/Sylastrata	
	HB11. Riparian Zone (e)	8	8	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.		
	Habitat Subtotal	52	55	60	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.43	0.46	0.50	provide an accurate representation of ephemera	al stream channel condition within the Lake	
		0.70	0.70	0.00	Ralph Hall project watershed.	a stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.29	1.33	1.44	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (699) X Multiplication Factor (0.00125) X Total FCI	1.13	1.16	1.26			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S16-TRIB13-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S16-TRIB13-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	3	3	4	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H3d. Charmer incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):		37	38	40	structures	and enhance water quality	
192	Hydrologic Subtotal Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
192	, ,	6			installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	WQ1a. Bank Stability (e)	0	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone B	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification:	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephonicia	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate		-		on each side)		
	Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone 		
	WQ6a. Riparian Zone Width (from stream edge				- Monitoring and management		
	to field) <i>(e)</i>	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation						
	Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
B-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
2.0	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.	abolly instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente ano onamior contation within the Edite	
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	provide an accurate representation of ephemer	al stream channel condition within the Lake	
		0.07	0.70	0.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by th	e stream's flow regime: the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.32	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (192) X Multiplication Factor (0.00125) X Total FCI	0.27	0.32	0.36			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-(7)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity		increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	5	5	5	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	4	4	4	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	51	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
641	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.51	installing grade control structures	overhanging herbaceous vegetation	
011	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	50	60	68	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.42	0.50	0.57	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.37	1.58	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (641) X Multiplication Factor (0.00125) X Total FCI	1.10	1.27	1.41			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel			
S25-(8)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	3	5	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S25-(8)	H3a. Channel Sinuosity 3 3 3	3	etc.) from outside conservation	increased overbank frequency)					
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	4	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	37	42	49	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
3,619	Hydrologic FCI = Subtotal / 100	0.37	0.42	0.49	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	4	4	4	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	7	6	6	around channel (minimum of 60' width				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9	- Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	1	5	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	55					
Enhancement	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.69					
	HB1. Flow Regime	2	2	2					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
C-9, C-12	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
, -	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	1	3	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =			
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	5	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	1	5	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadiment/Sylbatrate			
	HB11. Riparian Zone <i>(e)</i>	8	8	9	(g) Channel Bottom Bank Stability was used gid Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte			
	Habitat Subtotal	35	48	63	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.40	0.53	provide an accurate representation of ephemer	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.15	1.40	1.70	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	Biogeochemical FCI + Habitat FCI	-			are 0.0038, 0.00315, 0.0025, and 0.00125, resp				
	TOTAL FCU = SAR Length (3619) X Multiplication Factor (0.00125) X Total FCI	5.20	6.33	7.69					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-(9a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-(9)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
4,212	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
, ,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Oreation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-6	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.42	1.60	1.77	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream.		
	TOTAL FCU = SAR Length (4212) X Multiplication Factor (0.00125) X Total FCI	7.48	8.42	9.32	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iouively.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-(9b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-(9)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	52	53	55	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,480	Hydrologic FCI = Subtotal / 100	0.52	0.53	0.55	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-3	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.61	1.78	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (1480) X Multiplication Factor (0.00125) X Total FCI	2.65	2.98	3.29	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Gouvery.	

S25-TRIB1-(1) H Baseline SAR Name(s): S25-TRIB1-(1) H H M H H H H	11. Flow Regime and Groundwater Interaction 12a. Channel Condition/ Alteration 12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability (e) 13a. Channel Sinuosity 13b. Bottom Substrate Composition 13c. In stream Bottom Topography OR Anning's n (f) 13d. Channel Incision	CONSTRUCTION 1 6 7 6 5 3 2	1 6 7 6 5	1 7 7	PERFORMED - Protection within large contiguous mititgation area	RATIONALE FOR LIFT GCS will reduce channel downcutting and improve stream
S25-TRIB1-(1) H Baseline SAR Name(s): S25-TRIB1-(1) H H M H H H	12a. Channel Condition/ Alteration 12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability (e) 13a. Channel Sinuosity 13b. Bottom Substrate Composition 13c. In stream Bottom Topography OR 1anning's n (f) 13d. Channel Incision	7 6 5 3	7 6 5	7	50	
H. Baseline SAR Name(s): H. S25-TRIB1-(1) H. H. M H. H. H. H. H. H. H.	12b. Channel Capacity to Flow Frequency 12c. Channel Bank Stability (e) 13a. Channel Sinuosity 13b. Bottom Substrate Composition 13c. In stream Bottom Topography OR <i>I</i> anning's n (f) 13d. Channel Incision	7 6 5 3	7 6 5	7	mititgation area	downcutting and improve stream
Baseline SAR Name(s): H. S25-TRIB1-(1) H. H. M M H. H. H.	12c. Channel Bank Stability (e) 13a. Channel Sinuosity 13b. Bottom Substrate Composition 13c. In stream Bottom Topography OR /Ianning's n (f) 13d. Channel Incision	6 5 3	6 5			
S25-TRIB1-(1) H H H M H H	I3a. Channel Sinuosity I3b. Bottom Substrate Composition I3c. In stream Bottom Topography OR /Ianning's n (f) I3d. Channel Incision	5 3	5		- Implementation of measures to	stability, sediment transport, and
H H M H	13b. Bottom Substrate Composition 13c. In stream Bottom Topography OR /lanning's n (f) 13d. Channel Incision	3		7	prevent uncontrolled access (cattle,	floodplain connectivity (through
H M H H	i3c. In stream Bottom Topography OR /lanning's n (f) i3d. Channel Incision		0	5	etc.) from outside conservation	increased overbank frequency)
M H: H:	/lanning's n <i>(f)</i> I3d. Channel Incision	2	3	3	easement	- LWD will increase channel
H H	13d. Channel Incision		2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water
н		_	-		species	- Protection, plantings, and measures
		7	7	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
I II.	I4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	14b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	37	37	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
603	Hydrologic FCI = Subtotal / 100	0.37	0.37	0.40	installing grade control structures	overhanging herbaceous vegetation
	VQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will
	VQ1b. Channel Bottom Bank Stability OR			_	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity
Zone C C	Channel Sediments or Substrate Composition <i>(e,</i> /)	6	6	7	- Creation of pools in combination with	biological productivity
Stream Classification W	VQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
	VQ3. Nutrient Enrichment OR Presence of quatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones	
	VQ4. Composition of Organic Matter	6	6	6	around channel (minimum of 60' width	
	VQ4. Composition of Organic Matter	0	0	0	on each side)	
R	Riparian Zone <i>(e)</i>	6	7	9	 Creation of protected natural area adjacent to riparian buffer zone 	
W	VQ6a. Riparian Zone Width (from stream edge	8	8	9	- Monitoring and management	
	o field) <i>(e)</i>	0	0	9		
W	VQ6b. Riparian Zone Vegetation	6	7	9		
Pi	Protection/Completeness (e)	0	'	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	40	47		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.50	0.59		
Н	B1. Flow Regime	1	1	1		
	B2. Epifaunal Substrate and Available Cover	1	2	3	Notes:	
Ū Ū	B3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	IB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	
	B5. Sediment Deposition and Scouring	7	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	B6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	B7. Channel Alteration	6	6	7	(d) FCU = Functional Capacity Unit.	
	B8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	B9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	B10. Vegetative Protection (e)	6	7	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate
	B11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately represe	
	B12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	
	Habitat Subtotal	50	52	59	(h) Nutrient Enrichment was used globally for so	
I	Habitat FCI = Subtotal / 120	0.42	0.43	0.49	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake
		-			(i) The Multiplication Factor is determined by the	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.26	1.30	1.48	factors for Perennial, Intermittent with Perennial are 0.0038, 0.00315, 0.0025, and 0.00125, resp	
	TOTAL FCU = SAR Length (603) X Multiplication Factor (0.00125) X Total FCI	0.95	0.98	1.12		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB1-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB1-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	 Use of large woody debris (LWD) or other native material for in-channel 	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
683	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55	-		
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.61	1.79			
	TOTAL FCU = SAR Length (683) X Multiplication Factor (0.00125) X Total FCI	1.20	1.37	1.53	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iouroly.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB1-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB1-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>			_	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
270	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity	
	g)				- Creation of pools in combination with		
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	2	2	2	where appropriate - Creation of riparian buffer zones		
	Aquatic Vegetation (h)	2	2	2	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	5	/	9	ů ů		
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)	Z	0	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	47	55			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.59	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagaaabamiaal Eurotiana: "HP" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for so		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
			1	•		e stream's flow regime; the multiplication	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.39	1.60	1.78	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (270) X Multiplication Factor (0.00125) X Total FCI	0.47	0.54	0.60			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB1-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB1-A1-(1)	H3a. Channel Sinuosity	a. Channel Sinuosity 1 1 1 etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
268	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-3	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadiment/Sylbatrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	(g) Channel Bottom Bank Stability was used gid Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente ene enamier condition manin are Earc	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.43	0.50	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.11	1.32	1.50	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (268) X				are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI	0.37	0.44	0.50			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB2-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
535	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
000	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagoochomical Eurotions: "UP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (535) X Multiplication Factor (0.00125) X Total FCI	0.78	0.90	1.02	· · · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT	
REACH (SAR) INFORMATION	SWAMPINI METRICS (a, b, c, b)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB2-(2)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	5	6	7	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB2-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures	
	H3d. Channel Incision	5	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	29	31	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
714	Hydrologic FCI = Subtotal / 100	0.29	0.31	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	6	6	7	appropriate	biological productivity	
	g)				- Creation of pools in combination with		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0		where appropriate		
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	5	/	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge		0		- Monitoring and management		
	to field) (e)	3	6	9	5 5		
	WQ6b. Riparian Zone Vegetation		0	9			
	Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	27	35	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.34	0.44	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
C-6	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Diagonahaminal Eurotiana: "UB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	Quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	6	6	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	3	6	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	38	46	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.32	0.38	0.48	provide an accurate representation of ephemera	ai stream cnannei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /			4.40	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI		1.13	1.43	are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (714) X Multiplication Factor (0.00125) X Total FCI		1.01	1.28			
	wultiplication Factor (0.00125) X Total FCI						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB2-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB2-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
406	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.77	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (406) X Multiplication Factor (0.00125) X Total FCI	0.71	0.81	0.90	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB3-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB3-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H30. Channel incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	structures	and enhance water quality	
681	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
081	WQ1a. Bank Stability (e)	6	0.39	8	(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zone:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	/	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (681) X Multiplication Factor (0.00125) X Total FCI	0.98	1.15	1.31	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
S25-TRIB4-(1)	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB4-(1)	TRIB4-(1) H3a. Channel Sinuosity 2	2	2	etc.) from outside conservation	increased overbank frequency)		
1	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
1	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
1	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
317	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
•	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR	-		-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones around abannel (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
Ň	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
N	WQ6b. Riparian Zone Vegetation Protection/Completeness <i>(e)</i>	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
1	HB1. Flow Regime	1	1	1			
	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
1	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
1	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	2	2	2	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection <i>(e)</i>	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately represent		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente ene enamier condition whim the Earce	
ł F	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for so		
1 F	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.12	1.31		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (317) X Multiplication Factor (0.00125) X Total FCI	0.44	0.52	0.59	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB4-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB4-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,406	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1406) X Multiplication Factor (0.00125) X Total FCI	2.06	2.39	2.71	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB5-(0)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
1.654	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
1,004	WQ1a. Bank Stability (e)	6	0.40 7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream.		
	TOTAL FCU = SAR Length (1654) X Multiplication Factor (0.00125) X Total FCI	2.40	2.81	3.20	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iouroiy.	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB5-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB5-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
443	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.15	1.35	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (443) X	0.64	0.75	0.85	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB6-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	and enhance water quality - Woody debris, leaf litter, and	
1.908	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
1,000	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-5, C-6	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1908) X Multiplication Factor (0.00125) X Total FCI	2.79	3.24	3.67			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB6-(2)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB6-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	48	48	51	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
909	Hydrologic FCI = Subtotal / 100	0.48	0.48	0.51	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	4	4	4	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- On each side) - Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	1	5	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	5	7	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	37	46	55			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.46	0.58	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
C-6	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Eurotions: "HB" -	
	HB5. Sediment Deposition and Scouring	7	7	7	Habitat Functions.	quality / Diogeochemical Functions, ThD =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	7	7	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	1	5	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	52	64	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.53	Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.28	1.49	1.73	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (909) X Multiplication Factor (0.00125) X Total FCI	1.45	1.69	1.97	,,		

