Figure 2 – Water Surface Profiles Along Restored Channel

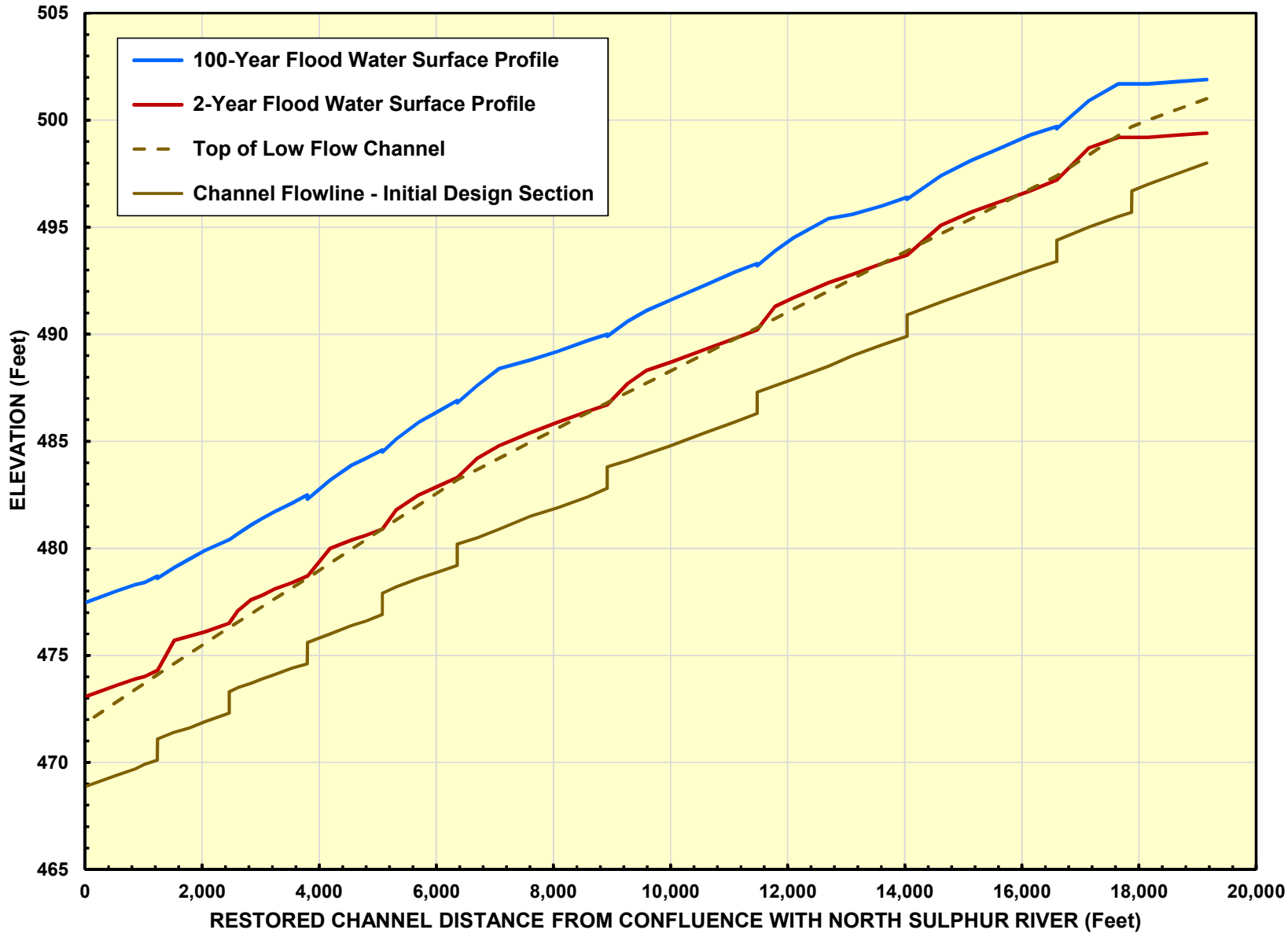


Table 4 – Unsteady HEC-RAS Modeling Results for 1-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	20	498.0	499.2	1.2	1.7	---
Section	18653	20	497.5	499.0	1.5	1.1	---
Section	18150	20	497.0	499.0	2.0	0.7	---
Grade Control	17877	20	496.7	499.0	2.3	0.6	---
Grade Control	17876	20	495.7	499.0	3.3	0.3	0.0
Section	17646	19	495.5	499.0	3.5	0.2	0.0
Channel 5	17142	173	495.0	498.4	3.4	2.0	0.3
Grade Control	16597	176	494.4	497.0	2.6	4.9	---
Grade Control	16596	176	493.4	497.0	3.6	1.8	0.3
Section	16136	177	493.0	496.6	3.6	1.9	0.3
Section	15632	180	492.5	496.0	3.5	2.0	0.3
Channel 4	15124	176	492.0	495.5	3.5	1.9	0.3
Section	14618	177	491.5	494.9	3.4	2.1	0.3
Grade Control	14040	180	490.9	493.5	2.6	4.5	---
Grade Control	14039	180	489.9	493.5	3.6	1.9	0.3
Section	13611	182	489.5	493.1	3.6	1.9	0.3
Section	13108	186	489.0	492.6	3.6	2.0	0.3
Section	12693	186	488.5	492.2	3.6	1.9	0.3
Section	12100	208	487.9	491.5	3.6	2.2	0.3
Section	11786	206	487.6	490.9	3.3	2.8	0.3
Grade Control	11477	206	487.3	490.0	2.7	4.6	---
Grade Control	11476	206	486.3	490.0	3.7	2.0	0.3
Channel 3	11094	203	485.9	489.6	3.7	2.0	0.3
Section	10592	206	485.4	489.1	3.7	2.0	0.3
Section	10000	210	484.8	488.5	3.7	2.1	0.3
Section	9587	211	484.4	487.9	3.5	2.3	0.3
Section	9267	214	484.1	487.3	3.2	3.0	0.2
Grade Control	8917	214	483.8	486.5	2.6	4.4	---
Grade Control	8916	217	482.8	486.5	3.7	2.1	0.3
Section	8581	216	482.4	486.1	3.7	2.1	0.3
Section	8077	213	481.9	485.6	3.7	2.0	0.3
Section	7606	210	481.5	485.1	3.6	2.2	0.3
Channel 2	7074	207	480.9	484.4	3.5	2.4	0.3
Section	6697	227	480.5	483.7	3.2	3.3	0.2
Grade Control	6357	226	480.2	482.9	2.7	4.3	---

Grade Control	6356	226	479.2	483.0	3.8	2.1	0.3
Section	6028	225	478.9	482.6	3.7	2.2	0.3
Section	5701	223	478.6	482.1	3.5	2.5	0.3
Section	5315	224	478.2	481.3	3.1	3.6	0.1
Grade Control	5077	223	477.9	480.6	2.7	4.5	---
Grade Control	5076	226	476.9	480.6	3.7	2.1	0.3
Section	4795	225	476.6	480.3	3.7	2.1	0.3
Section	4562	225	476.4	480.1	3.7	2.2	0.3
Section	4189	225	476.0	479.5	3.5	2.5	0.3
Grade Control	3797	224	475.6	478.4	2.8	4.7	---
Grade Control	3796	224	474.6	478.4	3.8	2.0	0.3
Section	3536	224	474.4	478.1	3.7	2.1	0.3
Section	3233	224	474.1	477.8	3.7	2.2	0.3
Section	3025	225	473.9	477.6	3.7	2.3	0.3
Section	2839	224	473.7	477.3	3.6	2.3	0.3
Section	2616	224	473.5	476.8	3.3	3.1	0.3
Grade Control	2462	224	473.3	476.2	2.9	4.5	---
Grade Control	2461	244	472.3	476.2	3.9	2.1	0.3
Channel 1	2047	243	471.9	475.8	3.9	2.1	0.3
Section	1782	247	471.6	475.5	3.9	2.1	0.3
Section	1522	250	471.4	475.3	3.9	2.1	0.3
Grade Control	1236	254	471.1	474.0	2.9	4.9	---
Grade Control	1235	254	470.1	474.0	3.9	2.2	0.4
Section	1008	257	469.9	473.8	3.9	2.2	0.4
Section	859	258	469.7	473.6	3.9	2.2	0.4
Section	538	263	469.4	473.3	3.9	2.2	0.4
Section	36	263	468.9	472.8	3.9	2.2	0.4

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

Table 5 – Unsteady HEC-RAS Modeling Results for 2-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	24	498.0	499.4	1.4	1.7	---
Section	18653	23	497.5	499.3	1.8	1.1	---
Section	18150	23	497.0	499.2	2.2	0.8	---
Grade Control	17877	22	496.7	499.2	2.5	0.6	---
Grade Control	17876	23	495.7	499.2	3.5	0.3	0.0
Section	17646	22	495.5	499.2	3.7	0.2	0.0
Channel 5	17142	215	495.0	498.7	3.7	2.1	0.3
Grade Control	16597	218	494.4	497.2	2.8	4.8	---
Grade Control	16596	218	493.4	497.2	3.8	2.0	0.3
Section	16136	220	493.0	496.7	3.7	2.1	0.3
Section	15632	222	492.5	496.2	3.7	2.1	0.3
Channel 4	15124	218	492.0	495.7	3.7	2.1	0.3
Section	14618	220	491.5	495.1	3.6	2.2	0.3
Grade Control	14040	223	490.9	493.7	2.8	4.9	---
Grade Control	14039	223	489.9	493.7	3.8	2.0	0.3
Section	13611	224	489.5	493.3	3.8	2.1	0.3
Section	13108	227	489.0	492.8	3.8	2.1	0.3
Section	12693	227	488.5	492.4	3.9	1.9	0.3
Section	12100	267	487.9	491.7	3.8	2.4	0.4
Section	11786	266	487.6	491.3	3.6	2.7	0.4
Grade Control	11477	264	487.3	490.2	2.9	5.1	---
Grade Control	11476	264	486.3	490.2	3.9	2.2	0.4
Channel 3	11094	261	485.9	489.8	3.9	2.2	0.4
Section	10592	263	485.4	489.3	3.9	2.2	0.4
Section	10000	266	484.8	488.7	3.9	2.2	0.4
Section	9587	269	484.4	488.3	3.9	2.4	0.4
Section	9267	271	484.1	487.7	3.6	2.8	0.4
Grade Control	8917	269	483.8	486.7	2.9	4.9	---
Grade Control	8916	275	482.8	486.7	3.9	2.3	0.4
Section	8581	273	482.4	486.4	4.0	2.2	0.4
Section	8077	271	481.9	485.9	4.0	2.2	0.4
Section	7606	269	481.5	485.4	3.9	2.3	0.4
Channel 2	7074	269	480.9	484.8	3.9	2.2	0.4
Section	6697	302	480.5	484.2	3.7	2.9	0.4
Grade Control	6357	301	480.2	483.3	3.1	5.0	0.1

Grade Control	6356	301	479.2	483.3	4.1	2.3	0.4
Section	6028	300	478.9	482.9	4.0	2.4	0.4
Section	5701	299	478.6	482.5	3.9	2.5	0.4
Section	5315	298	478.2	481.8	3.6	3.2	0.4
Grade Control	5077	297	477.9	480.9	3.0	5.1	0.1
Grade Control	5076	297	476.9	480.9	4.0	2.3	0.4
Section	4795	296	476.6	480.6	4.0	2.3	0.4
Section	4562	296	476.4	480.4	4.0	2.4	0.4
Section	4189	295	476.0	480.0	3.9	2.4	0.4
Grade Control	3797	294	475.6	478.7	3.1	4.8	0.2
Grade Control	3796	294	474.6	478.7	4.1	2.3	0.4
Section	3536	294	474.4	478.4	4.0	2.4	0.4
Section	3233	294	474.1	478.1	4.0	2.4	0.4
Section	3025	296	473.9	477.8	3.9	2.5	0.4
Section	2839	295	473.7	477.6	3.9	2.6	0.4
Section	2616	295	473.5	477.1	3.6	3.1	0.4
Grade Control	2462	294	473.3	476.5	3.2	4.4	0.3
Grade Control	2461	314	472.3	476.5	4.2	2.3	0.4
Channel 1	2047	314	471.9	476.1	4.2	2.2	0.4
Section	1782	317	471.6	475.9	4.3	2.2	0.4
Section	1522	320	471.4	475.7	4.3	2.2	0.4
Grade Control	1236	324	471.1	474.3	3.2	4.8	0.4
Grade Control	1235	324	470.1	474.3	4.2	2.4	0.4
Section	1008	326	469.9	474.0	4.1	2.4	0.4
Section	859	328	469.7	473.9	4.2	2.4	0.4
Section	538	332	469.4	473.6	4.2	2.4	0.4
Section	36	332	468.9	473.1	4.2	2.4	0.4

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

Table 6 – Unsteady HEC-RAS Modeling Results for 5-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	49	498.0	500.5	2.5	1.6	---
Section	18653	48	497.5	500.2	2.7	1.2	---
Section	18150	43	497.0	500.1	3.1	0.7	0.0
Grade Control	17877	33	496.7	500.0	3.3	0.4	0.1
Grade Control	17876	33	495.7	500.0	4.3	0.2	0.0
Section	17646	28	495.5	500.0	4.5	0.2	0.0
Channel 5	17142	419	495.0	499.5	4.5	2.6	0.5
Grade Control	16597	447	494.4	497.9	3.5	5.0	0.6
Grade Control	16596	446	493.4	498.0	4.6	2.7	0.5
Section	16136	441	493.0	497.5	4.5	2.7	0.5
Section	15632	433	492.5	497.0	4.5	2.7	0.5
Channel 4	15124	425	492.0	496.5	4.5	2.6	0.5
Section	14618	429	491.5	496.0	4.5	2.7	0.5
Grade Control	14040	428	490.9	494.4	3.5	4.9	0.6
Grade Control	14039	426	489.9	494.4	4.5	2.6	0.5
Section	13611	423	489.5	494.0	4.5	2.6	0.5
Section	13108	421	489.0	493.6	4.6	2.5	0.5
Section	12693	421	488.5	493.3	4.8	2.3	0.4
Section	12100	531	487.9	492.7	4.8	2.9	0.6
Section	11786	529	487.6	492.4	4.8	2.9	0.6
Grade Control	11477	527	487.3	491.0	3.7	5.2	0.8
Grade Control	11476	527	486.3	491.1	4.8	2.9	0.6
Channel 3	11094	519	485.9	490.7	4.8	2.8	0.5
Section	10592	512	485.4	490.2	4.8	2.8	0.5
Section	10000	508	484.8	489.6	4.8	2.8	0.5
Section	9587	510	484.4	489.2	4.8	2.8	0.5
Section	9267	513	484.1	488.9	4.8	2.8	0.5
Grade Control	8917	508	483.8	487.5	3.6	5.1	0.7
Grade Control	8916	521	482.8	487.6	4.8	2.9	0.6
Section	8581	519	482.4	487.2	4.8	2.8	0.5
Section	8077	517	481.9	486.8	4.9	2.7	0.5
Section	7606	517	481.5	486.4	4.9	2.8	0.5
Channel 2	7074	511	480.9	485.9	5.0	2.6	0.5
Section	6697	646	480.5	485.5	5.0	3.3	0.6
Grade Control	6357	646	480.2	484.2	3.9	5.3	0.9