S25-TRIB9-(1) Baseline SAR Name(s): S25-TRIB9-(1) H	SWAMPIM METRICS (a, b, c, d) H1. Flow Regime and Groundwater Interaction H2a. Channel Condition/ Alteration H2b. Channel Capacity to Flow Frequency H2c. Channel Bank Stability (e) H3a. Channel Sinuosity H3b. Bottom Substrate Composition	CONSTRUCTION 1 8 8 6	MONITORING 1 8	1	PERFORMED - Protection within large contiguous	- GCS will reduce channel			
S25-TRIB9-(1) H Baseline SAR Name(s): S25-TRIB9-(1) H	H2a. Channel Condition/ Alteration H2b. Channel Capacity to Flow Frequency H2c. Channel Bank Stability <i>(e)</i> H3a. Channel Sinuosity	8	1 8	1	 Protection within large contiguous 	- GCS will reduce channel			
H H Baseline SAR Name(s): H S25-TRIB9-(1) H	H2b. Channel Capacity to Flow Frequency H2c. Channel Bank Stability <i>(e)</i> H3a. Channel Sinuosity	8	8		s s	- GCS will reduce channel			
Baseline SAR Name(s): S25-TRIB9-(1) H	H2c. Channel Bank Stability (e) H3a. Channel Sinuosity			8	mititgation area	downcutting and improve stream			
S25-TRIB9-(1)	H3a. Channel Sinuosity	6	8	8	- Implementation of measures to	stability, sediment transport, and floodplain connectivity (through			
ŀ		0	7	8	prevent uncontrolled access (cattle,				
	H3b Bottom Substrate Composition	1	1	1	etc.) from outside conservation	increased overbank frequency)			
F	lob. Dottom oubstrate composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	0	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
Ν	Manning's n (f)	2	2	3	species	- Protection, plantings, and measures			
F	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
F	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
F	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
391	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation			
V	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone: V	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
g	g)				- Creation of pools in combination with				
Stream Classification V	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral V	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate				
A	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width				
Multiplication Factor (i): V	WQ4. Composition of Organic Matter	4	5	6	on each side)				
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
F	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone				
v	WQ6a. Riparian Zone Width (from stream edge	-	7	9	- Monitoring and management				
	to field) (e)	5	7	9	5 5				
v	WQ6b. Riparian Zone Vegetation	0	0	0					
	Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60					
ŀ	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-9 F	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
F	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
ŀ	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
ŀ	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
F	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and ri				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally use visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
ŀ	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately represe				
F	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for so				
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake			
			-	· ···		e stream's flow regime: the multiplication			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.32	1.49	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strear are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (391) X Multiplication Factor (0.00125) X Total FCI	0.55	0.65	0.73					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB10-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB10-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
837	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entranter contanter waarn are Lake	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.44	0.51	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.14	1.33	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream.		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (837) X				are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI	1.19	1.39	1.58			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB10-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	0	0	8	species	- Protection, plantings, and measures	
	H3d. Channel Incision H4a. Pools	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
		-	-	-	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
322	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of				where appropriate		
Ephemeral	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.12	1.32	1.49	Raipn Hail project watersnea. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (322) X Multiplication Factor (0.00125) X Total FCI	0.45	0.53	0.60	, , , , , , , , , , , , , , , , , , ,		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB10-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB10-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	50	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
395	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.50	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	53			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.66			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclifus / Disconscience / Functioners "!! ID" -	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sadimant/Sylbetrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente ene enamier contaitori manin are Edite	
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.37	1.56	1.74	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (395) X Multiplication Factor (0.00125) X Total FCI	0.68	0.77	0.86			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB10-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream stability, sediment transport, and	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
692	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiana, "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (692) X Multiplication Factor (0.00125) X Total FCI	0.96	1.13	1.28			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S25-TRIB11-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	 Adjustment of channel gradient by 	- Woody debris, leaf litter, and			
1,147	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				 Creation of pools in combination with LWD and GCS and other locations 				
	WQ2. Water Clarity	0	0	0	where appropriate				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	0	0	0					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management				
	to field) <i>(e)</i>	5	1	9					
	WQ6b. Riparian Zone Vegetation	2	6	9					
	Protection/Completeness (e)	2	0	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48					
Re-Establishment	Water Quality / Biogeochemical FCl = Subtotal / 80	0.41	0.51	0.60					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piogaaabamiaal Eurotiana: "UP" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / biogeochemical Functions, FIB -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake				
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Provide an accurate representation of ephemera Ralph Hall project watershed.	ai sueam channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strear are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (1147) X Multiplication Factor (0.00125) X Total FCI	1.59	1.88	2.12					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB11-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB11-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
370	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.43	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (370) X Multiplication Factor (0.00125) X Total FCI	0.51	0.61	0.68			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
334	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5			
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-13	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadiment/Sylbatrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	(g) Channel Bottom Bank Stability was used gid Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte	
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.43	0.50	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.11	1.30	1.48	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	Biogeochemical FCI + Habitat FCI	1.11	1.30	1.40			
	TOTAL FCU = SAR Length (334) X Multiplication Factor (0.00125) X Total FCI	0.46	0.54	0.62			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
382	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e</i>)	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-13	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Riagonabaminal Eurotianas "LIP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.36	1.55	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (382) X Multiplication Factor (0.00125) X Total FCI	0.55	0.65	0.74			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(3)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
444	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9			
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-10	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.15	1.34	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (444) X				are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ectively.	
	Multiplication Factor (0.00125) X Total FCI	0.64	0.74	0.84			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(4)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(4)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	4	4	4	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	37	38	40	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
478	Hydrologic FCI = Subtotal / 100	0.37	0.38	0.40	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	 where appropriate Creation of riparian buffer zones 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	6	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47			
Enhancement	Water Quality / Biogeochemical Cubicial Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover		1	3	Notes:		
C-9	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	-	1	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring		3	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	-	3	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)		4	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadimant/Sylastrata	
	HB11. Riparian Zone (e)	6	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition		3	7	Ralph Hall project watershed.		
	Habitat Subtotal	20	36	58	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.30	0.48	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	Biogeochemical FCI + Habitat FCI	0.94	1.16	1.47			
	TOTAL FCU = SAR Length (478) X Multiplication Factor (0.00125) X Total FCI	0.56	0.69	0.88			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(5a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
308	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functions, "UD" -	
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.77	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (308) X Multiplication Factor (0.00125) X Total FCI	0.54	0.62	0.68	····, · · · · · · · · · · · · · · · · ·		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(5b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	structures	and enhance water quality	
627	Hydrologic FCI = Subtotal / 100	49 0.49	0.50	0.52	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
027	WQ1a. Bank Stability (e)	6			(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	 on each side) Creation of protected natural area 		
	Riparian Zone (e)				adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54	-		
Re-Establishment	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
-	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.77	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (627) X	1.10	1.25	1.39	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(6)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(6)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	4	4	4	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	4	4	4	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	42	44	49	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
590	Hydrologic FCI = Subtotal / 100	0.42	0.44	0.49	installing grade control structures	overhanging herbaceous vegetation	
000	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	т	0	,	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	4	4	4	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge	1	5	9	adjacent to riparian buffer zone - Monitoring and management		
	to field) <i>(e)</i> WQ6b. Riparian Zone Vegetation			-			
	Protection/Completeness (e)	4	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	29	41	55			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.36	0.51	0.69			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
C-9	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeochemical Eurotiones "HB" -	
	HB5. Sediment Deposition and Scouring	1	3	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	4	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	1	5	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	26	42	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.22	0.35	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.00	1.30	1.69	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (590) X Multiplication Factor (0.00125) X Total FCI	0.74	0.96	1.25	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-(7)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-(7)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	50	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
310	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.50	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.38	1.56		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream		
	TOTAL FCU = SAR Length (310) X Multiplication Factor (0.00125) X Total FCI	0.53	0.60	0.67	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iecuveiy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity 4	4	4	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i> H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H3d. Channel Incision H4a. Pools	0	0	0 0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	-	39	40	42	structures	and enhance water quality	
953	Hydrologic Subtotal				- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
955	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitingtian Zanas	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / blogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream criannel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (953) X Multiplication Factor (0.00125) X Total FCI	1.38	1.61	1.82			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-A1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
. ,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	8	8	8	species	- Protection, plantings, and measures	
	H3d. Channel Incision H4a. Pools	0	0	0 0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	H4b. Channel Flow Status Hydrologic Subtotal	40	41	43	structures	and enhance water quality	
352	Hydrologic Subtotal Hydrologic FCI = Subtotal / 100	0.40	0.41	43 0.43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
552	WQ1a. Bank Stability (e)	6	0.41		installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	1	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / blogeochemical i unctions, Thb -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Provide an accurate representation of ephemera Ralph Hall project watershed.	a sucan channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.18	1.37	1.55	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (352) X Multiplication Factor (0.00125) X Total FCI	0.52	0.60	0.68			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK			
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT		
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel		
S25-TRIB12-A1-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream		
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through		
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel		
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water		
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures		
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will		
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,		
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality		
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and 		
550	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation		
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will		
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and		
Zone C	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	appropriate - Creation of pools in combination with	biological productivity		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate			
· ·	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 			
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)			
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area			
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone			
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management			
	to field) (e)	5	/	9	с с			
	WQ6b. Riparian Zone Vegetation	2	6	9				
	Protection/Completeness (e)	Z	0	9				
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48				
Re-Establishment	Water Quality / Biogeochemical FCl = Subtotal / 80	0.41	0.51	0.60				
	HB1. Flow Regime	1	1	1				
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:			
C-12	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of		
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.			
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.			
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r			
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate		
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres			
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.			
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake			
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channei condition within the Lake		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.			
	TOTAL FCU = SAR Length (550) X Multiplication Factor (0.00125) X Total FCI	0.80	0.93	1.05				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB12-A2-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB12-A2-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	Z	2	3	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,166	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity	
	g)				- Creation of pools in combination with		
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate - Creation of riparian buffer zones		
	Aquatic Vegetation (h)	0	0	0	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	5	1	9			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)		-	-			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-10	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and n (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.50	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1166) X Multiplication Factor (0.00125) X Total FCI	1.68	1.94	2.19			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S25-TRIB12-A3-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S25-TRIB12-A3-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
780	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-10, C-13	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiana, "HB" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (780) X Multiplication Factor (0.00125) X Total FCI	1.12	1.32	1.50	· · · · · · · · · · · · · · · · · · ·				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
S25-TRIB13-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and
616	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of				where appropriate	
-r	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area	
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone	
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management	
	to field) (e)	5	/	9	5 5	
	WQ6b. Riparian Zone Vegetation	0	0	9		
	Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48		
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:	
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake
					(i) The Multiplication Factor is determined by the	e stream's flow regime; the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	
	TOTAL FCU = SAR Length (616) X Multiplication Factor (0.00125) X Total FCI	0.89	1.04	1.18		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB13-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S25-TRIB13-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
712	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.16	1.35	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	Biogeochemical FCI + Habitat FCI	1.10	1.55	1.31			
	TOTAL FCU = SAR Length (712) X Multiplication Factor (0.00125) X Total FCI	1.03	1.20	1.34			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel			
S25-TRIB13-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	51	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1,324	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.51	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68					
	HB1. Flow Regime	2	2	2					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:				
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functions, "UD" -			
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.39	1.59	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (1324) X Multiplication Factor (0.00125) X Total FCI	2.30	2.63	2.91					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S25-TRIB13-A1-(1)	H2a. Channel Condition/ Alteration	1	4	7		downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S25-TRIB13-A1-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	Manning's n <i>(f)</i>	Z	2	3	species	- Protection, plantings, and measures			
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	22	26	34	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
953	Hydrologic FCI = Subtotal / 100	0.22	0.26	0.34	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e,	4	5	7	appropriate	biological productivity			
	g)				- Creation of pools in combination with				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate - Creation of riparian buffer zones				
	Aquatic Vegetation (h)	0	0	0	around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	5	1	5	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	4	6	9	- Monitoring and management				
	to field) <i>(e)</i>	4	0	5					
	WQ6b. Riparian Zone Vegetation	1	5	9					
	Protection/Completeness (e)			-					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	20	32	47					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.25	0.40	0.59					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
C-8, C-9	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =			
	HB5. Sediment Deposition and Scouring	1	3	6	Habitat Functions.	addity , Biogeochermoar i anoliene, 112			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us				
	HB9. Bank Stability <i>(e)</i>	4	5	7	visual assessment of the stream reach.				
	HB10. Vegetative Protection (e)	1	5	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	4	6	9	Composition because it more accurately repres	ents the channel condition within the Lake			
	HB12. Riparian Habitat Condition	4	5	7	Ralph Hall project watershed.	acting bacques Aquatic Vagatation data and			
	Habitat Subtotal	20	35	54	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera				
	Habitat FCI = Subtotal / 120	0.17	0.29	0.45	Ralph Hall project watershed.	a carean onamici contation within the Lare			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.64	0.95	1.38	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (953) X Multiplication Factor (0.00125) X Total FCI	0.76	1.13	1.64					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S25-TRIB13-A1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity 4 4	4	4	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	8	8	8	species	- Protection, plantings, and measures	
	H3d. Channel Incision H4a. Pools	0	0	0 0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	-	39	40	42	structures	and enhance water quality	
724	Hydrologic Subtotal				- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
724	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures (GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zana	WQ1a. Bank Stability (e)	6	7	8	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / blogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (724) X Multiplication Factor (0.00125) X Total FCI	1.06	1.23	1.39	,	·	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S25-TRIB14-(2)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	4	5	7	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S25-TRIB14-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	6	6	7	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	28	31	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
129	Hydrologic FCI = Subtotal / 100	0.28	0.31	0.38	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	1	3	6	around channel (minimum of 60' width on each side)					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	1	5	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	27	35	47						
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.34	0.44	0.59	-					
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:					
C-12	HB3. Stream Bottom Substrate	1	1	1	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	4	5	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	1	5	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadiment/Sylastrate				
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.	ente ene enamier condition whim the Earce				
	Habitat Subtotal	34	44	56	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	-	0.37	0.47	provide an accurate representation of ephemer	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.90	1.11	1.43	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	TOTAL FCU = SAR Length (129) X Multiplication Factor (0.00125) X Total FCI	0.15	0.18	0.23	are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S25-TRIB15-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H30. Channel incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
Proposed SAR Length (LF):	Hydrologic Subtotal	40	40	43	structures	and enhance water quality				
1.976	Hydrologic FCI = Subtotal / 100	0.40	0.40	43 0.43	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and				
1,970	WQ1a. Bank Stability (e)	6			(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will				
Mitigation Zanas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	6	8	(rock or woody debris) where	enhance in-stream habitat and				
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	6	around channel (minimum of 60' width					
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	48						
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.60						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-6, C-9	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	quality / Biogeochemical Functions, HB =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	6	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	43	52	61	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120		0.43	0.51	provide an accurate representation of ephemera Ralph Hall project watershed.	aı stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.32	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (1976) X Multiplication Factor (0.00125) X Total FCI	2.87	3.26	3.80	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	oouvoy.				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-(5a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-(4), S26-(5)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
945	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)	l I	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.41	1.59	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (945) X Multiplication Factor (0.00125) X Total FCI	1.67	1.88	2.07			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-(5b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-(5)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
451	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-11, C-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
- , -	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abolly instead of Channel Sadiment/Sylbatrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	(g) Channel Bottom Bank Stability was used gid Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente ane entannoi contation manin tro Edito	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.41	1.59	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI TOTAL FCU = SAR Length (451) X				are 0.0038, 0.00315, 0.0025, and 0.00125, resp	pectively.	
	Multiplication Factor (0.00125) X Total FCI	0.79	0.90	0.99			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-(5c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-(5)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
2,790	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
_,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte	
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI	1.43	1.61	1.77	are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (2790) X Multiplication Factor (0.00125) X Total FCI	4.99	5.61	6.17			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-(6a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-(6)		etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality	
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
2,540	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-7, C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	 (b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions. 	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.42	1.60	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (2540) X Multiplication Factor (0.00125) X Total FCI	4.51	5.08	5.59	,		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-(6b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-(6)	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	51	52	54	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1.580	Hydrologic FCI = Subtotal / 100	0.51	0.52	0.54	installing grade control structures	overhanging herbaceous vegetation	
,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water Q Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.43	1.61	1.77	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1580) X Multiplication Factor (0.00125) X Total FCI	2.82	3.18	3.50	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel
S26-(6c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through
S26-(6)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
2,243	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation
_,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	- ·		Ŭ	(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52		
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65		
	HB1. Flow Regime	2	2	2		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:	
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functionau "I ID" -
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.43	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia	
	Biogeochemical FCI + Habitat FCI	1.41	1.59	1.75	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	
	TOTAL FCU = SAR Length (2243) X Multiplication Factor (0.00125) X Total FCI	3.95	4.46	4.91		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel				
S26-(6d)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-(6)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 				
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
248	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65						
	HB1. Flow Regime	2	2	2						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:					
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =				
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Sylastrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	ente une entannoi contation within the Earte				
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	-	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.41	1.59	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	Biogeochemical FCI + Habitat FCI		1.55		are 0.0038, 0.00315, 0.0025, and 0.00125, resp					
	TOTAL FCU = SAR Length (248) X Multiplication Factor (0.00125) X Total FCI	0.44	0.49	0.54						