Grade Control	6356	646	479.2	484.3	5.1	3.2	0.6
Section	6028	646	478.9	483.9	5.0	3.2	0.6
Section	5701	646	478.6	483.5	4.9	3.4	0.7
Section	5315	647	478.2	482.9	4.7	3.7	0.7
Grade Control	5077	646	477.9	481.9	4.0	5.3	0.9
Grade Control	5076	646	476.9	482.0	5.1	3.1	0.6
Section	4795	647	476.6	481.7	5.1	3.1	0.6
Section	4562	647	476.4	481.4	5.0	3.2	0.6
Section	4189	643	476.0	481.0	5.0	3.2	0.6
Grade Control	3797	648	475.6	479.6	4.0	5.2	0.9
Grade Control	3796	648	474.6	479.7	5.1	3.1	0.6
Section	3536	648	474.4	479.4	5.0	3.2	0.6
Section	3233	647	474.1	479.1	4.9	3.3	0.6
Section	3025	654	473.9	478.8	4.9	3.5	0.7
Section	2839	654	473.7	478.5	4.8	3.6	0.7
Section	2616	653	473.5	478.0	4.5	4.0	0.8
Grade Control	2462	653	473.3	477.4	4.1	4.9	0.8
Grade Control	2461	706	472.3	477.5	5.2	3.3	0.7
Channel 1	2047	705	471.9	477.0	5.1	3.4	0.7
Section	1782	708	471.6	476.7	5.1	3.4	0.7
Section	1522	712	471.4	476.3	4.9	3.7	0.7
Grade Control	1236	708	471.1	475.3	4.2	5.0	0.9
Grade Control	1235	710	470.1	475.4	5.3	3.2	0.6
Section	1008	711	469.9	475.2	5.3	3.2	0.6
Section	859	713	469.7	475.1	5.4	3.2	0.6
Section	538	716	469.4	474.7	5.3	3.2	0.6
Section	36	715	468.9	474.2	5.3	3.2	0.6

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

Table 7 – Unsteady HEC-RAS Modeling Results for 10-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	68	498.0	500.9	2.9	1.3	---
Section	18653	68	497.5	500.6	3.1	1.1	0.1
Section	18150	56	497.0	500.5	3.5	0.6	0.1
Grade Control	17877	52	496.7	500.5	3.8	0.5	0.1
Grade Control	17876	52	495.7	500.5	4.8	0.3	0.1
Section	17646	52	495.5	500.5	4.9	0.3	0.1
Channel 5	17142	602	495.0	499.8	4.8	3.2	0.6
Grade Control	16597	595	494.4	498.3	3.9	5.0	0.8
Grade Control	16596	598	493.4	498.4	5.0	3.0	0.6
Section	16136	588	493.0	498.0	5.0	3.0	0.6
Section	15632	586	492.5	497.5	4.9	3.0	0.6
Channel 4	15124	585	492.0	496.9	4.9	3.0	0.6
Section	14618	588	491.5	496.3	4.8	3.1	0.6
Grade Control	14040	581	490.9	494.8	3.9	4.8	0.8
Grade Control	14039	582	489.9	494.9	5.0	2.9	0.6
Section	13611	579	489.5	494.6	5.1	2.8	0.6
Section	13108	582	489.0	494.1	5.1	2.8	0.6
Section	12693	582	488.5	493.8	5.3	2.6	0.5
Section	12100	757	487.9	493.1	5.2	3.5	0.7
Section	11786	740	487.6	492.7	5.1	3.6	0.7
Grade Control	11477	737	487.3	491.5	4.2	5.2	0.9
Grade Control	11476	741	486.3	491.7	5.3	3.3	0.7
Channel 3	11094	732	485.9	491.3	5.4	3.2	0.7
Section	10592	733	485.4	490.8	5.4	3.3	0.7
Section	10000	739	484.8	490.1	5.3	3.3	0.7
Section	9587	743	484.4	489.6	5.2	3.4	0.7
Section	9267	728	484.1	489.2	5.1	3.5	0.7
Grade Control	8917	735	483.8	488.1	4.3	5.0	0.9
Grade Control	8916	758	482.8	488.2	5.4	3.3	0.7
Section	8581	753	482.4	487.9	5.5	3.2	0.6
Section	8077	749	481.9	487.4	5.5	3.1	0.6
Section	7606	748	481.5	487.0	5.5	3.2	0.6
Channel 2	7074	747	480.9	486.5	5.6	3.0	0.6
Section	6697	977	480.5	486.0	5.5	4.2	0.8
Grade Control	6357	973	480.2	484.9	4.7	5.6	1.1

Grade Control	6356	973	479.2	485.0	5.8	3.7	0.8
Section	6028	973	478.9	484.6	5.7	3.9	0.8
Section	5701	973	478.6	484.1	5.5	4.1	0.8
Section	5315	974	478.2	483.4	5.2	4.6	0.9
Grade Control	5077	971	477.9	482.6	4.7	5.6	1.1
Grade Control	5076	971	476.9	482.7	5.8	3.8	0.8
Section	4795	971	476.6	482.4	5.8	3.8	0.8
Section	4562	972	476.4	482.0	5.6	3.9	0.8
Section	4189	973	476.0	481.5	5.5	4.1	0.8
Grade Control	3797	968	475.6	480.3	4.7	5.4	1.0
Grade Control	3796	968	474.6	480.4	5.8	3.7	0.8
Section	3536	968	474.4	480.1	5.7	3.8	0.8
Section	3233	966	474.1	479.7	5.6	3.9	0.8
Section	3025	978	473.9	479.4	5.5	4.1	0.8
Section	2839	978	473.7	479.1	5.4	4.2	0.9
Section	2616	978	473.5	478.7	5.2	4.6	0.9
Grade Control	2462	978	473.3	478.2	4.9	5.1	1.0
Grade Control	2461	1,071	472.3	478.3	6.0	3.9	0.8
Channel 1	2047	1,068	471.9	477.7	5.8	4.1	0.8
Section	1782	1,068	471.6	477.4	5.8	4.2	0.9
Section	1522	1,070	471.4	476.9	5.5	4.5	0.9
Grade Control	1236	1,065	471.1	476.2	5.1	5.2	1.0
Grade Control	1235	1,066	470.1	476.3	6.2	3.7	0.8
Section	1008	1,067	469.9	476.0	6.1	3.7	0.8
Section	859	1,068	469.7	475.9	6.2	3.7	0.8
Section	538	1,071	469.4	475.6	6.2	3.7	0.8
Section	36	1,070	468.9	475.1	6.2	3.7	0.8

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

Table 8 – Unsteady HEC-RAS Modeling Results for 25-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	93	498.0	501.2	3.2	1.3	0.1
Section	18653	90	497.5	501.0	3.5	1.0	0.1
Section	18150	81	497.0	500.9	3.9	0.7	0.1
Grade Control	17877	73	496.7	500.9	4.2	0.5	0.1
Grade Control	17876	76	495.7	500.9	5.2	0.4	0.1
Section	17646	73	495.5	500.9	5.4	0.3	0.1
Channel 5	17142	800	495.0	500.2	5.2	3.8	0.7
Grade Control	16597	780	494.4	498.8	4.4	5.0	0.9
Grade Control	16596	785	493.4	498.9	5.5	3.3	0.7
Section	16136	782	493.0	498.5	5.5	3.3	0.7
Section	15632	784	492.5	497.9	5.4	3.4	0.7
Channel 4	15124	782	492.0	497.4	5.4	3.5	0.7
Section	14618	787	491.5	496.7	5.2	3.7	0.7
Grade Control	14040	767	490.9	495.4	4.5	4.8	0.9
Grade Control	14039	771	489.9	495.5	5.6	3.2	0.6
Section	13611	770	489.5	495.1	5.6	3.1	0.6
Section	13108	775	489.0	494.7	5.7	3.1	0.6
Section	12693	775	488.5	494.4	5.9	2.9	0.6
Section	12100	1,030	487.9	493.6	5.7	4.1	0.8
Section	11786	1,028	487.6	493.1	5.4	4.4	0.9
Grade Control	11477	1,003	487.3	492.2	4.8	5.3	1.0
Grade Control	11476	1,005	486.3	492.3	6.0	3.7	0.8
Channel 3	11094	997	485.9	491.9	6.0	3.7	0.8
Section	10592	1,000	485.4	491.3	5.9	3.7	0.8
Section	10000	1,005	484.8	490.7	5.8	3.8	0.8
Section	9587	1,008	484.4	490.1	5.7	4.0	0.8
Section	9267	1,010	484.1	489.6	5.5	4.2	0.9
Grade Control	8917	994	483.8	488.8	5.0	5.0	1.0
Grade Control	8916	1,026	482.8	488.9	6.1	3.7	0.8
Section	8581	1,021	482.4	488.6	6.2	3.6	0.7
Section	8077	1,019	481.9	488.1	6.2	3.5	0.7
Section	7606	1,018	481.5	487.7	6.2	3.5	0.7
Channel 2	7074	1,017	480.9	487.2	6.3	3.4	0.7
Section	6697	1,363	480.5	486.6	6.1	4.9	1.0
Grade Control	6357	1,359	480.2	485.6	5.4	5.9	1.2

Grade Control	6356	1,359	479.2	485.7	6.5	4.3	0.9
Section	6028	1,359	478.9	485.3	6.4	4.5	0.9
Section	5701	1,360	478.6	484.8	6.2	4.7	1.0
Section	5315	1,361	478.2	484.0	5.8	5.2	1.1
Grade Control	5077	1,356	477.9	483.3	5.4	6.0	1.2
Grade Control	5076	1,358	476.9	483.4	6.5	4.3	0.9
Section	4795	1,359	476.6	483.0	6.4	4.4	0.9
Section	4562	1,358	476.4	482.7	6.3	4.5	0.9
Section	4189	1,359	476.0	482.1	6.1	4.8	1.0
Grade Control	3797	1,354	475.6	481.1	5.5	5.7	1.2
Grade Control	3796	1,355	474.6	481.2	6.6	4.2	0.9
Section	3536	1,355	474.4	480.9	6.5	4.3	0.9
Section	3233	1,354	474.1	480.5	6.4	4.4	0.9
Section	3025	1,372	473.9	480.2	6.3	4.6	1.0
Section	2839	1,371	473.7	479.9	6.2	4.8	1.0
Section	2616	1,371	473.5	479.4	5.9	5.1	1.0
Grade Control	2462	1,370	473.3	479.1	5.8	5.3	1.1
Grade Control	2461	1,515	472.3	479.1	6.8	4.5	0.9
Channel 1	2047	1,510	471.9	478.5	6.6	4.7	1.0
Section	1782	1,511	471.6	478.2	6.5	4.8	1.0
Section	1522	1,511	471.4	477.7	6.3	5.0	1.0
Grade Control	1236	1,508	471.1	477.1	6.0	5.5	1.1
Grade Control	1235	1,508	470.1	477.2	7.1	4.2	0.9
Section	1008	1,510	469.9	477.0	7.1	4.2	0.9
Section	859	1,511	469.7	476.8	7.1	4.2	0.9
Section	538	1,515	469.4	476.5	7.1	4.2	0.9
Section	36	1,515	468.9	476.0	7.1	4.2	0.9

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

Table 9 – Unsteady HEC-RAS Modeling Results for 50-Year, 3-Hour Storm Event

Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	116	498.0	501.5	3.5	1.3	0.2
Section	18653	112	497.5	501.4	3.9	1.0	0.2
Section	18150	104	497.0	501.3	4.3	0.7	0.1
Grade Control	17877	100	496.7	501.3	4.6	0.6	0.1
Grade Control	17876	100	495.7	501.3	5.6	0.4	0.1
Section	17646	96	495.5	501.3	5.8	0.4	0.1
Channel 5	17142	984	495.0	500.5	5.5	4.1	0.8
Grade Control	16597	965	494.4	499.2	4.8	5.2	1.0
Grade Control	16596	967	493.4	499.4	6.0	3.6	0.7
Section	16136	966	493.0	498.9	5.9	3.6	0.8
Section	15632	968	492.5	498.3	5.8	3.7	0.8
Channel 4	15124	962	492.0	497.7	5.7	3.8	0.8
Section	14618	960	491.5	497.0	5.5	4.0	0.8
Grade Control	14040	944	490.9	495.9	5.0	4.8	0.9
Grade Control	14039	946	489.9	496.0	6.1	3.4	0.7
Section	13611	948	489.5	495.6	6.1	3.4	0.7
Section	13108	954	489.0	495.2	6.2	3.3	0.7
Section	12693	954	488.5	494.9	6.4	3.1	0.7
Section	12100	1,280	487.9	494.0	6.1	4.5	0.9
Section	11786	1,273	487.6	493.5	5.9	4.8	1.0
Grade Control	11477	1,249	487.3	492.7	5.4	5.5	1.1
Grade Control	11476	1,255	486.3	492.8	6.5	4.0	0.8
Channel 3	11094	1,245	485.9	492.4	6.5	4.0	0.8
Section	10592	1,246	485.4	491.8	6.4	4.1	0.8
Section	10000	1,249	484.8	491.1	6.3	4.2	0.9
Section	9587	1,251	484.4	490.6	6.2	4.3	0.9
Section	9267	1,251	484.1	490.1	6.0	4.5	0.9
Grade Control	8917	1,240	483.8	489.4	5.6	5.1	1.0
Grade Control	8916	1,281	482.8	489.4	6.6	4.0	0.8
Section	8581	1,275	482.4	489.1	6.7	3.9	0.8
Section	8077	1,274	481.9	488.7	6.8	3.8	0.8
Section	7606	1,274	481.5	488.2	6.7	3.8	0.8
Channel 2	7074	1,271	480.9	487.8	6.9	3.7	0.8
Section	6697	1,723	480.5	487.1	6.6	5.4	1.1
Grade Control	6357	1,719	480.2	486.2	6.0	6.3	1.3

Grade Control	6356	1,721	479.2	486.3	7.1	4.8	1.0
Section	6028	1,722	478.9	485.9	7.0	4.9	1.0
Section	5701	1,723	478.6	485.4	6.8	5.2	1.1
Section	5315	1,723	478.2	484.6	6.4	5.7	1.2
Grade Control	5077	1,718	477.9	483.9	6.0	6.3	1.3
Grade Control	5076	1,720	476.9	484.0	7.1	4.8	1.0
Section	4795	1,720	476.6	483.6	7.0	4.8	1.0
Section	4562	1,721	476.4	483.3	6.9	5.0	1.1
Section	4189	1,721	476.0	482.7	6.7	5.3	1.1
Grade Control	3797	1,717	475.6	481.7	6.1	6.0	1.3
Grade Control	3796	1,717	474.6	481.8	7.2	4.6	1.0
Section	3536	1,719	474.4	481.5	7.1	4.8	1.0
Section	3233	1,717	474.1	481.1	7.0	4.9	1.0
Section	3025	1,741	473.9	480.8	6.9	5.1	1.1
Section	2839	1,739	473.7	480.5	6.8	5.2	1.1
Section	2616	1,738	473.5	480.1	6.6	5.4	1.1
Grade Control	2462	1,738	473.3	479.8	6.5	5.6	1.2
Grade Control	2461	1,930	472.3	479.8	7.5	5.0	1.0
Channel 1	2047	1,921	471.9	479.2	7.3	5.1	1.1
Section	1782	1,925	471.6	478.8	7.2	5.2	1.1
Section	1522	1,924	471.4	478.4	7.0	5.4	1.1
Grade Control	1236	1,923	471.1	477.8	6.7	5.8	1.2
Grade Control	1235	1,923	470.1	477.9	7.8	4.6	1.0
Section	1008	1,926	469.9	477.7	7.8	4.6	1.0
Section	859	1,929	469.7	477.6	7.9	4.6	1.0
Section	538	1,934	469.4	477.2	7.8	4.6	1.0
Section	36	1,934	468.9	476.7	7.8	4.6	1.0