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel				
S26-(6e)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-(6)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 				
	H4a. Pools	5	5	5	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
3.175	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation				
-,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	4	4	around channel (minimum of 60' width on each side)					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	46	52						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.58	0.65						
	HB1. Flow Regime	2	2	2						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:					
C-2, C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	4	4	4	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =				
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	abally instead of Channel Sadiment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	52	62	70	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	-	0.52	0.58	provide an accurate representation of ephemer	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams					
	Biogeochemical FCI + Habitat FCI	1.42	1.60	1.76	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp					
	TOTAL FCU = SAR Length (3175) X Multiplication Factor (0.00125) X Total FCI	5.64	6.35	6.99						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB1-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>				species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and 	
200	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition <i>(e,</i>	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width 		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46	-		
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-2	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instand of Channel Sadiment/Sylbetrate	
	HB11. Riparian Zone (e)	5	7	9	(g) Charine Bollom Bank Stability was used git Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.35	0.43	0.50	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /				Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI	1.11	1.29	1.47	are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (200) X Multiplication Factor (0.00125) X Total FCI	0.28	0.32	0.37			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB2-(1)	H2a. Channel Condition/ Alteration	7	7	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	7	7	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB2-(1)		etc.) from outside conservation	increased overbank frequency)						
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	38	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1,019	Hydrologic FCI = Subtotal / 100	0.38	0.38	0.39	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	7	7	7	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	7	8	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	40	47					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.50	0.59	-				
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
C-1	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	2	2	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -			
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	7	7	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	3	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	7	8	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	6	6	7	Ralph Hall project watershed.				
	Habitat Subtotal	43	50	59	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.42	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.30	1.47	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (1019) X Multiplication Factor (0.00125) X Total FCI	1.48	1.66	1.87	,				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB2-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity 4 4	4	4	etc.) from outside conservation	increased overbank frequency)		
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel structures	improve bank stability, filter runoff, and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
787	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	,	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-1, C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Nuclitur / Disease chamical Europticase (110) -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Raph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (787) X Multiplication Factor (0.00125) X Total FCI	1.15	1.34	1.51			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB2-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB2-(3)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	3	3	3	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H30. Channel incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	structures	and enhance water quality	
301	Hydrologic FCI = Subtotal / 100	0.40	0.41	43 0.43	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
501	WQ1a. Bank Stability (e)	6	0.41	0.43 8	(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)	32	41	49			
Mitigation Design Type: Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
-	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.37	1.56	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	TOTAL FCU = SAR Length (301) X Multiplication Factor (0.00125) X Total FCI	0.44	0.52	0.59	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iecuveiy.	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB2-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB2-(4)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	4	4	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
614	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation	
-	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	-	-	-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.39	1.58	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream: are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (614) X Multiplication Factor (0.00125) X Total FCI	1.07	1.21	1.34	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB3-(1)	H2a. Channel Condition/ Alteration	6	6	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	7	7	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB3-(1)	H3a. Channel Sinuosity		increased overbank frequency)				
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	 species Use of large woody debris (LWD) or 	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	35	35	38	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
781	Hydrologic FCI = Subtotal / 100	0.35	0.35	0.38	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	6	7	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	0	,	(rock or woody debris) where	enhance in-stream habitat and	
0	Channel Sediments or Substrate Composition (e, g)	6	6	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
	WQ4. Composition of Organic Matter	2	4	6	around channel (minimum of 60' width		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	5	7	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	1	5	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	3	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	23	34	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.29	0.43	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:		
C-4	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functionau "IID" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	6	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	3	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	1	5	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	31	44	58	(h) Nutrient Enrichment was used globally for se		
	Habitat FCI = Subtotal / 120	-	0.37	0.48	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	0.90	1.14	1.45	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (781) X Multiplication Factor (0.00125) X Total FCI	0.88	1.11	1.42			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB3-(2a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB3-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	5	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
717	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.38	1.57	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (717) X Multiplication Factor (0.00125) X Total FCI	1.24	1.41	1.58	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB3-(2b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB3-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	5	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1,480	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.53	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR		7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	1	- Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.38	1.57	1.76	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1480) X Multiplication Factor (0.00125) X Total FCI	2.55	2.90	3.26	,,,,,,, _		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB3-(2c)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB3-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	5	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
703	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.52	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.43	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.37	1.56	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (703) X Multiplication Factor (0.00125) X Total FCI	1.20	1.37	1.54	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB4-(0)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A		etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	structures	and enhance water quality	
588	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	 Adjustment of channel gradient by installing grade control structures 	 Woody debris, leaf litter, and overhanging herbaceous vegetation 	
566	WQ1a. Bank Stability (e)	6	0.37	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	0	'	0	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Piagaaabamiaal Eurotiona: "HP" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / blogeochemical runctions, Thb =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in heu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Provide an accurate representation of ephemera Ralph Hall project watershed.	ai sueam channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.31	1.48	Raph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (588) X Multiplication Factor (0.00125) X Total FCI	0.82	0.96	1.09	· · · · · · · · · · · · · · · · · · ·	···· · · ·	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB4-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB4-(1)		etc.) from outside conservation	increased overbank frequency)						
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	5	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	47	48	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1,492	Hydrologic FCI = Subtotal / 100	0.47	0.48	0.52	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	45	52					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.56	0.65					
	HB1. Flow Regime	2	2	2					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:				
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Duality (Diamaaahamiaa) Furatiana, "UD" –			
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.37	1.55	1.75	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream.				
	TOTAL FCU = SAR Length (1492) X Multiplication Factor (0.00125) X Total FCI	2.56	2.89	3.26	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Joouroy.			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB5-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB5-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
487	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functions, "UD" -			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (487) X Multiplication Factor (0.00125) X Total FCI	0.71	0.82	0.93	and 0.0000, 0.00010, 0.0020, and 0.00120, resp				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB6-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB6-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1,022	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.34	1.51	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (1022) X Multiplication Factor (0.00125) X Total FCI	1.48	1.71	1.93					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB6-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB6-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	 Adjustment of channel gradient by 	- Woody debris, leaf litter, and	
1,571	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of		<u>^</u>	<u> </u>	where appropriate		
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	5	/	9			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)	Z	0	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-4	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeochemical Eurotiones "HB" -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.34	1.51	Raiph Hail project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1571) X Multiplication Factor (0.00125) X Total FCI	2.28	2.63	2.97	· · · · · · · · · · · · · · · · · · ·	······································	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB7-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures	
	H30. Channel incision H4a. Pools	0	0	0	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4b. Channel Flow Status	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	structures	and enhance water quality	
1,719	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	 Adjustment of channel gradient by installing grade control structures 	- Woody debris, leaf litter, and	
1,719	WQ1a. Bank Stability (e)	6	0.40	0.42 8	(GCS) made from native material	overhanging herbaceous vegetation from established buffer zones will	
Mitigation Zanas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0	1	0	(rock or woody debris) where	enhance in-stream habitat and	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	adjacent to riparian buffer zone - Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Nuclitur / Disease chamical Europticase (110) -	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.44	0.51	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1719) X Multiplication Factor (0.00125) X Total FCI	2.49	2.90	3.29	are 0.0000, 0.00010, 0.0020, and 0.00120, lesp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB7-(2)	H2a. Channel Condition/ Alteration	8	8	8		downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
26-TRIB7-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	51	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
1.329	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.51	installing grade control structures	overhanging herbaceous vegetation	
, ,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations		
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	2	2	2	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	around channel (minimum of 60' width		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	46	52			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.58	0.65			
	HB1. Flow Regime	2	2	2			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:		
C-5	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	50	60	68	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not		
	Habitat FCI = Subtotal / 120	0.42	0.50	0.57	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannei condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.37	1.57	1.73	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (1329) X Multiplication Factor (0.00125) X Total FCI	2.28	2.61	2.87	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB8-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB8-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	 Adjustment of channel gradient by 	 Woody debris, leaf litter, and 				
642	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of		_	_	where appropriate					
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	5	9	9	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management					
	to field) <i>(e)</i>	5	/	9						
	WQ6b. Riparian Zone Vegetation	2	6	9						
	Protection/Completeness (e)	Z	0	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-4, C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	42	52	60	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120		0.43	0.50	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.11	1.29	1.47	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream.					
	TOTAL FCU = SAR Length (642) X Multiplication Factor (0.00125) X Total FCI	0.89	1.04	1.18	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	iocurciy.				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB9-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB9-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water guality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
742	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-4, C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.50	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream. are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (742) X Multiplication Factor (0.00125) X Total FCI	1.07	1.23	1.39	,				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB10-(1a)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB10-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	roughness and improve bank stability - Created pools will retain water			
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures			
	H4a, Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1.524	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
.,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	around channel (minimum of 60' width				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58	-				
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:				
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	45	55	63	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.38	0.46	0.53	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.35		Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	TOTAL FCU = SAR Length (1524) X Multiplication Factor (0.00125) X Total FCI	2.23	2.57	2.90	are 0.0038, 0.00315, 0.0025, and 0.00125, resp				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB10-(1b)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB10-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	48	49	51	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
1,166	Hydrologic FCI = Subtotal / 100	0.48	0.49	0.51	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity			
	g)				- Creation of pools in combination with LWD and GCS and other locations				
	WQ2. Water Clarity	4	4	4					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation <i>(h)</i>	2	2	2	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9	- Monitoring and management				
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	38	45	52					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.48	0.56	0.65					
	HB1. Flow Regime	2	2	2					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:				
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =			
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	50	60	68	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.50	0.57	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.37	1.55	1.73	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 				
	TOTAL FCU = SAR Length (1166) X Multiplication Factor (0.00125) X Total FCI	2.00	2.26	2.52					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB10-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB10-A1-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
748	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
	Aquatic Vegetation (h)		-	_	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>		ů	ő	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management		
	to field) <i>(e)</i>	0	,	3			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	() ·g	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	inter the second	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed. (h) Nutrient Enrichment was used globally for s	acting basevas Agustic Vagatation dass not	
	Habitat Subtotal	43	53	61	provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.33	1.50	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (748) X Multiplication Factor (0.00125) X Total FCI	1.08	1.24	1.40			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB10-A1-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB10-A1-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
1,634	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				- Creation of pools in combination with					
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate					
	Aquatic Vegetation (h)	0	0	0	 Creation of riparian buffer zones around channel (minimum of 60' width 					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	-	7	9	- Monitoring and management					
	to field) (e)	5	7	9	5 5					
	WQ6b. Riparian Zone Vegetation	0	â	0						
	Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; HB =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream cnannei condition within the Lake				
		-	I	I		e stream's flow regime; the multiplication				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.51	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (1634) X Multiplication Factor (0.00125) X Total FCI	2.37	2.76	3.08						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB10-A2-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB10-A2-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	Manning's n <i>(f)</i>	2	2	3	species	- Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
349	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity			
	g)				- Creation of pools in combination with				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate				
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	4	on each side)				
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	r	7	9	- Monitoring and management				
	to field) (e)	5	7	9	5 5				
	WQ6b. Riparian Zone Vegetation	2	6	9					
	Protection/Completeness (e)	2	ю	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	46					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.58					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water G	Quality / Piagaaabamiaal Eurotiana: "UP" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Biogeochemical Functions, HB -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera				
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Provide an accurate representation of epnemera Ralph Hall project watershed.	ai stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.14	1.33	1.49	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream				
	TOTAL FCU = SAR Length (349) X Multiplication Factor (0.00125) X Total FCI	0.50	0.58	0.65	are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB10-A2-TRIBA-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	 Implementation of measures to 	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB10-A2-TRIBA-(1)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>	2	2	-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	36	37	39	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
165	Hydrologic FCI = Subtotal / 100	0.36	0.37	0.39	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
Stream Classification	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
	Aquatic Vegetation (h)			-	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	3	4	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>		ů	Ű	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	 Monitoring and management 		
	to field) (e)			Ű			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	39	46			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.49	0.58			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D Mitigation Plan) for scoring methodology.	ocumentation (included in Appendix C of	
	HB4. Pool Variability	2	2	2	(b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.		
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	1	1	1	 (e) Score shown is the average of the left and r (f) Instream bottom topography was globally us 		
	HB9. Bank Stability <i>(e)</i>	6	7	8	visual assessment of the stream reach.		
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo		
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	acting bacques Agustic Vagatation dass not	
	Habitat Subtotal	41	51	59	(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake		
	Habitat FCI = Subtotal / 120	0.34	0.43	0.49	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.10	1.28	1.46	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (165) X Multiplication Factor (0.00125) X Total FCI	0.23	0.26	0.30			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB11-(1)	H2a. Channel Condition/ Alteration	4	5	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	1	4	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	4	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB11-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	Manning's n (f)				species	- Protection, plantings, and measures			
	H3d. Channel Incision	3	5	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	19	26	36	 Adjustment of channel gradient by 	- Woody debris, leaf litter, and			
459	Hydrologic FCI = Subtotal / 100	0.19	0.26	0.36	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability <i>(e)</i>	4	5	7	(GCS) made from native material	from established buffer zones will			
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (<i>e</i> , <i>g</i>)	4	5	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	9/ WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
	WQ3. Nutrient Enrichment OR Presence of			-	where appropriate				
Ephonora	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	6	around channel (minimum of 60' width on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate	r	7	9	- Creation of protected natural area				
	Riparian Zone <i>(e)</i>	5	/	9	adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge		_		- Monitoring and management				
	to field) (e)	1	5	9	······································				
	WQ6b. Riparian Zone Vegetation		_	<u> </u>					
	Protection/Completeness (e)	5	7	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	22	33	47					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.28	0.41	0.59					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
C-7	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Violity / Biogeophemical Eurotiane: "HP" -			
	HB5. Sediment Deposition and Scouring	3	4	6	Habitat Functions.	quality / Biogeochemical Functions, HB -			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	4	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	5	7	9	(g) Channel Bottom Bank Stability was used glo	ballv instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	1	5	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	1	4	7	Ralph Hall project watershed.				
	Habitat Subtotal	24	40	58	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.20	0.33	0.48	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.67	1.01	1.43	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 				
	TOTAL FCU = SAR Length (459) X Multiplication Factor (0.00125) X Total FCI	0.38	0.58	0.82					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB11-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB11-(2)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
308	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48					
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -			
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.16	1.35	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams				
	Biogeochemical FCI + Habitat FCI		1.55	1.55	are 0.0038, 0.00315, 0.0025, and 0.00125, resp				
	TOTAL FCU = SAR Length (308) X Multiplication Factor (0.00125) X Total FCI	0.45	0.52	0.59					