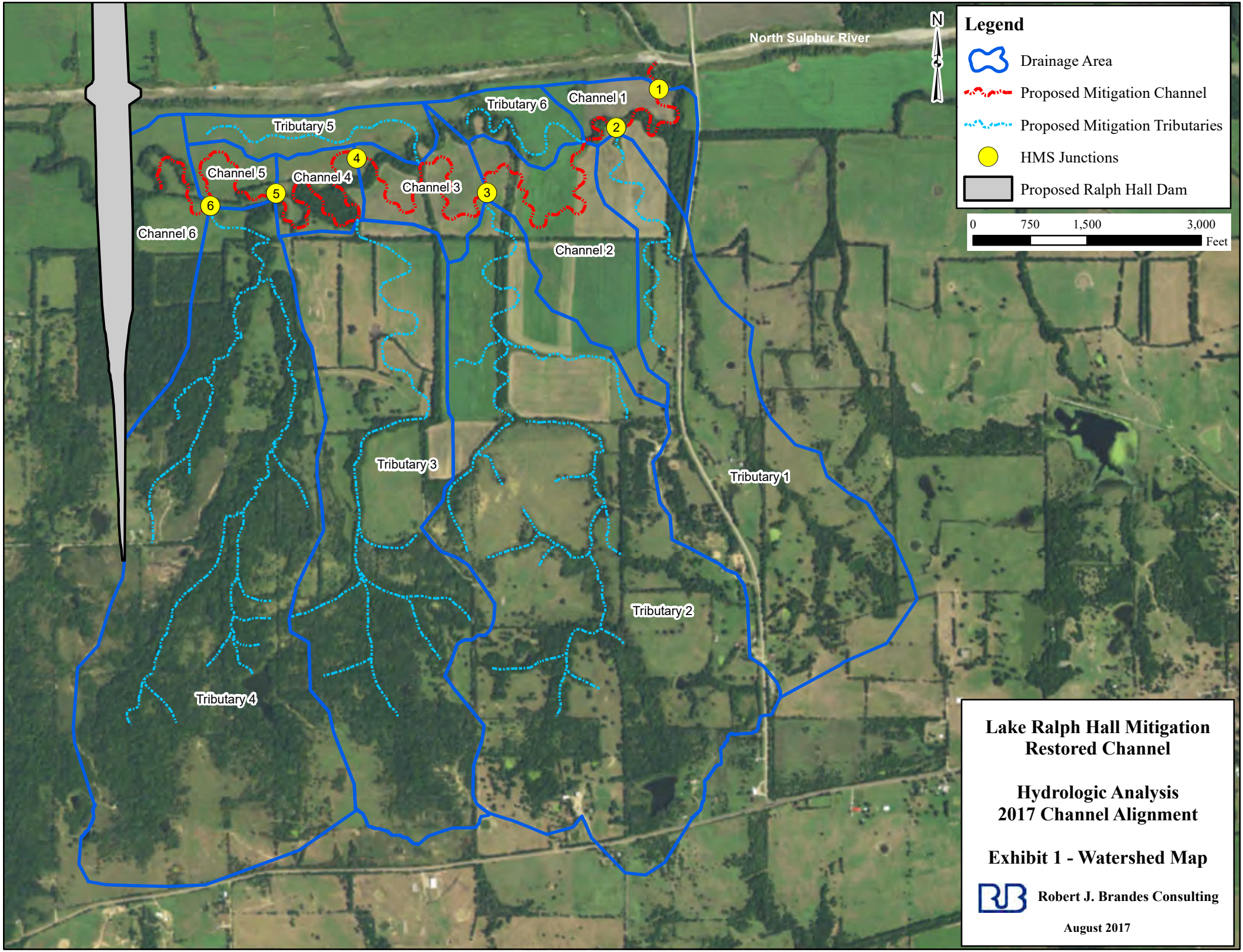
Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.

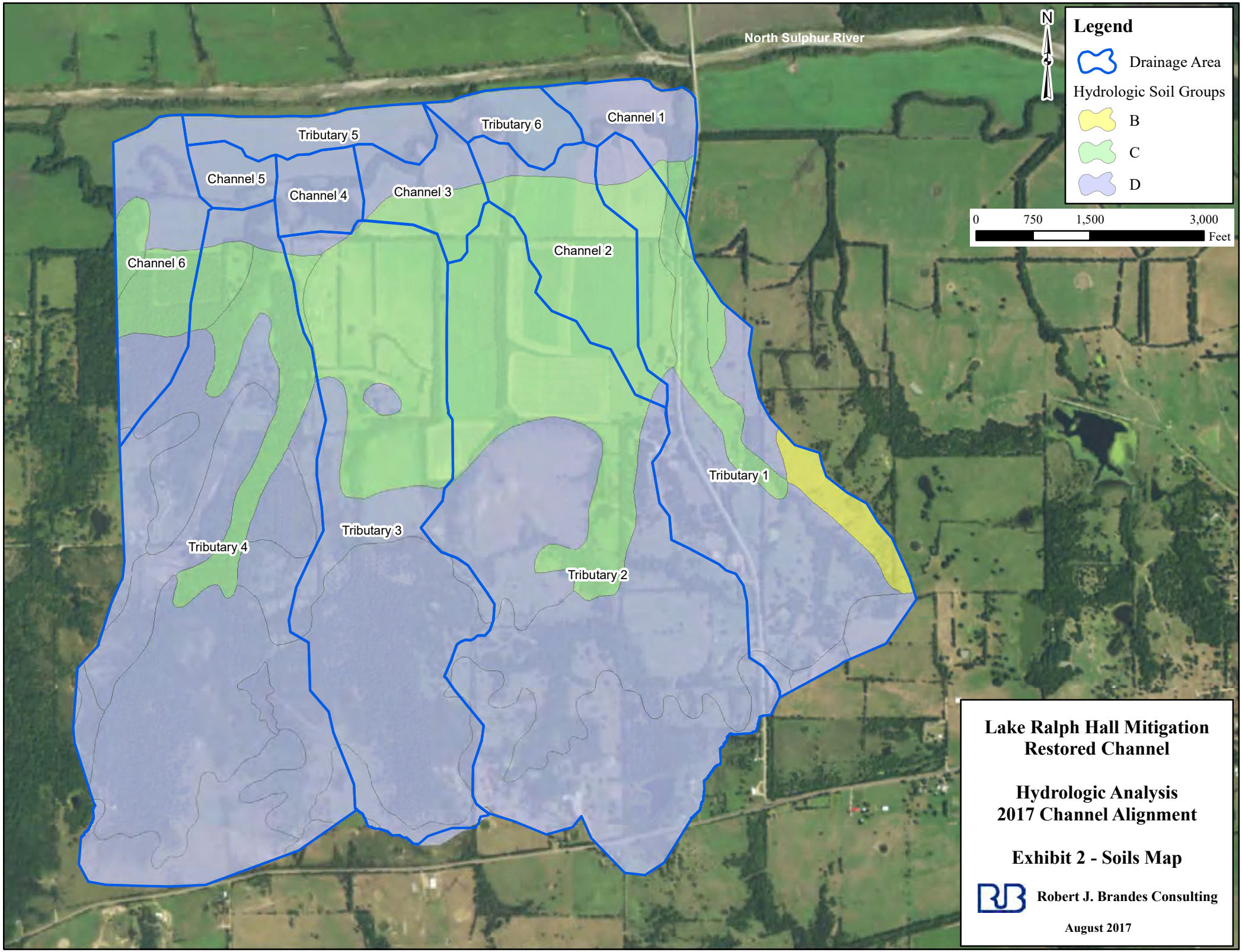
Table 10 – Unsteady HEC-RAS Modeling Results for 100-Year, 3-Hour Storm Event

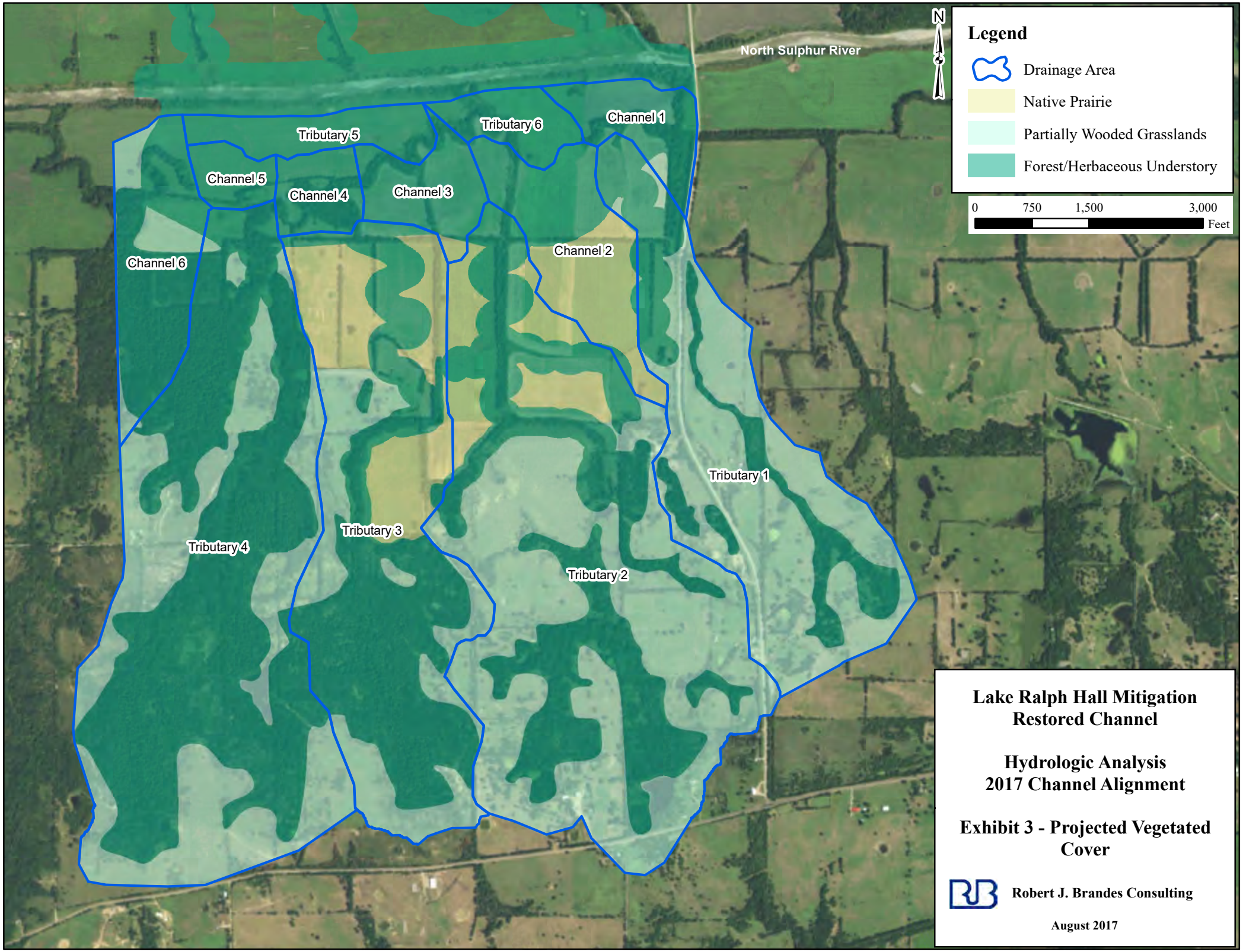
Modeling Element	HEC-RAS Cross Section	Peak Flow	Channel Flowline (see Note)	Water Surface Elevation	Flow Depth (see Note)	Middle Channel Velocity	Overbank Velocity
		(cfs)	(feet)	(feet)	(feet)	(ft/s)	(ft/s)
Channel 6	19156	139	498.0	501.9	3.9	1.2	0.2
Section	18653	137	497.5	501.8	4.3	0.9	0.2
Section	18150	130	497.0	501.7	4.7	0.7	0.1
Grade Control	17877	126	496.7	501.7	5.0	0.6	0.1
Grade Control	17876	126	495.7	501.7	6.0	0.5	0.1
Section	17646	126	495.5	501.7	6.2	0.4	0.1
Channel 5	17142	1,171	495.0	500.9	5.9	4.4	0.9
Grade Control	16597	1,152	494.4	499.6	5.2	5.3	1.1
Grade Control	16596	1,155	493.4	499.7	6.3	3.8	0.8
Section	16136	1,157	493.0	499.3	6.3	3.9	0.8
Section	15632	1,155	492.5	498.7	6.2	4.0	0.8
Channel 4	15124	1,143	492.0	498.1	6.1	4.1	0.8
Section	14618	1,139	491.5	497.4	5.9	4.3	0.9
Grade Control	14040	1,126	490.9	496.3	5.4	4.9	1.0
Grade Control	14039	1,129	489.9	496.4	6.5	3.6	0.8
Section	13611	1,130	489.5	496.0	6.5	3.6	0.7
Section	13108	1,138	489.0	495.6	6.6	3.5	0.7
Section	12693	1,138	488.5	495.4	6.9	3.3	0.7
Section	12100	1,543	487.9	494.5	6.6	4.8	1.0
Section	11786	1,530	487.6	493.9	6.3	5.1	1.1
Grade Control	11477	1,510	487.3	493.2	5.8	5.7	1.2
Grade Control	11476	1,513	486.3	493.3	7.0	4.3	0.9
Channel 3	11094	1,501	485.9	492.9	7.0	4.3	0.9
Section	10592	1,504	485.4	492.3	6.9	4.4	0.9
Section	10000	1,508	484.8	491.6	6.8	4.5	0.9
Section	9587	1,510	484.4	491.1	6.7	4.6	1.0
Section	9267	1,509	484.1	490.6	6.5	4.8	1.0
Grade Control	8917	1,501	483.8	489.9	6.1	5.3	1.1
Grade Control	8916	1,548	482.8	490.0	7.2	4.2	0.9
Section	8581	1,546	482.4	489.7	7.3	4.1	0.9
Section	8077	1,543	481.9	489.2	7.3	4.1	0.9
Section	7606	1,544	481.5	488.8	7.3	4.1	0.9
Channel 2	7074	1,542	480.9	488.4	7.5	4.0	0.8
Section	6697	2,108	480.5	487.6	7.1	5.8	1.2
Grade Control	6357	2,104	480.2	486.8	6.6	6.6	1.4