STREAM ASSESSMENT	SWAMPIM METRICS (a, b, c, d)	END OF	END OF	AT	MITIGATION ACTIVITIES / WORK	RATIONALE FOR LIFT				
REACH (SAR) INFORMATION		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR EIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB12-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB12-(1)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	Manning's n <i>(f)</i>	Z	2	3	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	38	39	41	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
378	Hydrologic FCI = Subtotal / 100	0.38	0.39	0.41	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				- Creation of pools in combination with					
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate					
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	5	7	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	-	7	9	- Monitoring and management					
	to field) (e)	5	7	9	5 5					
	WQ6b. Riparian Zone Vegetation	0	â	0						
	Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	41	49						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.51	0.61						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water C Habitat Functions.	Quality / Biogeochemical Functions; "HB" =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for se					
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake				
				· · · · ·		e stream's flow regime; the multiplication				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.35	1.54	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (378) X Multiplication Factor (0.00125) X Total FCI	0.54	0.64	0.73						

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB13-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB13-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
1,202	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will				
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity				
	g)				- Creation of pools in combination with					
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations where appropriate					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones					
	Aquatic Vegetation (h)		0	-	around channel (minimum of 60' width					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	on each side)					
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area					
	Riparian Zone <i>(e)</i>	5	3	3	adjacent to riparian buffer zone					
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	- Monitoring and management					
	to field) <i>(e)</i>	5	1	9						
	WQ6b. Riparian Zone Vegetation	2	6	9						
	Protection/Completeness (e)									
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	2	2	2	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =				
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	adanty / Biogeconomical Fanotione, The				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	43	53	61	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera					
	Habitat FCI = Subtotal / 120	0.36	0.44	0.51	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.15	1.34	1.52	Raiph Hail project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (1202) X Multiplication Factor (0.00125) X Total FCI	1.73	2.01	2.28		-				

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB13-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement - Supplemental plantings of native	 LWD will increase channel roughness and improve bank stability 			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	trees, shrubs, and herbaceous	 Created pools will retain water Protection, plantings, and measures 			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
341	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	7	7	7	(rock or woody debris) where appropriate - Creation of pools in combination with	enhance in-stream habitat and biological productivity			
	g)		0	0	LWD and GCS and other locations				
	WQ2. Water Clarity	0	0	0	where appropriate				
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 				
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:				
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality (Biagaaabamiaal Eurotiana, "HP" -			
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	Quality / Biogeochemical Functions, HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(q) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (341) X Multiplication Factor (0.00125) X Total FCI	0.50	0.58	0.66					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB13-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB13-(3), S26-(6)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
541	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59	-		
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-7	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamical Functions, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemer	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality /	1.17	1.36	1.53	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams		
	Biogeochemical FCI + Habitat FCI				are 0.0038, 0.00315, 0.0025, and 0.00125, resp		
	TOTAL FCU = SAR Length (541) X Multiplication Factor (0.00125) X Total FCI	0.79	0.92	1.03			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK					
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB14-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB14-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	species	- Protection, plantings, and measures				
	H4a. Pools	0	0	0	 Use of large woody debris (LWD) or other native material for in-channel 	to prevent uncontrolled access will improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
1.076	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation				
.,	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR		,		(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	on each side) - Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-8	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r					
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate				
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s					
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	ai stream channel condition within the Lake				
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (1076) X Multiplication Factor (0.00125) X Total FCI	1.57	1.83	2.07	and 0.0000, 0.00010, 0.0020, and 0.00120, resp					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK				
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB15-(1)	H2a. Channel Condition/ Alteration	3	5	7	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	6	6	7	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	3	5	7	prevent uncontrolled access (cattle,	floodplain connectivity (through			
S26-TRIB15-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water			
	Manning's n (f)		0	7	species	- Protection, plantings, and measures			
	H3d. Channel Incision	6	6	•	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,			
Proposed SAR Length (LF):	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality			
	Hydrologic Subtotal	26	30	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
152	Hydrologic FCI = Subtotal / 100	0.26	0.30	0.37	installing grade control structures	overhanging herbaceous vegetation			
Million Hanne 7 and	WQ1a. Bank Stability (e)	3	5	7	(GCS) made from native material (rock or woody debris) where	from established buffer zones will enhance in-stream habitat and			
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition (e,	4	5	7	appropriate	biological productivity			
	g)	-	0	'	- Creation of pools in combination with				
	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	 where appropriate Creation of riparian buffer zones around channel (minimum of 60' width 				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	2	4	6	on each side)				
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone				
	WQ6a. Riparian Zone Width (from stream edge	1	5	9	- Monitoring and management				
	to field) <i>(e)</i> WQ6b. Riparian Zone Vegetation		-	-					
	Protection/Completeness (e)	2	5	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	17	31	47					
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.21	0.39	0.59					
	HB1. Flow Regime	1	1	1					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	1	2	3	Notes:				
C-11	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.				
	HB5. Sediment Deposition and Scouring	1	3	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	quality / Biogeocnemical Functions; HB =			
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability <i>(e)</i>	3	5	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	5	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	1	5	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	20	38	58	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	0.17	0.32	0.48	provide an accurate representation of ephemer Ralph Hall project watershed.	ai stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.64	1.00	1.44	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Strean are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 				
	TOTAL FCU = SAR Length (152) X Multiplication Factor (0.00125) X Total FCI	0.12	0.19	0.27					

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT				
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel				
S26-TRIB15-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream				
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and				
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through				
S26-TRIB15-(2)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)				
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel				
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous species	roughness and improve bank stability - Created pools will retain water				
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	 Protection, plantings, and measures to prevent uncontrolled access will 				
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,				
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality				
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and				
976	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation				
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will				
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and				
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity				
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations					
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones					
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)					
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management					
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9						
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47						
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59						
	HB1. Flow Regime	1	1	1						
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:					
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of				
-	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.					
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =				
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.					
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.					
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	ight bank scores.				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a				
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach.					
	HB11. Riparian Zone <i>(e)</i>	5	7	9	(g) Channel Bottom Bank Stability was used glo Composition because it more accurately repres					
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.					
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s	coring because Aquatic Vegetation does not				
	Habitat FCI = Subtotal / 120		0.45	02	provide an accurate representation of ephemer	al stream channel condition within the Lake				
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.					
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.52	(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.					
	TOTAL FCU = SAR Length (976) X Multiplication Factor (0.00125) X Total FCI	1.42	1.65	1.85						

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT			
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel			
S26-TRIB15-(3)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream			
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and			
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through			
N/A	H3a. Channel Sinuosity	6	6	6	etc.) from outside conservation	increased overbank frequency)			
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel			
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures			
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will			
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,			
	H4b. Channel Flow Status	4	4	4	structures	and enhance water quality			
Proposed SAR Length (LF):	Hydrologic Subtotal	50	51	53	- Adjustment of channel gradient by	- Woody debris, leaf litter, and			
931	Hydrologic FCI = Subtotal / 100	0.50	0.51	0.53	installing grade control structures	overhanging herbaceous vegetation			
	WQ1a. Bank Stability (e)	6	7	8	(GCS) made from native material	from established buffer zones will			
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and			
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity			
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations				
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width				
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)				
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management				
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9					
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9					
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54					
Re-Establishment	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68					
	HB1. Flow Regime	2	2	2					
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:				
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of			
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chaminal Functions, "UD" -			
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =			
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.				
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.				
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r				
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a			
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate			
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres				
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.				
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s				
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake			
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.41	1.61	1.78	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.				
	TOTAL FCU = SAR Length (931) X Multiplication Factor (0.00125) X Total FCI	1.64	1.87	2.07					

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB16-(4)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
.,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB16-(4)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>				species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	40	41	43	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
176	Hydrologic FCI = Subtotal / 100	0.40	0.41	0.43	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone: Zone C	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition <i>(e,</i>	7	7	7	(rock or woody debris) where appropriate	enhance in-stream habitat and biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
	WQ2. Water Clarity	0	0	0			
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6	around channel (minimum of 60' width on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	9	9	9	 Creation of protected natural area adjacent to riparian buffer zone Monitoring and management 		
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	34	41	48			
Restoration	Water Quality / Biogeochemical Subtotal Water Quality / Biogeochemical FCI = Subtotal / 80	0.43	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
-	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.		
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120		0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.19	1.37	1.55	Raiph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (176) X Multiplication Factor (0.00125) X Total FCI	0.26	0.30	0.34			