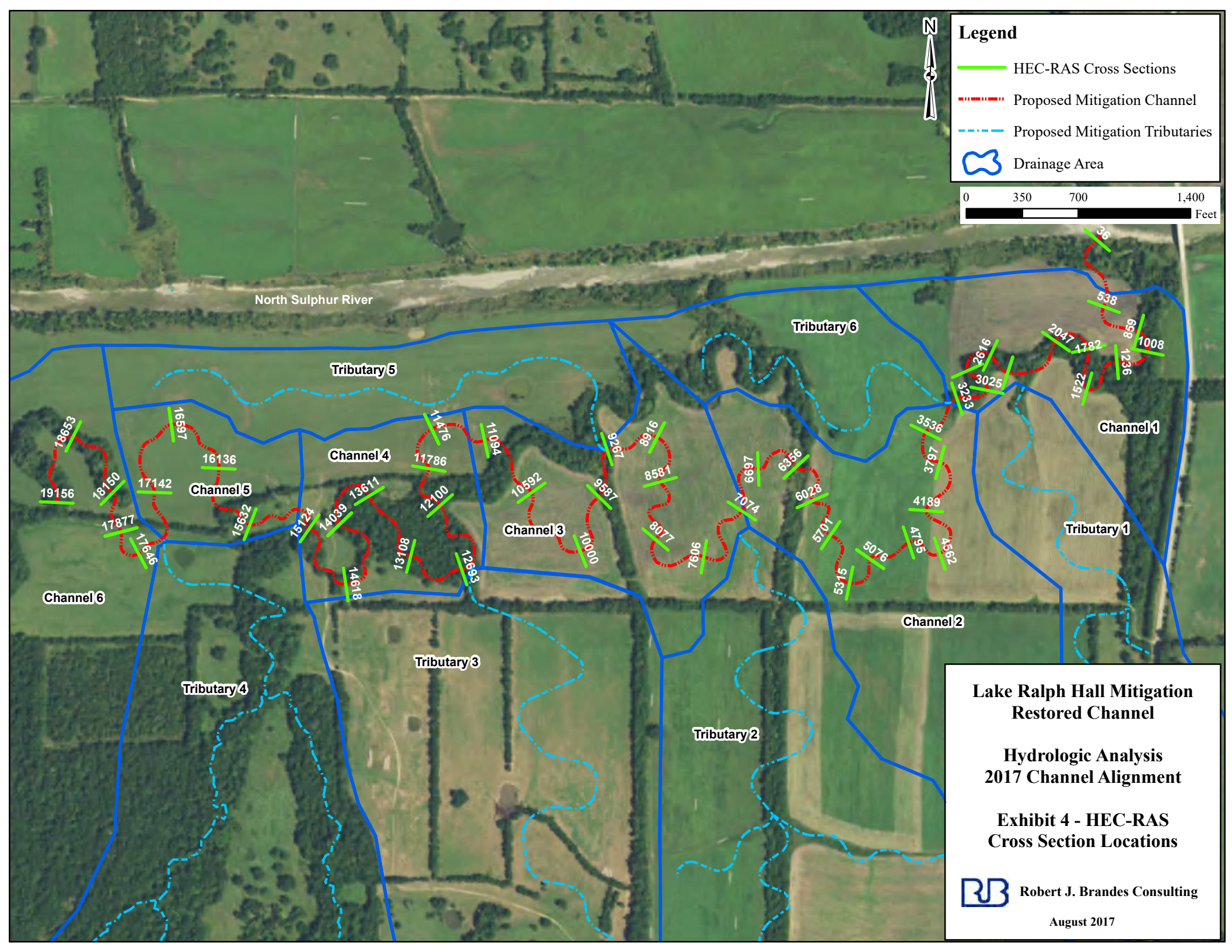
Grade Control	6356	2,106	479.2	486.9	7.7	5.2	1.1
Section	6028	2,107	478.9	486.4	7.5	5.4	1.1
Section	5701	2,109	478.6	485.9	7.3	5.6	1.2
Section	5315	2,108	478.2	485.1	6.9	6.1	1.3
Grade Control	5077	2,103	477.9	484.5	6.6	6.6	1.4
Grade Control	5076	2,105	476.9	484.6	7.7	5.2	1.1
Section	4795	2,107	476.6	484.2	7.6	5.3	1.1
Section	4562	2,107	476.4	483.9	7.5	5.4	1.1
Section	4189	2,107	476.0	483.2	7.2	5.7	1.2
Grade Control	3797	2,102	475.6	482.3	6.7	6.3	1.3
Grade Control	3796	2,105	474.6	482.5	7.8	5.0	1.1
Section	3536	2,107	474.4	482.1	7.7	5.1	1.1
Section	3233	2,103	474.1	481.7	7.6	5.2	1.1
Section	3025	2,132	473.9	481.4	7.5	5.4	1.1
Section	2839	2,131	473.7	481.1	7.4	5.5	1.2
Section	2616	2,130	473.5	480.7	7.2	5.7	1.2
Grade Control	2462	2,130	473.3	480.4	7.1	5.9	1.2
Grade Control	2461	2,371	472.3	480.4	8.1	5.4	1.1
Channel 1	2047	2,362	471.9	479.9	8.0	5.5	1.2
Section	1782	2,364	471.6	479.5	7.9	5.6	1.2
Section	1522	2,365	471.4	479.1	7.7	5.8	1.2
Grade Control	1236	2,368	471.1	478.6	7.5	6.1	1.3
Grade Control	1235	2,368	470.1	478.7	8.6	5.0	1.1
Section	1008	2,374	469.9	478.4	8.5	5.0	1.1
Section	859	2,376	469.7	478.3	8.6	5.0	1.1
Section	538	2,382	469.4	478.0	8.6	5.0	1.1
Section	36	2,382	468.9	477.5	8.6	5.0	1.1

Note: The Channel Flowline and Peak Water Surface Elevation values are referenced to an assumed datum established at the actual bottom of the low-flow channel of the design cross section at the most upstream Section 19156, which is set equal to elevation 498.0 feet. (This is not the assumed virtual bottom that is set 1.5' below the top of the banks of the low-flow channel for purposes of the HEC-RAS modeling). Also, the values of Flow Depth are referenced to the same Channel Flowline.


North Sulphur River
N
Legend
Drainage Area
Proposed Mitigation Channel
Proposed Mitigation Tributaries
HMS Junctions
Proposed Ralph Hall Dam
0
750
1,500
3,000
Feet
Tributary 5
Tributary 6
Channel 1
Channel 5
Channel 4
Channel 3
Channel 6
Channel 2
Tributary 3
Tributary 1
Tributary 2
Tributary 4
1
2
3
4
5
6
Lake Ralph Hall Mitigation
Restored Channel
Hydrologic Analysis
2017 Channel Alignment
Exhibit 1 - Watershed Map
Robert J. Brandes Consulting
August 2017


North Sulphur River
N
Legend
Drainage Area
Hydrologic Soil Groups
B
C
D
0
750
1,500
3,000
Feet
Tributary 5
Tributary 6
Channel 1
Channel 5
Channel 4
Channel 3
Channel 2
Channel 6
Tributary 1
Tributary 3
Tributary 4
Tributary 2
Lake Ralph Hall Mitigation
Restored Channel
Hydrologic Analysis
2017 Channel Alignment
Exhibit 2 - Soils Map
Robert J. Brandes Consulting
August 2017


North Sulphur River
N
Legend
Drainage Area
Native Prairie
Partially Wooded Grasslands
Forest/Herbaceous Understory
0
750
1,500
3,000
Feet
Tributary 5
Tributary 6
Channel 1
Channel 5
Channel 4
Channel 3
Channel 2
Channel 6
Tributary 1
Tributary 3
Tributary 4
Tributary 2
Lake Ralph Hall Mitigation
Restored Channel
Hydrologic Analysis
2017 Channel Alignment
Exhibit 3 - Projected Vegetated Cover
Robert J. Brandes Consulting
August 2017


N
Legend
HEC-RAS Cross Sections
Proposed Mitigation Channel
Proposed Mitigation Tributaries
Drainage Area
0
350
700
1,400
Feet
North Sulphur River
Tributary 5
Tributary 6
Channel 4
Channel 5
Channel 3
Channel 1
Tributary 1
Channel 6
Channel 2
Tributary 3
Tributary 4
Tributary 2
18653
19156
18150
17877
17646
16597
17142
16136
15632
15124
14039
13611
13108
14618
11476
11786
12100
12693
11094
10592
10000
9267
9587
8916
8587
8077
7606
6697
7074
6356
6028
5701
5315
5076
4795
4562
4189
3797
3536
3223
3025
2616
2047
1782
1522
1236
1008
859
538
36
Lake Ralph Hall Mitigation
Restored Channel
Hydrologic Analysis
2017 Channel Alignment
Exhibit 4 - HEC-RAS
Cross Section Locations
Robert J. Brandes Consulting
August 2017

APPENDIX G

DETAILED FIGURES AND TABLES DOCUMENTING PROJECTED UPLIFT FROM PROPOSED AQUATIC RESOURCES MITIGATION ACTIVITIES

T3-BAKER-ENH

BAKER CREEK

T3-TRIB1-ENH

T2-BAKER-ENH

EXISTING IMPOUNDMENT TO REMAIN

FIGURE G-2

FIGURE G-1

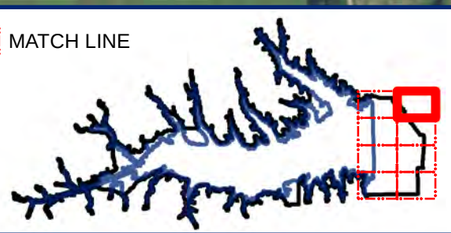
EXISTING IMPOUNDMENTS TO BE REMOVED IN STREAM WORK AREAS UNLESS OTHERWISE NOTED.

N
W E
S

500 250 0 Feet

FIGURE G-1 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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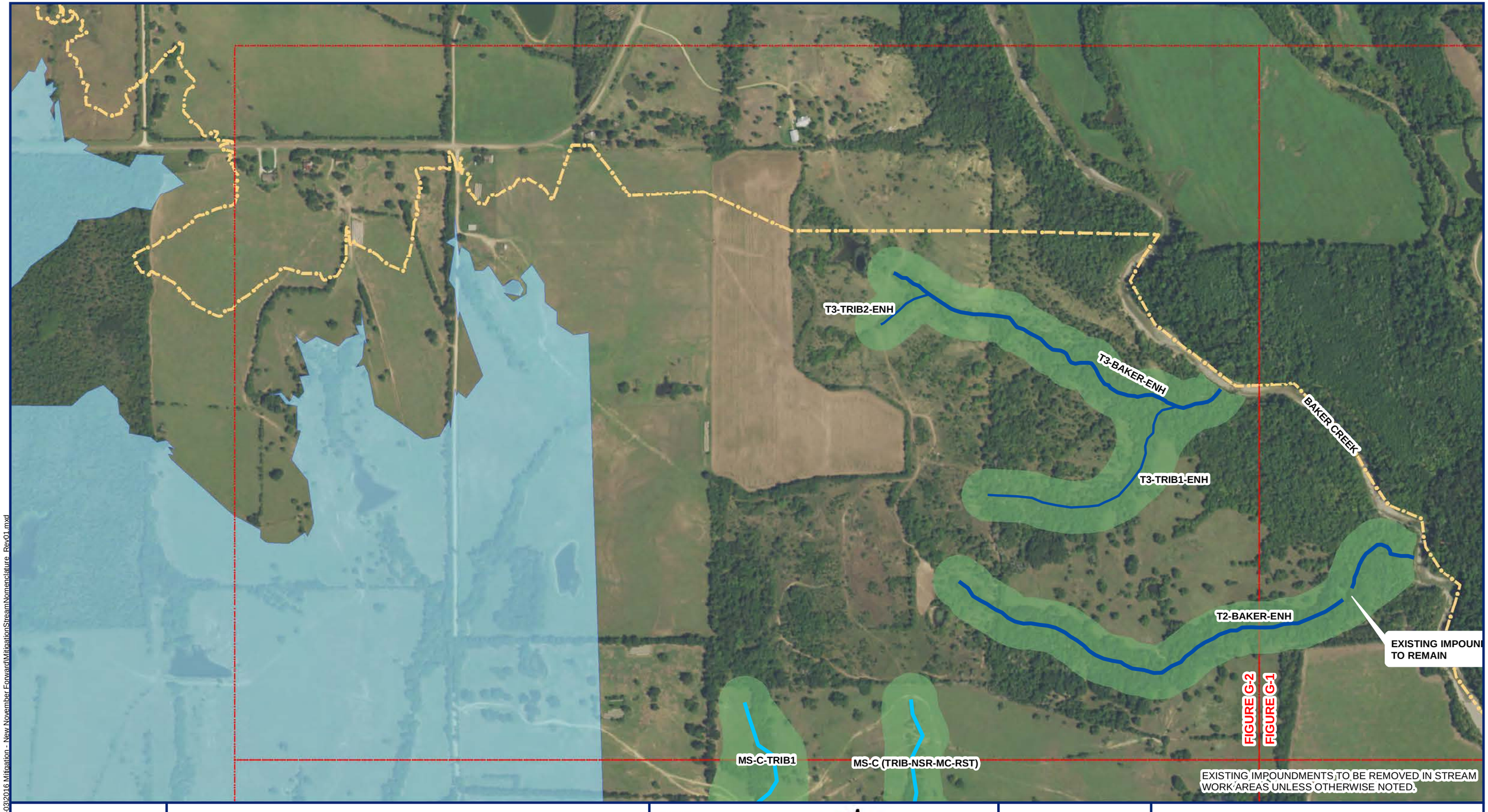

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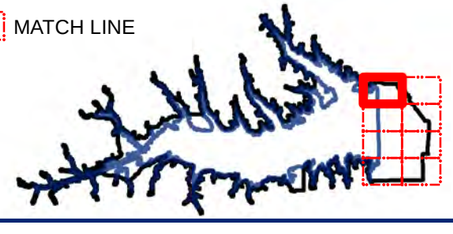
FIGURE G-2 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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MS-B (TRIB-NSR-MC-RST)

MS-A (TRIB-NSR-MC-RST)

MS-A-TRIB2

MS-A-TRIB1

MS-B-TRIB1

MS-A (TRIB-NSR-MC-RST)

MS-B (TRIB-NSR-MC-RST)

FIGURE G-4

FIGURE G-3

NSR-MC-RST

NSR-MC-PRE

S2-PRE

S2-TRIB1-PRE

S1-PRE

FNSR-RST

S1 (FMR BAKER)-PRE

MS-G (TRIB-FNSR-RST)

MS-E (TRIB-FNSR-RST)

S2-PRE

S1-TRIB1-PRE

MS-D (TRIB-FNSR-RST)

FNSR-RST

S2-PRE

EXISTING IMPOUNDMENTS TO BE REMOVED IN STREAM WORK AREAS UNLESS OTHERWISE NOTED.

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FIGURE G-3 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE

USACE PROJECT NO.:
SWF-2003-00336

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Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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MS-C-TRIB1

MS-C (TRIB-NSR-MC-RST)

MS-B (TRIB-NSR-MC-RST)

MS-B-TRIB2

MS-A (TRIB-NSR-MC-RST)

MS-A-TRIB2

MS-B-TRIB1

MS-C (TRIB-NSR-MC-RST)

MS-B-TRIB3

MS-B (TRIB-NSR-MC-RST)

FIGURE G-4

FIGURE G-3

NSR-MC-RST

NSR-MC-PRE

S2-PRE

MS-G (TRIB-FNSR-RST)

S2-PRE

FNSR-RST

FNSR-RST

S2-TRIB3-A1-PRE

EXISTING IMPOUNDMENTS TO BE REMOVED IN STREAM WORK AREAS UNLESS OTHERWISE NOTED.

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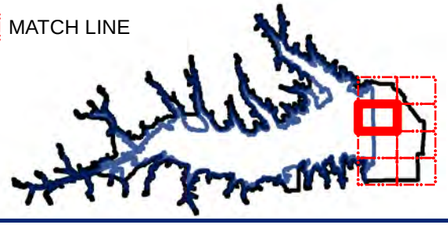
FIGURE G-4 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



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Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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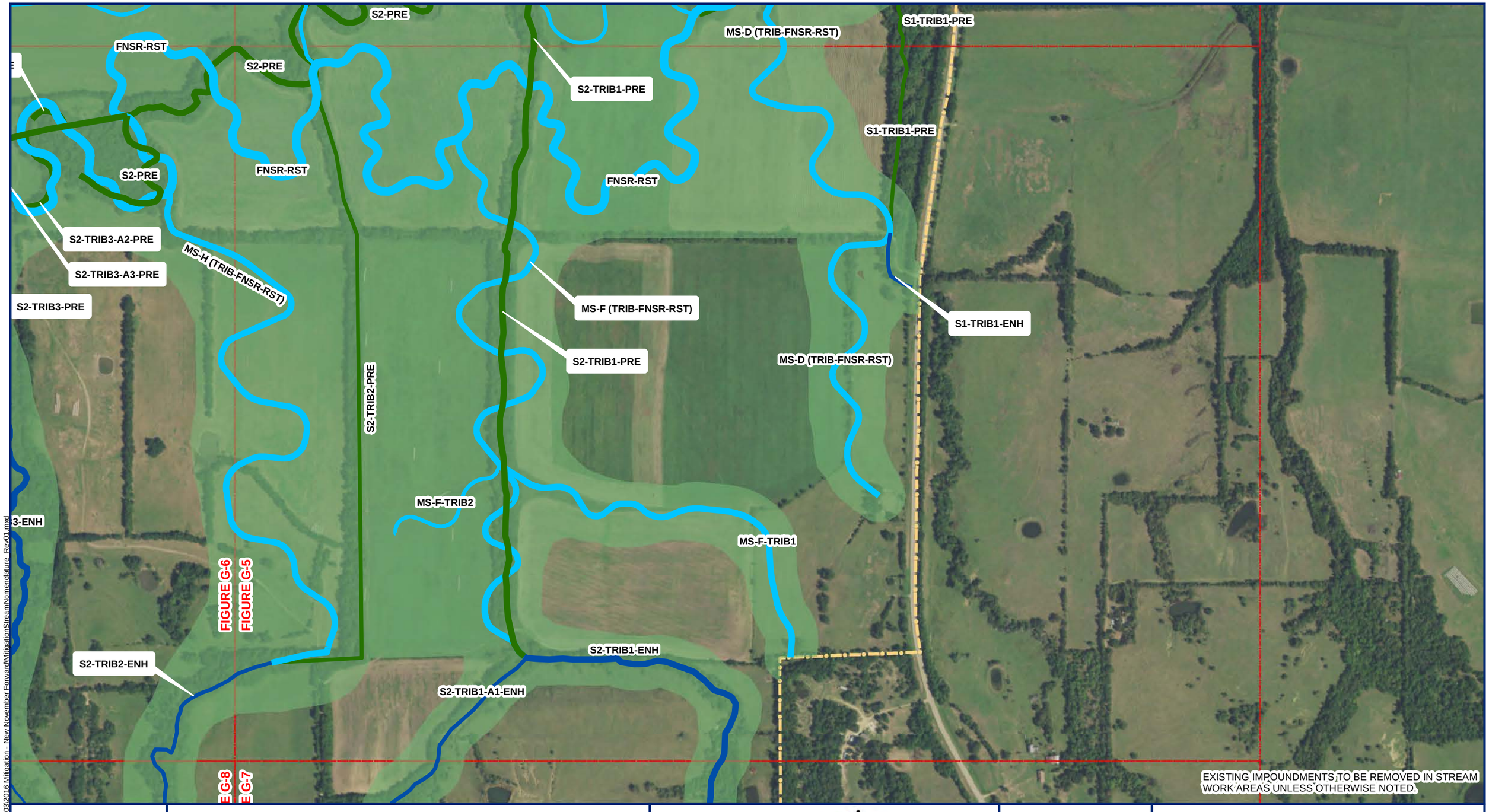

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FIGURE G-5 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE

USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

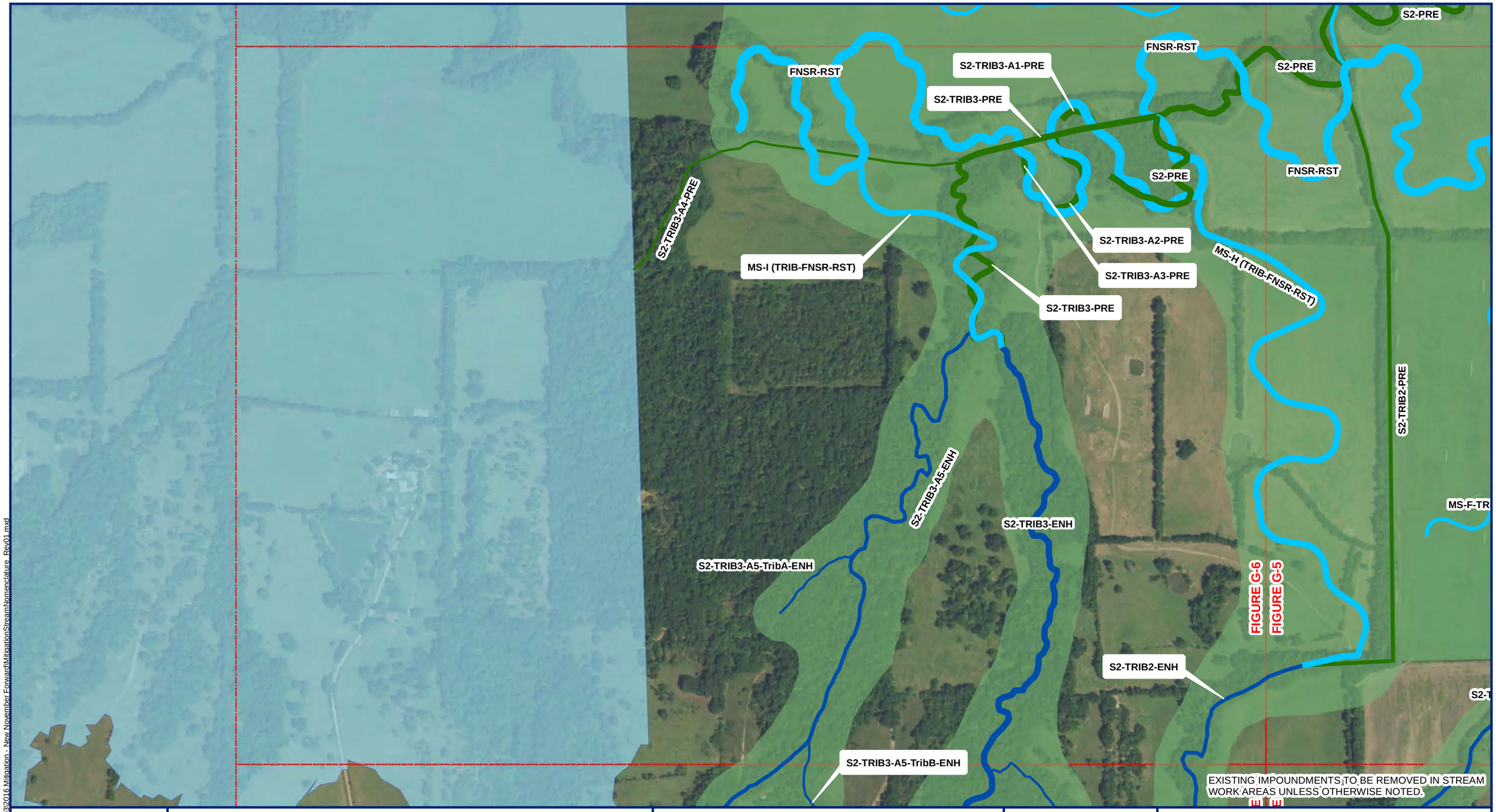

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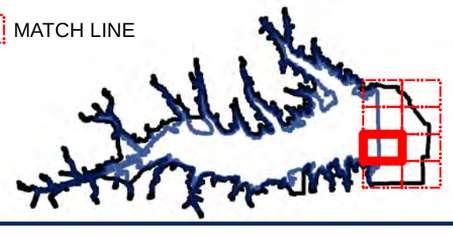
FIGURE G-6 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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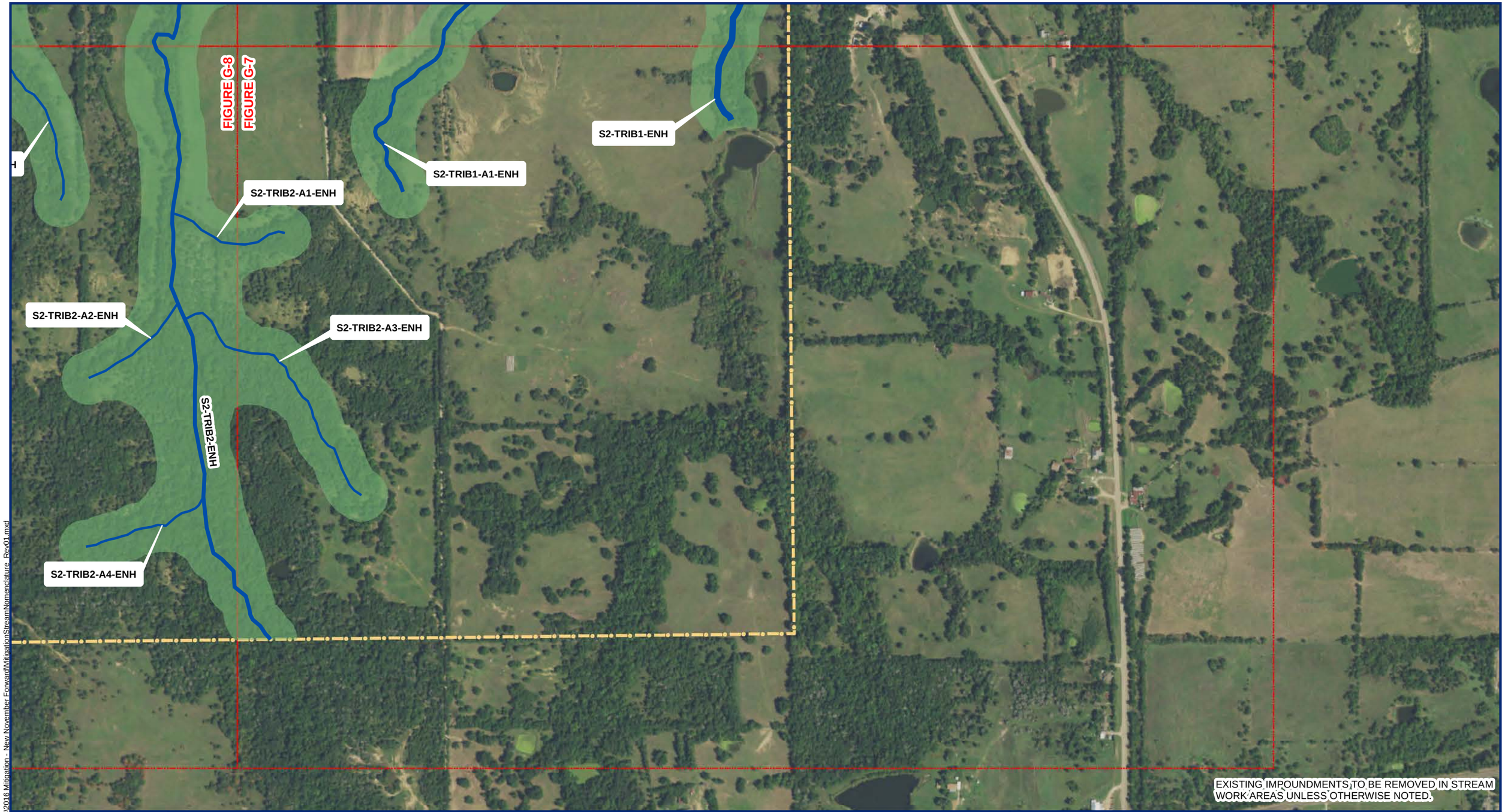

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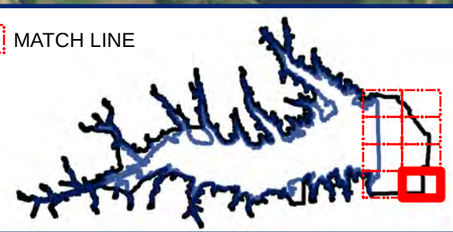
FIGURE G-7 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



USACE PROJECT NO.:
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PREPARED BY:
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Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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S2-TRIB3-A5-TribB-ENH
S2-TRIB3-A5-ENH
S2-TRIB3-A6-ENH
FIGURE G-8
FIGURE G-7
S2-TRIB2-A1-ENH
S2-TRIB3-ENH
S2-TRIB3-A7-ENH
S2-TRIB2-A2-ENH
S2-TRIB2-A3-ENH
S2-TRIB2-ENH
S2-TRIB3-A9-ENH
S2-TRIB2-A4-ENH
S2-TRIB3-A10-ENH
S2-TRIB3-A8-ENH
EXISTING IMPOUNDMENTS TO BE REMOVED IN STREAM WORK AREAS UNLESS OTHERWISE NOTED.

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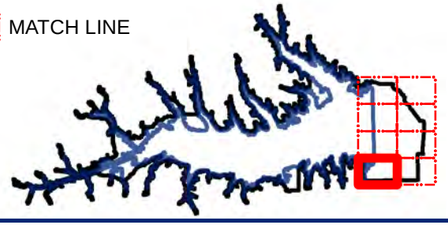
500 250 0 Feet

FIGURE G-8 OF 8
PROPOSED MITIGATION STREAM CHANNELS
LAKE RALPH HALL
FANNIN COUNTY, TEXAS

MATCH LINE



USACE PROJECT NO.:
SWF-2003-00336

PREPARED BY:
ALAN PLUMMER ASSOC., INC.