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB16-(5)	H2a. Channel Condition/ Alteration	1	4	7	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	1	4	7	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	1	4	7	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB16-(5)	H3a. Channel Sinuosity	3	3	3	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	1	1	1	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water	
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	1	4	7	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	11	23	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
600	Hydrologic FCI = Subtotal / 100	0.11	0.23	0.36	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	1	4	7	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	1	4	7	appropriate	biological productivity	
	g)				 Creation of pools in combination with LWD and GCS and other locations 		
	WQ2. Water Clarity	0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	- Creation of riparian buffer zones		
	Aquatic Vegetation (h)		-	-	around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	1	3	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	5	7	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	0	,	3	adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	8	8	9	- Monitoring and management		
	to field) <i>(e)</i>	0	Ū	3			
	WQ6b. Riparian Zone Vegetation	1	5	9			
	Protection/Completeness (e)						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	17	31	47			
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.21	0.39	0.59			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	2	3	Notes:		
C-11	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology. (b) "H" = Hydrologic Functions; "WQ" = Water (Quality / Biogeochemical Functions: "HB" =	
	HB5. Sediment Deposition and Scouring	1	3	6	Habitat Functions.	adding y Biogeochermoury anotione, The	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	1	4	7	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r (f) Instream bottom topography was globally us		
	HB9. Bank Stability <i>(e)</i>	1	4	7	visual assessment of the stream reach.	ed in neu of manning's N as it allows for a	
	HB10. Vegetative Protection (e)	1	5	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	3	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	25	40	58	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.21	0.33	0.48	Ralph Hall project watershed.		
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.53	0.95	1.43	 (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively. 		
	TOTAL FCU = SAR Length (600) X Multiplication Factor (0.00125) X Total FCI	0.40	0.71	1.07			

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB16-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through	
S26-TRIB16-A1-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	increased overbank frequency)	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous species 	roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and	
596	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)		
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e</i>)	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management		
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	5	7	9			
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9			
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres		
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for s		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera	al stream channel condition within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Stream are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.		
	TOTAL FCU = SAR Length (596) X Multiplication Factor (0.00125) X Total FCI	0.87	1.01	1.15	and 0.0000, 0.00010, 0.0020, and 0.00120, resp		

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
S26-TRIB17-(1)	H2a. Channel Condition/ Alteration	5	6	7	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	4	5	7		stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	5	6	7	prevent uncontrolled access (cattle,	floodplain connectivity (through
S26-TRIB17-(1)	H3a. Channel Sinuosity	3	3	3	easement - LWD will increase c - Supplemental plantings of native trees, shrubs, and herbaceous - Created pools will re	increased overbank frequency)
	H3b. Bottom Substrate Composition	1	1	1		 LWD will increase channel roughness and improve bank stability Created pools will retain water Protection, plantings, and measures
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3		
	H3d. Channel Incision	4	5	7	 species Use of large woody debris (LWD) or 	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	25	29	36	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
252	Hydrologic FCI = Subtotal / 100	0.25	0.29	0.36	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability <i>(e)</i>	5	6	7	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e, g)	5	6	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannel (minimum of 60) width	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	5	5	6	around channel (minimum of 60' width on each side)	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management	
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	38	47		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.48	0.59		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	2	3	Notes:	
C-11	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamicael Functiones, "UD" -
	HB5. Sediment Deposition and Scouring	4	5	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	5	6	7	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	4	6	9	(g) Channel Bottom Bank Stability was used glo	obally instead of Channel Sediment/Substrate
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	
	Habitat Subtotal	43	49	59	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120		0.41	0.49	provide an accurate representation of ephemera	al stream channel condition within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.01	1.17	1.44	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (252) X Multiplication Factor (0.00125) X Total FCI	0.32	0.37	0.45	· · · · · · · · · · · · · · · · · · ·	····· · ,

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
S26-TRIB17-(2)	H2a. Channel Condition/ Alteration	2	4	7	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	1	4	7	- Implementation of measures to	stability, sediment transport, and floodplain connectivity (through increased overbank frequency) - LWD will increase channel roughness and improve bank stability - Created pools will retain water
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	2	4	7	prevent uncontrolled access (cattle,	
S26-TRIB17-(2)	H3a. Channel Sinuosity	1	1	1	etc.) from outside conservation easement - Supplemental plantings of native trees, shrubs, and herbaceous	
	H3b. Bottom Substrate Composition	1	1	1		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3		
	H3d. Channel Incision	1	4	7	species	 Protection, plantings, and measures to prevent uncontrolled access will
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	11	21	34	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
120	Hydrologic FCI = Subtotal / 100	0.11	0.21	0.34	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	2	4	7	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e, g)	2	4	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around channel (minimum of 60' width	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	6	6	6	on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e</i>)	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management	
	WQ6a. Riparian Zone Width (from stream edge to field) <i>(e)</i>	8	8	9		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	4	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	27	35	47		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.34	0.44	0.59		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	2	3	Notes:	
C-11	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	3	4	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; "HB" =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	4	5	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	1	1	1	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	2	4	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	4	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadiment/Sylbatrate
	HB11. Riparian Zone <i>(e)</i>	8	8	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	8	8	8	Ralph Hall project watershed.	ente une entranter contanter waarn are Lake
	Habitat Subtotal	37	44	57	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	0.31	0.37	0.48	provide an accurate representation of ephemer	al stream channel condition within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.76	1.01	1.40	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (120) X Multiplication Factor (0.00125) X Total FCI	0.11	0.15	0.21	are 0.0038, 0.00315, 0.0025, and 0.00125, resp	ecuvery.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	mititgation area	 GCS will reduce channel downcutting and improve stream stability, sediment transport, and floodplain connectivity (through increased overbank frequency) LWD will increase channel roughness and improve bank stability Created pools will retain water
S26-TRIB17-(3)	H2a. Channel Condition/ Alteration	4	5	7		
	H2b. Channel Capacity to Flow Frequency	2	4	7		
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	4	5	7	prevent uncontrolled access (cattle,	
S26-TRIB17-(3)	H3a. Channel Sinuosity	4	4	4	easement - - Supplemental plantings of native n trees, shrubs, and herbaceous -	
	H3b. Bottom Substrate Composition	1	1	1		
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3		
	H3d. Channel Incision	2	4	7	species	 Protection, plantings, and measures to prevent uncontrolled access will
	H4a. Pools	0	0	0	- Use of large woody debris (LWD) or other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	20	26	37	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
134	Hydrologic FCI = Subtotal / 100	0.20	0.26	0.37	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability (e)	4	5	7	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR	•			(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e, g)	4	5	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	0	0	0	where appropriate - Creation of riparian buffer zones around abannal (minimum of 60) width	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	7	7	6	around channel (minimum of 60' width on each side)	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone <i>(e)</i>	5	7	9	- Creation of protected natural area adjacent to riparian buffer zone - Monitoring and management	
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	8	8	9		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	5	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	30	37	47		
Enhancement	Water Quality / Biogeochemical FCI = Subtotal / 80	0.38	0.46	0.59	-	
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	2	2	3	Notes:	
C-11	HB3. Stream Bottom Substrate	3	3	3	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	1	2	3	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	3	4	6	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeocnemical Functions; "HB" =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	3	5	7	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	4	5	7	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	5	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sadiment/Sylhetrate
	HB11. Riparian Zone (e)	8	8	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	5	6	7	Ralph Hall project watershed.	
	Habitat Subtotal	35	44	58	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120		0.37	0.48	provide an accurate representation of ephemer	al stream channel condition within the Lake
		0.29	0.37	0.40	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	0.87	1.09	1.44	factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (134) X Multiplication Factor (0.00125) X Total FCI	0.15	0.18	0.24	1	