Date: 12/19/2017

- CREATED MITIGATION STREAM CHANNELS
- ENHANCED MITIGATION STREAM CHANNELS
- EXISTING STREAM CHANNELS - TO BE FILLED
- RIPARIAN BUFFER ZONE INCLUDING MEANDER BELT WIDTH
- SJD ASSESSMENT AREA
- CONSERVATION POOL

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TABLE G-1 (PAGE 1 OF 2)
CALCULATED FUNCTIONAL CAPACITY UNITS (FCUs) FROM MITIGATION PROJECT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IDENTIFICATION NAME	REFERENCE FIGURE	OHWM WIDTH RANGE	EXISTING LAND USE CATEGORY	STREAM FLOW REGIME CLASSIFICATION	REFERENCE TABLE	LENGTH (FEET)	BASE FCI	PROJECTED FCI	FC MULTIPLIER	BASE FCU	PROJECTED FCU
S1-TRIB1-ENH	G-5	2.5-5'	1	Ephemeral	Table G-2 (1)	389	0.32	2.24	0.00125	0.16	1.09
S2-TRIB1-A1-ENH	G-5, G-7	2.5-5'	1	Ephemeral	Table G-2 (2)	1,833	0.32	2.22	0.00125	0.73	5.09
S2-TRIB1-ENH	G-5, G-7	6-15'	1	Ephemeral	Table G-2 (3)	2,101	0.25	2.26	0.00125	0.67	5.93
S2-TRIB2-A1-ENH	G-7, G-8	0.5-2.0'	2	Ephemeral	Table G-2 (4)	702	0.93	2.24	0.00125	0.82	1.97
S2-TRIB2-A2-ENH	G-8	0.5-2.0'	3	Ephemeral	Table G-2 (5)	671	1.15	2.24	0.00125	0.96	1.88
S2-TRIB2-A3-ENH	G-7, G-8	0.5-2.0'	3	Ephemeral	Table G-2 (6)	1,574	1.15	2.24	0.00125	2.26	4.41
S2-TRIB2-A4-ENH	G-8	0.5-2.0'	3	Ephemeral	Table G-2 (7)	747	1.15	2.24	0.00125	1.07	2.09
S2-TRIB2-ENH	G-6, G-7, G-8	2.5-5'	1	Ephemeral	Table G-2 (8)	4,567	0.32	2.24	0.00125	1.83	12.79
S2-TRIB3-A10-ENH	G-8	2.5-5'	3	Ephemeral	Table G-2 (9)	269	1.22	2.27	0.00125	0.41	0.76
S2-TRIB3-A5-ENH	G-6, G-8	2.5-5'	3	Ephemeral	Table G-2 (10)	4,152	1.22	2.27	0.00125	6.31	11.78
S2-TRIB3-A5-TribA-ENH	G-6	0.5-2.0'	3	Ephemeral	Table G-2 (11)	574	1.15	2.26	0.00125	0.82	1.62
S2-TRIB3-A5-TribB-ENH	G-8	0.5-2.0'	3	Ephemeral	Table G-2 (12)	697	1.15	2.24	0.00125	1.00	1.95
S2-TRIB3-A6-ENH	G-8	0.5-2.0'	3	Ephemeral	Table G-2 (13)	1,209	1.15	2.26	0.00125	1.73	3.42
S2-TRIB3-A7-ENH	G-8	2.5-5'	3	Ephemeral	Table G-2 (14)	2,280	1.22	2.27	0.00125	3.47	6.47
S2-TRIB3-A8-ENH	G-8	2.5-5'	3	Ephemeral	Table G-2 (15)	762	1.22	2.27	0.00125	1.16	2.16
S2-TRIB3-A9-ENH	G-8	2.5-5'	3	Ephemeral	Table G-2 (16)	367	1.22	2.27	0.00125	0.56	1.04
S2-TRIB3-ENH	G-6, G-8	6-15'	2	Ephemeral	Table G-2 (17)	7,838	0.83	2.31	0.00125	8.09	22.63
T2-BAKER-ENH	G-1, G-2	2.5-5'	2	Ephemeral	Table G-2 (18)	2,996	0.95	2.26	0.00125	3.56	8.46
T3-BAKER-ENH	G-2	2.5-5'	2	Ephemeral	Table G-2 (19)	2,175	0.95	2.26	0.00125	2.58	6.14
T3-TRIB1-ENH	G-2	0.5-2.0'	1	Ephemeral	Table G-2 (20)	1,422	0.34	2.22	0.00125	0.60	3.95
T3-TRIB2-ENH	G-2	0.5-2.0'	1	Ephemeral	Table G-2 (21)	330	0.34	2.21	0.00125	0.14	0.91
FNSR-RST	G-3, G-5, G-6	16-25'	1	Intermittent with Perennial Pools	Table G-2 (22)	19,217	0.00	2.67	0.00380	0.00	194.98
MS-A (TRIB-NSR-MC-RST)	G-3	2.5-5'	1	Ephemeral	Table G-2 (23)	5,173	0.00	2.32	0.00125	0.00	15.00
MS-A-TRIB1	G-3	0.5-2.0'	1	Ephemeral	Table G-2 (24)	1,748	0.00	2.23	0.00125	0.00	4.87
MS-A-TRIB2	G-3, G-4	0.5-2.0'	1	Ephemeral	Table G-2 (25)	1,460	0.00	2.21	0.00125	0.00	4.03
MS-B (TRIB-NSR-MC-RST)	G-4	2.5-5'	1	Ephemeral	Table G-2 (26)	3,999	0.00	2.32	0.00125	0.00	11.60
MS-B-TRIB1	G-4	2.5-5'	1	Ephemeral	Table G-2 (27)	694	0.00	2.28	0.00125	0.00	1.98
MS-B-TRIB2	G-4	2.5-5'	1	Ephemeral	Table G-2 (28)	836	0.00	2.26	0.00125	0.00	2.36
MS-B-TRIB3	G-4	2.5-5'	1	Ephemeral	Table G-2 (29)	989	0.00	2.26	0.00125	0.00	2.79
MS-C (TRIB-NSR-MC-RST)	G-2, G-4	2.5-5'	1	Ephemeral	Table G-2 (30)	5,910	0.00	2.32	0.00125	0.00	17.14
MS-C-TRIB1	G-2, G-4	2.5-5'	1	Ephemeral	Table G-2 (31)	1,558	0.00	2.28	0.00125	0.00	4.44
MS-D (TRIB-FNSR-RST)	G-3, G-5	6-15'	1	Ephemeral	Table G-2 (32)	4,649	0.00	2.36	0.00125	0.00	13.71
MS-E (TRIB-FNSR-RST)	G-3	2.5-5'	1	Ephemeral	Table G-2 (33)	3,126	0.00	2.33	0.00125	0.00	9.10
MS-F (TRIB-FNSR-RST)	G-5	6-15'	1	Ephemeral	Table G-2 (34)	4,857	0.00	2.36	0.00125	0.00	14.33
MS-F-TRIB1	G-5	6-15'	1	Ephemeral	Table G-2 (35)	2,691	0.00	2.33	0.00125	0.00	7.84
MS-F-TRIB2	G-5	2.5-5'	1	Ephemeral	Table G-2 (36)	943	0.00	2.26	0.00125	0.00	2.66
MS-G (TRIB-FNSR-RST)	G-3, G-4	2.5-5'	1	Ephemeral	Table G-2 (37)	3,911	0.00	2.27	0.00125	0.00	11.10
MS-H (TRIB-FNSR-RST)	G-5, G-6	6-15'	1	Ephemeral	Table G-2 (38)	4,973	0.00	2.38	0.00125	0.00	14.79
MS-I (TRIB-FNSR-RST)	G-6	6-15'	2	Ephemeral	Table G-2 (39)	2,173	0.00	2.36	0.00125	0.00	6.41
NSR-MC-RST	G-3, G-4	16-25'	1	Intermittent	Table G-2 (40)	8,801	0.00	2.25	0.00250	0.00	49.51

TABLE G-1 (PAGE 2 OF 2)
CALCULATED FUNCTIONAL CAPACITY UNITS (FCUs) FROM MITIGATION PROJECT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IDENTIFICATION NAME	**REFERENCE FIGURE**	**OHWM WIDTH RANGE**	**EXISTING LAND USE CATEGORY**	**STREAM FLOW REGIME CLASSIFICATION**	**REFERENCE TABLE**	**LENGTH (FEET)**	**BASE FCI**	**PROJECTED FCI**	**FC MULTIPLIER**	**BASE FCU**	**PROJECTED FCU**
NSR-MC-PRE	G-3, G-4	16-25'	1	Intermittent	Table G-2 (41)	6,579	0.51	0.00	0.00250	8.39	0.00
S1 (FMR BAKER)-PRE	G-3	6-15'	1	Ephemeral	Table G-2 (42)	1,448	0.25	0.00	0.00125	0.46	0.00
S1-PRE	G-3	6-15'	1	Ephemeral	Table G-2 (43)	1,483	0.25	0.00	0.00125	0.47	0.00
S1-TRIB1-PRE	G-3, G-5	2.5-5'	1	Ephemeral	Table G-2 (44)	1,378	0.32	0.00	0.00125	0.55	0.00
S2-PRE	G-3, G-5, G-6	6-15'	1	Ephemeral	Table G-2 (45)	3,955	0.25	0.00	0.00125	1.25	0.00
S2-PRE	G-6	6-15'	2	Ephemeral	Table G-2 (46)	1,166	0.83	0.00	0.00125	1.20	0.00
S2-TRIB1-PRE	G-3, G-5	6-15'	1	Ephemeral	Table G-2 (47)	4,739	0.25	0.00	0.00125	1.50	0.00
S2-TRIB2-PRE	G-5	2.5-5'	1	Ephemeral	Table G-2 (48)	3,831	0.32	0.00	0.00125	1.53	0.00
S2-TRIB3-A1-PRE	G-6	6-15'	2	Ephemeral	Table G-2 (49)	247	0.83	0.00	0.00125	0.25	0.00
S2-TRIB3-A2-PRE	G-6	6-15'	2	Ephemeral	Table G-2 (50)	598	0.83	0.00	0.00125	0.62	0.00
S2-TRIB3-A3-PRE	G-6	6-15'	2	Ephemeral	Table G-2 (51)	210	0.83	0.00	0.00125	0.22	0.00
S2-TRIB3-A4-PRE	G-6	0.5-2.0'	1	Ephemeral	Table G-2 (52)	2,246	0.34	0.00	0.00125	0.96	0.00
S2-TRIB3-PRE	G-6	6-15'	2	Ephemeral	Table G-2 (53)	1,555	0.83	0.00	0.00125	1.60	0.00
S2-TRIB3-PRE	G-6	6-15'	1	Ephemeral	Table G-2 (54)	1,156	0.25	0.00	0.00125	0.37	0.00
(13) TOTALS						**145,953**				**58.32**	**495.20**
(14) TOTALS (ROUNDED)										**58**	**495**
(15) NET UPLIFT FROM MITIGATION PROJECT										**437 FCU**	

NOTES FOR TABLE G-1:

(1) Stream identification name. Nomenclature: "S" indicates stream; "TRIB" indicates tributary; "T" indicates tributary to Baker Creek (BAKER); "MS" indicates new mitigation stream; "NSR" indicates North Sulphur River; "FNSR" indicates former North Sulphur River; "MC" indicates main channel (channelized NSR); "ENH" indicates enhancement of existing stream; "RST" indicates restoration of stream; "PRE" indicates pre-project (i.e., existing) streams (streams with "PRE" will be filled)

(2) Stream location shown on figure(s) referenced.

(3) Stream width range at ordinary high water mark (OHWM). OHWM defined as the projected line of scour along a stream channel where the channel is typically void of vegetation. Stream OHWM used for stream classification.

(4) Existing land use category: 1 = cropland and pasture, 2 = grasses and parklike (partially wooded grassland), 3 = young trees and forest. Land use used for FCI calculations. Refer to Table G-2 for FCI calculation details (Table reference in Column 6).

(5) Stream flow regime classification with mitigation activities implemented. Stream flow regime determines the multiplier used in Column 10.

(6) Details of SWAMPIM pre and post project stream scoring for each stream segment are shown in the tables referenced.

(7) Stream segment length in feet along the thalweg.

(8) Base Functional Capacity Index (FCI) score for stream segment, representing pre-project conditions. A score of "0" indicates that the stream does not exist today.

(9) Projected FCI score for stream segment; representing post-project conditions. A score of "0" indicates that the stream will be impacted (filled) by mitigation activities. Stream channel will no longer exist.

(10) Functional Capacity multiplier for stream segment. Perennial = 0.00380; Intermittent = 0.0025; Ephemeral = 0.00125. Ref: Mitigation Plan Appendix C - SWAMPIM Protocol Documentation

(11) Base Functional Capacity Unit (FCU) = Column 7 x Column 8 x Column 10 (pre-project conditions)

(12) Projected FCU = Column 7 x Column 9 x Column 10 (post-project conditions).

(13) Summation of Columns 7, 11, and 12.

(14) Totals from Column 13 rounded to the nearest whole number.

(15) Net Uplift from Mitigation Project = Projected FCU - Base FCU (rounded to the nearest whole number)