STREAM ASSESSMENT		END OF	END OF	AT	MITIGATION ACTIVITIES / WORK		
REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT	
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel	
S26-TRIB18-(5)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream	
.,	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and	
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle, etc.) from outside conservation easement	floodplain connectivity (through increased overbank frequency) - LWD will increase channel roughness and improve bank stability - Created pools will retain water	
S26-TRIB18-(5)	H3a. Channel Sinuosity	4	4	4			
	H3b. Bottom Substrate Composition	2	2	2			
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 		
	Manning's n <i>(f)</i>			-	species	- Protection, plantings, and measures	
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will	
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,	
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality	
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	 Adjustment of channel gradient by 	- Woody debris, leaf litter, and	
542	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation	
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will	
	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and	
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate - Creation of pools in combination with	biological productivity	
Stream Classification	<i>g)</i> WQ2. Water Clarity	0	0	0	LWD and GCS and other locations		
		0	0	0	where appropriate		
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (<i>h</i>)	0	0	0	- Creation of riparian buffer zones around channel (minimum of 60' width		
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	on each side)		
0.00125	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area		
	Riparian Zone <i>(e)</i>	-	-		adjacent to riparian buffer zone		
	WQ6a. Riparian Zone Width (from stream edge	5	7	9	 Monitoring and management 		
	to field) (e)			•			
	WQ6b. Riparian Zone Vegetation	2	6	9			
	Protection/Completeness (e)						
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	33	41	48			
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.41	0.51	0.60			
	HB1. Flow Regime	1	1	1			
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:		
C-11	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of	
	HB4. Pool Variability	3	3	3 3 (b) "H" = Hydrologic Euroticon: "WO		ater Quality / Biogeochemical Functions; "HB" =	
	HB5. Sediment Deposition and Scouring	6	6	6	Habitat Functions.	quality / Diogeochemical Fahetions, The -	
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.		
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.		
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r		
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in neu of Manning's N as it allows for a	
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate	
	HB11. Riparian Zone <i>(e)</i>	5	7	9	Composition because it more accurately repres	ents the channel condition within the Lake	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.		
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so provide an accurate representation of ephemera		
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	Ralph Hall project watershed.	a suean channer conullon within the Lake	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.17	1.36	1.54	(i) The Multiplication Factor is determined by the	rennial Pools, Intermittent, and Ephemeral Streams	
	TOTAL FCU = SAR Length (542) X Multiplication Factor (0.00125) X Total FCI	0.79	0.92	1.04		-	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS (a, b, c, d)	END OF CONSTRUCTION	END OF MONITORING	AT MATURITY	MITIGATION ACTIVITIES / WORK PERFORMED	RATIONALE FOR LIFT
Proposed SAR Name:	H1. Flow Regime and Groundwater Interaction	2	2	2	- Protection within large contiguous	- GCS will reduce channel
S26-TRIB19-(2)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability <i>(e)</i>	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through increased overbank frequency) - LWD will increase channel roughness and improve bank stability - Created pools will retain water - Protection, plantings, and measures to prevent uncontrolled access will
S26-TRIB19-(2)	H3a. Channel Sinuosity	5	5	5	etc.) from outside conservation	
	H3b. Bottom Substrate Composition	2	2	2	easement	
	H3c. In stream Bottom Topography OR Manning's n <i>(f)</i>	2	2	3	- Supplemental plantings of native trees, shrubs, and herbaceous	
	H3d. Channel Incision	8	8	8	species - Use of large woody debris (LWD) or	
	H4a. Pools	4	4	4	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	4	4	4	structures	and enhance water guality
Proposed SAR Length (LF):	Hydrologic Subtotal	49	50	52	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
794	Hydrologic FCI = Subtotal / 100	0.49	0.50	0.52	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR			-	(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e, g)	7	7	7	appropriate - Creation of pools in combination with	biological productivity
Stream Classification	WQ2. Water Clarity	4	4	4	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation (h)	2	2	2	where appropriate - Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	4	5	6	around channel (minimum of 60' width on each side)	
0.00125	WQ5. Land Use Pattern Beyond Immediate Riparian Zone (e)	9	9	9	Creation of protected natural area adjacent to riparian buffer zone Monitoring and management	
	WQ6a. Riparian Zone Width (from stream edge to field) (e)	5	7	9		
	WQ6b. Riparian Zone Vegetation Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	39	47	54		
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.49	0.59	0.68		
	HB1. Flow Regime	2	2	2		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	5	5	5	Notes:	
C-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	Nuclitur / Disease chamical Europticase "UD" -
	HB5. Sediment Deposition and Scouring	7	7	7	(b) "H" = Hydrologic Functions; "WQ" = Water (Habitat Functions.	Quality / Biogeochemical Functions; HB =
	HB6. Channel Flow Status	4	4	4	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability (e)	6	7	8	(f) Instream bottom topography was globally us	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	visual assessment of the stream reach. (g) Channel Bottom Bank Stability was used glo	hally instead of Channel Sediment/Substrate
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	51	61	69	(h) Nutrient Enrichment was used globally for s	
	Habitat FCI = Subtotal / 120	-	0.51	0.58	provide an accurate representation of ephemera	al stream channel condition within the Lake
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.40	1.60	1.77	Ralph Hall project watershed. (i) The Multiplication Factor is determined by the factors for Perennial, Intermittent with Perennia are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (794) X Multiplication Factor (0.00125) X Total FCI	1.39	1.59	1.76	and 0.0000, 0.00010, 0.0020, and 0.00120, resp	

REACH (SAR) INFORMATION Proposed SAR Name:	SWAMPIM METRICS (a, b, c, d)			AT		
Proposed SAR Name		CONSTRUCTION	MONITORING	MATURITY	PERFORMED	RATIONALE FOR LIFT
r roposed of a channe.	H1. Flow Regime and Groundwater Interaction	1	1	1	- Protection within large contiguous	- GCS will reduce channel
S26-TRIB19-A1-(1)	H2a. Channel Condition/ Alteration	8	8	8	mititgation area	downcutting and improve stream
	H2b. Channel Capacity to Flow Frequency	8	8	8	- Implementation of measures to	stability, sediment transport, and
Baseline SAR Name(s):	H2c. Channel Bank Stability (e)	6	7	8	prevent uncontrolled access (cattle,	floodplain connectivity (through increased overbank frequency)
S26-TRIB19-A1-(1)	H3a. Channel Sinuosity	4	4	4	etc.) from outside conservation	
	H3b. Bottom Substrate Composition	2	2	2	easement	- LWD will increase channel
	H3c. In stream Bottom Topography OR	2	2	3	 Supplemental plantings of native trees, shrubs, and herbaceous 	roughness and improve bank stability - Created pools will retain water
	Manning's n <i>(f)</i>	Z	2	3	species	- Protection, plantings, and measures
	H3d. Channel Incision	8	8	8	- Use of large woody debris (LWD) or	to prevent uncontrolled access will
	H4a. Pools	0	0	0	other native material for in-channel	improve bank stability, filter runoff,
	H4b. Channel Flow Status	0	0	0	structures	and enhance water quality
Proposed SAR Length (LF):	Hydrologic Subtotal	39	40	42	- Adjustment of channel gradient by	- Woody debris, leaf litter, and
173	Hydrologic FCI = Subtotal / 100	0.39	0.40	0.42	installing grade control structures	overhanging herbaceous vegetation
	WQ1a. Bank Stability <i>(e)</i>	6	7	8	(GCS) made from native material	from established buffer zones will
Mitigation Zone:	WQ1b. Channel Bottom Bank Stability OR				(rock or woody debris) where	enhance in-stream habitat and
Zone C	Channel Sediments or Substrate Composition (e,	7	7	7	appropriate	biological productivity
	g)				- Creation of pools in combination with	
Stream Classification	WQ2. Water Clarity	0	0	0	LWD and GCS and other locations	
Ephemeral	WQ3. Nutrient Enrichment OR Presence of	0	0	0	where appropriate	
	Aquatic Vegetation (h)	0	0	0	- Creation of riparian buffer zones	
Multiplication Factor (i):	WQ4. Composition of Organic Matter	3	4	5	around channel (minimum of 60' width on each side)	
	WQ5. Land Use Pattern Beyond Immediate	9	9	9	- Creation of protected natural area	
	Riparian Zone <i>(e)</i>	9	9	9	adjacent to riparian buffer zone	
1	WQ6a. Riparian Zone Width (from stream edge	Ľ	7	9	- Monitoring and management	
	to field) (e)	5	7	9	5 5	
	WQ6b. Riparian Zone Vegetation	0	0	0		
	Protection/Completeness (e)	2	6	9		
Mitigation Design Type:	Water Quality / Biogeochemical Subtotal	32	40	47		
Restoration	Water Quality / Biogeochemical FCI = Subtotal / 80	0.40	0.50	0.59		
	HB1. Flow Regime	1	1	1		
Reference Figure:	HB2. Epifaunal Substrate and Available Cover	4	4	4	Notes:	
C-14	HB3. Stream Bottom Substrate	4	4	4	(a) Refer to SWAMPIM Assessment Protocol D	ocumentation (included in Appendix C of
	HB4. Pool Variability	3	3	3	Mitigation Plan) for scoring methodology.	
	HB5. Sediment Deposition and Scouring	6	6	6	(b) "H" = Hydrologic Functions; "WQ" = Water G Habitat Functions.	quality / Biogeochemical Functions; HB =
	HB6. Channel Flow Status	0	0	0	(c) FCI = Functional Condition Index.	
	HB7. Channel Alteration	8	8	8	(d) FCU = Functional Capacity Unit.	
	HB8. Channel Sinuosity	3	3	3	(e) Score shown is the average of the left and r	
	HB9. Bank Stability <i>(e)</i>	6	7	8	(f) Instream bottom topography was globally us visual assessment of the stream reach.	ed in lieu of Manning's N as it allows for a
	HB10. Vegetative Protection (e)	2	6	9	(g) Channel Bottom Bank Stability was used glo	bally instead of Channel Sediment/Substrate
	HB11. Riparian Zone (e)	5	7	9	Composition because it more accurately repres	
	HB12. Riparian Habitat Condition	2	5	7	Ralph Hall project watershed.	
	Habitat Subtotal	44	54	62	(h) Nutrient Enrichment was used globally for so	
	Habitat FCI = Subtotal / 120	0.37	0.45	0.52	provide an accurate representation of ephemera Ralph Hall project watershed.	al stream channel condition within the Lake
		-	-	· · · ·	(i) The Multiplication Factor is determined by the	e stream's flow regime: the multiplication
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	1.16	1.35	1.52	factors for Perennial, Intermittent with Perennial are 0.0038, 0.00315, 0.0025, and 0.00125, resp	Pools, Intermittent, and Ephemeral Streams
	TOTAL FCU = SAR Length (173) X Multiplication Factor (0.00125) X Total FCI	0.25	0.29	0.33		