TABLE G-2 (1): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S1-TRIB1-ENH	2.5-5.0'/ Ephemeral/ Section of existing channelized tributary channel west of FM 904 that will be enhanced	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large, contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	4			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	4			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.11**	**0.62**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	0	4			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.10**	**0.69**			
		TOTAL - FCI *(f)*	**0.32**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (100 is highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (80 is highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (120 is highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (2): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB1-A1-ENH	2.5-5.0'/ Ephemeral/ Upstream tributary channel to be enhanced; Will connect to MS-F (TRIB-FNSR-RST).	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	4			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.11**	**0.61**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	0	3			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.10**	**0.68**			
		TOTAL - FCI *(f)*	**0.32**	**2.22**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (3): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB1-ENH	6-15'/ Ephemeral/ Upstream portion of channelized tributary to middle FNSR channel fragment; Will connect to MS-F (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0.65**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.91**			
		HB1. Flow Regime	1	2			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	3			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.09**	**0.70**			
		TOTAL - FCI *(f)*	**0.25**	**2.26**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (4): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-A1-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB2-PRE; Will connect to MS-H (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	6	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	3	3			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.20**	**0.61**			
		WQ1a. Bank Stability	6	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	10			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	3	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	6	9			
		HB10. Vegetative Protection	6	10			
		HB11. Riparian Zone	6	10			
		HB12. Riparian Habitat Condition	6	10			
		Habitat Subtotal FCI *(e)*	**0.29**	**0.70**			
		TOTAL - FCI *(f)*	**0.93**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (5): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-A2-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB2-PRE; Will connect to MS-H (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.61**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (6): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-A3-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB2-PRE; Will connect to MS-H (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.61**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (7): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-A4-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB2-PRE; Will connect to MS-H (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.61**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (8): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-ENH	2.5-5.0'/ Ephemeral/ Existing upstream reach of S2-TRIB2-PRE; Will connect to MS-H (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at the release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	4			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	4			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.11**	**0.62**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	0	4			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.10**	**0.69**			
		TOTAL - FCI *(f)*	**0.32**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (9): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A10-ENH	2.5-5.0'/ Ephemeral/ Existing tributary of S2-TRIB3-PRE; Will connect to MS-I (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.27**	**0.64**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.41**	**0.70**			
		TOTAL - FCI *(f)*	**1.22**	**2.27**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (10): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A5-ENH	2.5-5.0'/ Ephemeral/ Existing upstream tributary; Will be enhanced and connect to MS-I (TRIB FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width. • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.27**	**0.64**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.41**	**0.70**			
		TOTAL - FCI *(f)*	**1.22**	**2.27**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (11): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A5-TribA-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB3-A5; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) in addition to appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	4			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.63**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.26**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (12): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A5-TribB-ENH	0.5-2.5'/ Ephemeral/ Existing upstream tributary to S2-TRIB3-A5; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings(minimum of seven (7) years) ; • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.61**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.24**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (13): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A6-ENH	0.5-2.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB3; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings(minimum of seven (7) years) ; • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	0	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.63**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.40**	**0.70**			
		TOTAL - FCI *(f)*	**1.15**	**2.26**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (14): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A7-ENH	2.5-5.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB3; Will be enhanced	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years) ; • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.27**	**0.64**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.41**	**0.70**			
		TOTAL - FCI *(f)*	**1.22**	**2.27**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (15): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A8-ENH	2.5-5.0'/ Ephemeral/ Existing upstream tributary to S2-TRIB3; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years) ; • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.27**	**0.64**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.41**	**0.70**			
		TOTAL - FCI *(f)*	**1.22**	**2.27**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (16): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A9-ENH	2.5-5.0'/ Ephemeral/ Existing upstream tributary TO S2-TRIB3; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring after completion of project including any remedial plantings (minimum of seven (7) years) ; • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	3	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	8	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	5	5			
		H3d. Channel Incision	1	8			
		H4a. Pools	1	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.27**	**0.64**			
		WQ1a. Bank Stability	8	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	4	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	7	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	9	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	9	10			
		Water Quality Subtotal FCI *(d)*	**0.54**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	5	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	3	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	8	9			
		HB10. Vegetative Protection	9	10			
		HB11. Riparian Zone	9	10			
		HB12. Riparian Habitat Condition	8	10			
		Habitat Subtotal FCI *(e)*	**0.41**	**0.70**			
		TOTAL - FCI *(f)*	**1.22**	**2.27**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (17): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-ENH	6-15'/ Ephemeral/ Upstream reach of existing tributary; Will be enhanced and connect to MS-I (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) and other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	6	9			
		H3a. Channel Sinuosity	1	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	4	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0.68**			
		WQ1a. Bank Stability	6	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	8			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	10			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0.91**			
		HB1. Flow Regime	1	2			
		HB2. Epifaunal Substrate and Available Cover	4	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	1	5			
		HB9. Bank Stability	6	9			
		HB10. Vegetative Protection	6	10			
		HB11. Riparian Zone	6	10			
		HB12. Riparian Habitat Condition	6	10			
		Habitat Subtotal FCI *(e)*	**0.26**	**0.72**			
		TOTAL - FCI *(f)*	**0.83**	**2.31**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (18): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
T2-BAKER-ENH	2.5-5.0'/ Ephemeral/Existing tributary to Baker Creek; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species. • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	6	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	3	4			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.63**			
		WQ1a. Bank Stability	6	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	10			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	3	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	6	9			
		HB10. Vegetative Protection	6	10			
		HB11. Riparian Zone	6	10			
		HB12. Riparian Habitat Condition	6	10			
		Habitat Subtotal FCI *(e)*	**0.30**	**0.70**			
		TOTAL - FCI *(f)*	**0.95**	**2.26**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (19): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
T3-BAKER-ENH	2.5-5.0'/ Ephemeral/ Existing tributary to Baker Creek; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	1	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species. • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	6	9			
		H3a. Channel Sinuosity	5	5			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	3	4			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.21**	**0.63**			
		WQ1a. Bank Stability	6	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	9			
		WQ4. Composition of Organic Matter	5	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	10			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0.93**			
		HB1. Flow Regime	1	1			
		HB2. Epifaunal Substrate and Available Cover	3	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	6	9			
		HB10. Vegetative Protection	6	10			
		HB11. Riparian Zone	6	10			
		HB12. Riparian Habitat Condition	6	10			
		Habitat Subtotal FCI *(e)*	**0.30**	**0.70**			
		TOTAL - FCI *(f)*	**0.95**	**2.26**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (20): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
T3-TRIB1-ENH	0.5-2.0'/ Ephemeral/ Existing tributary to Baker Creek tributary; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species; • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	4			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	2			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.10**	**0.59**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.14**	**0.70**			
		TOTAL - FCI *(f)*	**0.34**	**2.22**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (21): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
T3-TRIB2-ENH	0.5-2.0'/ Ephemeral/ Existing tributary to Baker Creek tributary; Will be enhanced.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Supplemental plantings of native trees, shrubs, and herbaceous species. • Use of large woody debris (LWD) or other native material for in-channel structure; • Adjustment of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Monitoring and management.	• GCS will reduce channel downcutting and improve stream stability, sediment transport and floodplain connectivity (through increased overbank frequency); • LWD will increase channel roughness and channel sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	2	8			
		H2b. Channel Capacity to Flow Frequency	2	8			
		H2c. Channel Bank Stability	3	9			
		H3a. Channel Sinuosity	0	3			
		H3b. Bottom Substrate Composition	1	9			
		H3c. In stream Bottom Topography OR Manning's n	1	2			
		H3d. Channel Incision	1	8			
		H4a. Pools	0	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.10**	**0.58**			
		WQ1a. Bank Stability	3	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	10			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	1	5			
		HB3. Stream Bottom Substrate	1	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	2	9			
		HB8. Channel Sinuosity	5	5			
		HB9. Bank Stability	3	9			
		HB10. Vegetative Protection	1.5	10			
		HB11. Riparian Zone	1.5	10			
		HB12. Riparian Habitat Condition	1.5	10			
		Habitat Subtotal FCI *(e)*	**0.14**	**0.70**			
		TOTAL - FCI *(f)*	**0.34**	**2.21**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (22): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
FNSR-RST	6-25'/ Intermittent with Perennial Pools/Replaces FNSR channel fragments S1 (FMR BAKER)-PRE, S1-PRE, part of S2-TRIB1-PRE, S2-PRE, part of S2-TRIB3-PRE, S2-TRIB3-A1-PRE, S2-TRIB3-A2-PRE, S2-TRIB3-A3-PRE, and S2-TRIB3,A4-PRE; Existing FNSR channel fragments do not form contiguous channel but function as multiple tributaries to NSR in conjunction with upstream tributaries. The former NSR channel fragments are presented separately in subsequent tables. This table is just for the restored contiguous channel.	H1. Flow Regime and Groundwater Interaction	0	7	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Creation of contiguous channel by connecting segments of channel that had been historically filled and restoration of former channel segments based on natural channel design; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (min. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Stocking of native fish species • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and sediment transport, and create floodplain connectivity at a 1.5 to 2 year frequency; • Flows from drainage area to restored channel will provide varying intermittent stream flow with water retained in perennial pools; • Protection, riparian plantings, and measures to prevent uncontrolled access will provide bank stability, will filter runoff and enhance water quality; • Removal of existing impoundments within work areas of upstream channels will help restore hydrology and sediment transport; • Incorporation of in-channel structures, plus woody debris and leaf litter from established riparian buffer zones, and herbaceous vegetation along channels will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	9			
		H3b. Bottom Substrate Composition	0	7			
		H3c. In stream Bottom Topography OR Manning's n	0	8			
		H3d. Channel Incision	0	9			
		H4a. Pools	0	9			
		H4b. Channel Flow Status	0	9			
		Hydrology Subtotal FCI *(c)*	**0**	**0.83**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	9			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.94**			
		HB1. Flow Regime	0	7			
		HB2. Epifaunal Substrate and Available Cover	0	9			
		HB3. Stream Bottom Substrate	0	8			
		HB4. Pool Variability	0	9			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	9			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	9			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.90**			
		TOTAL - FCI *(f)*	**0**	**2.67**			

TABLE G-2 (23): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-A (TRIB-NSR-MC-RST)	2.5-5'/ Ephemeral/ Stream was historically filled and converted within cropland and pasture.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Restoration of historically-filled former tributary channel based on natural channel design; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (min. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improving stream stability and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity, and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.66**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.73**			
		TOTAL - FCI *(f)*	**0**	**2.32**			

TABLE G-2 (24): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-A-TRIB1	0.5-2.0'/ Ephemeral/ Stream was historically filled and converted within cropland and pasture	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Restoration of historically-filled former tributary channel based on natural channel design; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (min. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improving stream stability and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity, and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	5			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	2			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.60**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	5			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.70**			
		TOTAL - FCI *(f)*	**0**	**2.23**			

TABLE G-2 (25): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-A-TRIB2	0.5-2.0'/ Ephemeral/ Stream was historically filled and converted within cropland and pasture	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Restoration of historically-filled former tributary channel based on natural channel design; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (min. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species reationwidth; Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improving stream stability and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity, and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	4			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	2			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	3			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.59**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	4			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.69**			
		TOTAL - FCI *(f)*	**0**	**2.21**			

TABLE G-2 (26): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-B (TRIB-NSR-MC-RST)	2.5-5.0'/ Ephemeral/ Existing upland pond (UP-6) constructed by impoundment of erosional feature; Area to be regraded to replace UP-6 with created MS-B.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (min. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.66**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.73**			
		TOTAL - FCI *(f)*	**0**	**2.32**			

TABLE G-2 (27): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-B-TRIB1	2.5-5.0'/ Ephemeral/ Existing upland pond (UP-6) constructed by impoundment of erosional feature; area to be regraded to replace UP-6 with created MS-B; upstream tributary to MS-B to be created as MS-B-TRIB1.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations where appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	6			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.64**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	6			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.71**			
		TOTAL - FCI *(f)*	**0**	**2.28**			

TABLE G-2 (28): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-B-TRIB2	2.5-5.0'/ Ephemeral/ Existing upland pond constructed by impoundment of erosional feature; area to be regraded to replace UP-6 with created MS-B; upstream tributary to MS-B to be created as MS-B-TRIB2.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	5			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.63**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	5			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.70**			
		TOTAL - FCI *(f)*	**0**	**2.26**			

TABLE G-2 (29): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-B-TRIB3	2.5-5.0'/ Ephemeral/ Existing upland pond (UP-6) constructed by impoundment of erosional feature; area to be regraded to replace UP-6 with created MS-B; upstream tributary to MS-B to be created as MS-B-TRIB3.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	5			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.63**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	5			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.70**			
		TOTAL - FCI *(f)*	**0**	**2.26**			

TABLE G-2 (30): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-C (TRIB-NSR-MC-RST)	2.5-5.0'/ Ephemeral/ Existing upland pond (UP-19) constructed by impoundment of erosional feature; area to be regraded to replace UP-19 with created MS-C	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.66**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.73**			
		TOTAL - FCI *(f)*	**0**	**2.32**			

TABLE G-2 (31): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-C-TRIB1	2.5-5.0'/ Ephemeral/ Existing upland pond (UP-19) constructed by impoundment of erosional feature; area to be regraded to replace UP-19 with created MS-C; upstream tributary to MS-C to be created as MS-C-TRIB1.	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Removal of dam and grading to create channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	6			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.64**			*Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	6			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.71**			
		TOTAL - FCI *(f)*	**0**	**2.28**			

TABLE G-2 (32): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-D (TRIB-FNSR-RST)	6-15'/ Ephemeral/ Replaces A1-TRIB1-PRE; Existing channel from FM 904 is channelized; new meandering channel to be created including connection with upstream drainage	H1. Flow Regime and Groundwater Interaction	0	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Grading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.71**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.91**			
		HB1. Flow Regime	0	2			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.74**			
		TOTAL - FCI *(f)*	**0**	**2.36**			

TABLE G-2 (33): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-E (TRIB-FNSR-RST)	2.5-5.0'/ Ephemeral/ Created tributary on north side of FNSR-RST to convey drainage toward FNSR-RST; replaces portion of S2-TRIB1-PRE	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring.
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	9			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.67**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	9			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.73**			
		TOTAL - FCI *(f)*	**0**	**2.33**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (34): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-F (TRIB-FNSR-RST)	6-15'/ Ephemeral/ Replaces S2-TRIB1-PRE; Existing channel is channelized; new meandering channel to be created including connection with upstream drainage	H1. Flow Regime and Groundwater Interaction	0	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Regrading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.71**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.91**			
		HB1. Flow Regime	0	2			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.74**			
		TOTAL - FCI *(f)*	**0**	**2.36**			

TABLE G-2 (35): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-F-TRIB1	6-15'/ Ephemeral/ Replaces modified drainage through cropland	H1. Flow Regime and Groundwater Interaction	0	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Regrading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	6			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.69**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.91**			
		HB1. Flow Regime	0	2			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	6			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.73**			
		TOTAL - FCI *(f)*	**0**	**2.33**			

TABLE G-2 (36): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-F-TRIB2	2.5-5.0'/ Ephemeral/ Replaces modified drainage through cropland	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Regrading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	5			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.63**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	5			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.70**			
		TOTAL - FCI *(f)*	**0**	**2.26**			

TABLE G-2 (37): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-G (TRIB-FNSR-RST)	2.5-5.0'/ Ephemeral/ Created tributary on north side of FNSR-RST to convey drainage to new channel	H1. Flow Regime and Groundwater Interaction	0	1	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	6			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	4			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.64**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.93**			
		HB1. Flow Regime	0	1			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	3			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	6			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.71**			
		TOTAL - FCI *(f)*	**0**	**2.27**			

TABLE G-2 (38): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-H (TRIB-FNSR-RST)	6-15'/ Ephemeral/ Replaces channelized portion of SW-TRIB2-PRE; new meandering channel to be created including connection with upstream drainage	H1. Flow Regime and Groundwater Interaction	0	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Grading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	9			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.72**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.91**			
		HB1. Flow Regime	0	2			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	9			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.75**			
		TOTAL - FCI *(f)*	**0**	**2.38**			

TABLE G-2 (39): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
MS-I (TRIB-FNSR-RST)	6-15'/ Ephemeral/ Replaces portion of S2-TRIB3-PRE; connects S2-TRIB3-ENH to FNSR-RST	H1. Flow Regime and Groundwater Interaction	0	2	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Regrading and creation of tributary channel based on natural channel design to restore hydrology and sediment transport; • Use of large woody debris (LWD) or other native material for in-channel structure; • Maintenance of channel design gradient by installing grade control structures (GCS) made from native material (rock or woody debris) where appropriate; • Creation of pools in combination with LWD and GCS and other locations when appropriate; • Creation of buffer zones around channel (approx. 120' width) plus appropriate meander belt width; • Plantings of native trees, shrubs, and herbaceous species; • Monitoring and management.	• Stream channel and valley design will restore hydrologic function and will provide sediment transport and floodplain connectivity; • GCS will control channel downcutting, improve stream stability, and provide sediment transport; • LWD will provide channel roughness, enhance sinuosity and improve bank stability; • Created pools will retain water; • Protection, riparian plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Woody debris, leaf litter, and overhanging herbaceous vegetation from established buffer zones will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	8			
		H2b. Channel Capacity to Flow Frequency	0	8			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	8			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	8			
		H4a. Pools	0	7			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0**	**0.71**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	8			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	8			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0**	**0.91**			
		HB1. Flow Regime	0	2			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	4			
		HB5. Sediment Deposition and Scouring	0	9			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	8			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0**	**0.74**			
		TOTAL - FCI *(f)*	**0**	**2.36**			

TABLE G-2 (40): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
NSR-MC-RST	16-25'/ Intermittent/ Protection of exposed shale in bed and banks of river channel to be provided with earthen fill generated from grading existing enlarged channel side slopes to create stable slopes of approx. 5:1. Earthen material generated would be used to bury exposed shale in bed and banks of river channel. Meandering base flow channel would be created within the protective earthen fill. Multiple shallow pools (~3 feet deep) would be created within base flow channel. Earthen fill and graded channel side slopes would be planted with woody vegetation to create forested floodplain and riparian zone. Discharge velocities to base flow channel would range from 3.2 fps for the 1-year frequency storm event to 5.7 fps for the 100-year storm event. Stepped drop structure to be constructed immediately upstream of Baker Creek confluence to transition to downstream river channel.	H1. Flow Regime and Groundwater Interaction	0	3	• Protection within large contiguous mitigation area; • Implementation of measures to prevent uncontrolled access (cattle, etc.) from outside aquatic mitigation boundary; • Grading existing channel vertical side slopes to stable slopes of approximately 5:1; • Earthen material generated from graded slopes used to bury exposed shale in the bed and banks of the river channel to an approximate depth of 10 feet; • Creation of base flow meandering channel within restored floodplain downstream of Leon Hurse Dam to a transition structure immediately upstream of confluence of Baker Creek • Channel design to be based on natural channel design; • Base flow channel designed to convey up to 2-year frequency flow; • Plantings of native woody and herbaceous vegetation to establish wooded floodplain and riparian habitat; • Greater than 2-year frequency flow will provide overbanking to established forested floodplain created within the existing oversized channel; • Creation of buffer zones (approx~. 500' wide) plus appropriate meander belt width; • Connection of restored, created tributaries and restored former NSR channel to created base flow channel • Monitoring and management.	• Discharges from Leon Hurse Dam will maintain intermittent flow within created base flow channel; • Design for base flow channel and riparian plantings to provide stable banks, appropriate channel capacity to flow frequency to achieve overbanking for >2 year flow events, will provide sediment transport from contributing tributaries for improved bottom substrate composition and topography; • Channel design length will be >1.2X valley length; • Channel design will be stable at spillway discharge velocities • Design to include shallow pool areas for increased hydrology and habitat variability; • Protection, plantings, and measures to prevent uncontrolled access will improve bank stability, will filter runoff and enhance water quality; • Incorporation of in-channel structures, woody debris and leaf litter from established riparian buffer zones, and herbaceous vegetation along channels will enhance in-stream habitat and biological productivity.	• Mitigation measures in place and stable at release of monitoring period after completion of project including any remedial plantings (minimum of seven (7) years); • 200 woody stems per acre with diversity, vegetative cover, and invasive species standards stated in mitigation plan; • SWAMPIM Score achieved at release of monitoring. *Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*
		H2a. Channel Condition/ Alteration	0	6			
		H2b. Channel Capacity to Flow Frequency	0	5			
		H2c. Channel Bank Stability	0	9			
		H3a. Channel Sinuosity	0	6			
		H3b. Bottom Substrate Composition	0	9			
		H3c. In stream Bottom Topography OR Manning's n	0	5			
		H3d. Channel Incision	0	9			
		H4a. Pools	0	4			
		H4b. Channel Flow Status	0	7			
		Hydrology Subtotal FCI *(c)*	**0.00**	**0.63**			
		WQ1a. Bank Stability	0	9			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	7			
		WQ2. Water Clarity	0	9			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	9			
		WQ4. Composition of Organic Matter	0	9			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	0	10			
		WQ6a. Riparian Zone Width (from stream edge to field)	0	10			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	0	10			
		Water Quality Subtotal FCI *(d)*	**0.00**	**0.91**			
		HB1. Flow Regime	0	3			
		HB2. Epifaunal Substrate and Available Cover	0	5			
		HB3. Stream Bottom Substrate	0	6			
		HB4. Pool Variability	0	2			
		HB5. Sediment Deposition and Scouring	0	8			
		HB6. Channel Flow Status	0	7			
		HB7. Channel Alteration	0	9			
		HB8. Channel Sinuosity	0	6			
		HB9. Bank Stability	0	9			
		HB10. Vegetative Protection	0	10			
		HB11. Riparian Zone	0	10			
		HB12. Riparian Habitat Condition	0	10			
		Habitat Subtotal FCI *(e)*	**0.00**	**0.71**			
		TOTAL - FCI *(f)*	**0.00**	**2.25**			

TABLE G-2 (41): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
NSR-MC-PRE	16-25'/ Intermittent/ Channel to be filled to reclaim eroded North Sulphur River channel. Mitigation activities, as described in NSR-MC-RST, will be constructed within the reclaimed channel.	H1. Flow Regime and Groundwater Interaction	5	0	• Protection of eroding shale downstream of dam will involve grading existing channel vertical side slopes to approximate 5:1 stable slopes; • Earthen material generated from grading of channel side slopes used to bury exposed shale in the bed and banks of the river channel to approximate depth of 10 feet; • Construction of transition (grade control) structure within channel immediately upstream of the confluence of the Main North Sulphur River channel and Baker Creek	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	2	0			
		H3a. Channel Sinuosity	2	0			
		H3b. Bottom Substrate Composition	0	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	1	0			
		H4a. Pools	3	0			
		H4b. Channel Flow Status	2	0			
		Hydrology Subtotal FCI *(c)*	**0.16**	**0.00**			
		WQ1a. Bank Stability	2	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	0	0			
		WQ2. Water Clarity	2	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	1	0			
		WQ4. Composition of Organic Matter	2	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	2	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	2	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	2	0			
		Water Quality Subtotal FCI *(d)*	**0.16**	**0.00**			
		HB1. Flow Regime	4	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	1	0			
		HB5. Sediment Deposition and Scouring	1	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	1	0			
		HB8. Channel Sinuosity	2	0			
		HB9. Bank Stability	2	0			
		HB10. Vegetative Protection	3	0			
		HB11. Riparian Zone	3	0			
		HB12. Riparian Habitat Condition	3.2	0			
		Habitat Subtotal FCI *(e)*	**0.19**	**0.00**			
		TOTAL - FCI *(f)*	**0.51**	**0.00**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (42): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S1 (FMR BAKER)-PRE	6-15'/ Ephemeral/ Former Baker Creek where it converged with FNSR located south of current NSR Main Channel; currently functions as tributary to NSR Main Channel; Will be replaced by FNSR-RST	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0	*Notes:* *(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.* *(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.* *(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.* *(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.* *(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.*		
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.09**	0			
		TOTAL - FCI *(f)*	**0.25**	**0**			

TABLE G-2 (43): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S1-PRE	6-15'/ Ephemeral/ Existing FNSR channel fragments do not form contiguous channel but function as multiple tributaries to NSR in conjunction with upstream tributaries. The restored NSR channel is presented in separate table. This table for an existing former NSR segment. Will be replaced by FNSR-RST	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.09**	0			
		TOTAL - FCI *(f)*	**0.25**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (44): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S1-TRIB1-PRE	2.5-5.0'/ Ephemeral/ Channelized reach of tributary to downstream FNSR channel fragment; Will be replaced by MS-D (TRIB-FNSR-RST)	H1. Flow Regime and Groundwater Interaction	1	0	• Creation of meandering tributary channel will involve fill of historically channelized reach of this tributary and grading to create new channel. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	2	0			
		H2b. Channel Capacity to Flow Frequency	2	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	1	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.11**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	2	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.10**	0			
		TOTAL - FCI *(f)*	**0.32**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (45): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-PRE	6-15'/ Ephemeral/ Existing FNSR channel fragments do not form contiguous channel but function as multiple tributaries to NSR in conjunction with upstream tributaries. The restored NSR channel is presented in separate table. This table is just for an existing FNSR segment; Will be replaced by FNSR-RST	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.09**	0			
		TOTAL - FCI *(f)*	**0.25**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (46): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-PRE	6-15'/ Ephemeral/ Existing FNSR channel fragments do not form contiguous channel but function as multiple tributaries to NSR in conjunction with upstream tributaries. The restored NSR channel is presented in separate table. This table is just for an existing FNSR segment; Will be replaced by FNSR-RST.	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	6	0			
		H3a. Channel Sinuosity	1	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	4	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0**			
		WQ1a. Bank Stability	6	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	0			
		WQ4. Composition of Organic Matter	5	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	0			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	4	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	1	0			
		HB9. Bank Stability	6	0			
		HB10. Vegetative Protection	6	0			
		HB11. Riparian Zone	6	0			
		HB12. Riparian Habitat Condition	6	0			
		Habitat Subtotal FCI *(e)*	**0.26**	0			
		TOTAL - FCI *(f)*	**0.83**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (47): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB1-PRE	6-15'/ Ephemeral/ Channelized reach of east tributary to middle FNSR channel fragment; Will be replaced by MS-F (TRIB-FNSR-RST).	H1. Flow Regime and Groundwater Interaction	1	0	• Creation of meandering tributary channel will involve fill of historically channelized reach of tributary and grading to create new channel. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.09**	0			
		TOTAL - FCI *(f)*	**0.25**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (48): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB2-PRE	2.5-5.0'/ Ephemeral/ Channelized reach of S2-TRIB2; Will be replaced by MS-H (TRIB-FNSR-RST).	H1. Flow Regime and Groundwater Interaction	1	0	• Creation of meandering tributary channel will involve fill of historically channelized reach of this tributary and grading to create new channel. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	2	0			
		H2b. Channel Capacity to Flow Frequency	2	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	1	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.11**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	2	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.10**	0			
		TOTAL - FCI *(f)*	**0.32**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (49): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A1-PRE	6-15'/ Ephemeral/ FNSR segment that functions as tributary to S2-TRIB3; Will be replaced by FNSR-RST	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	6	0			
		H3a. Channel Sinuosity	1	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	4	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0**			
		WQ1a. Bank Stability	6	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	0			
		WQ4. Composition of Organic Matter	5	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	0			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	4	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	1	0			
		HB9. Bank Stability	6	0			
		HB10. Vegetative Protection	6	0			
		HB11. Riparian Zone	6	0			
		HB12. Riparian Habitat Condition	6	0			
		Habitat Subtotal FCI *(e)*	**0.26**	0			
		TOTAL - FCI *(f)*	**0.83**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (50): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A2-PRE	6-15'/ Ephemeral/ FNSR segment that functions as tributary to S2-TRIB3; Will be replaced by FNSR-RST.	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	6	0			
		H3a. Channel Sinuosity	1	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	4	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0**			
		WQ1a. Bank Stability	6	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	0			
		WQ4. Composition of Organic Matter	5	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	0			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	4	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	1	0			
		HB9. Bank Stability	6	0			
		HB10. Vegetative Protection	6	0			
		HB11. Riparian Zone	6	0			
		HB12. Riparian Habitat Condition	6	0			
		Habitat Subtotal FCI *(e)*	**0.26**	0			
		TOTAL - FCI *(f)*	**0.83**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (51): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A3-PRE	6-15'/ Ephemeral/ FNSR segment that functions as tributary to S2-TRIB3; Will be replaced by FNSR-RST.	H1. Flow Regime and Groundwater Interaction	1	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	6	0			
		H3a. Channel Sinuosity	1	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	4	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0**			
		WQ1a. Bank Stability	6	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	0			
		WQ4. Composition of Organic Matter	5	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	0			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	4	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	1	0			
		HB9. Bank Stability	6	0			
		HB10. Vegetative Protection	6	0			
		HB11. Riparian Zone	6	0			
		HB12. Riparian Habitat Condition	6	0			
		Habitat Subtotal FCI *(e)*	**0.26**	0			
		TOTAL - FCI *(f)*	**0.83**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (52): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-A4-PRE	0.5-2.0'/ Ephemeral/ Ditch conveying flow from Hedrick Branch to FNSR segment Will be replaced by FNSR-RST.	H1. Flow Regime and Groundwater Interaction	0	0	• Due to depth and eroded nature of channel, channel restoration in its current location is infeasible. Channel segment will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	2	0			
		H2b. Channel Capacity to Flow Frequency	2	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	1	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.10**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	0	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	2	0			
		HB8. Channel Sinuosity	5	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.14**	0			
		TOTAL - FCI *(f)*	**0.34**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (53): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-PRE	6-15'/ Ephemeral/ Downstream portion of existing tributary that discharges to channelized reach of FNSR; Section within fragmented wooded riparian zone; Will be replaced by MS-I (TRIB-FNSR-RST).	H1. Flow Regime and Groundwater Interaction	1	0	• Portion of existing tributary that discharges to channelized reach of FNSR. Channel segment will be filled. • Grading to construct new channel segment (MS-I) to connect upstream tributaries to FNSR-RST based on natural channel design. • Existing trees in fill areas will be harvested as appropriate for use as large woody debris in other porions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	6	0			
		H3a. Channel Sinuosity	1	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	4	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.13**	**0**			
		WQ1a. Bank Stability	6	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	5	0			
		WQ4. Composition of Organic Matter	5	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	6	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	6	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	6	0			
		Water Quality Subtotal FCI *(d)*	**0.44**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	4	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	1	0			
		HB9. Bank Stability	6	0			
		HB10. Vegetative Protection	6	0			
		HB11. Riparian Zone	6	0			
		HB12. Riparian Habitat Condition	6	0			
		Habitat Subtotal FCI *(e)*	**0.26**	0			
		TOTAL - FCI *(f)*	**0.83**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

TABLE G-2 (54): MITIGATION SUMMARY TABLE – SWAMPIM PRE- AND POST-PROJECT STREAM SCORES AND MITIGATION INFORMATION

ID_NAME	WIDTH OHWM/ CLASSIFICATION/DESC.	SWAMPIM METRICS *(a, b)*	BASELINE (EXISTING) SCORES	PROJECTED SCORES	MITIGATION ACTIVITIES/WORK PERFORMED	RATIONALE FOR LIFT	SUCCESS CRITERIA
S2-TRIB3-PRE	6-15'/ Ephemeral/ Downstream portion of existing tributary that discharges to channelized reach of FNSR; Section within cropland; Will be replaced by MS-I (TRIB-FNSR-RST).	H1. Flow Regime and Groundwater Interaction	1	0	• Channelized reach of FNSR will be filled. • Existing trees will be harvested as appropriate for use as large woody debris in other portions of the project.	N/A	N/A
		H2a. Channel Condition/ Alteration	0	0			
		H2b. Channel Capacity to Flow Frequency	0	0			
		H2c. Channel Bank Stability	3	0			
		H3a. Channel Sinuosity	0	0			
		H3b. Bottom Substrate Composition	1	0			
		H3c. In stream Bottom Topography OR Manning's n	1	0			
		H3d. Channel Incision	0	0			
		H4a. Pools	0	0			
		H4b. Channel Flow Status	0	0			
		Hydrology Subtotal FCI *(c)*	**0.06**	**0**			
		WQ1a. Bank Stability	3	0			
		WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition	1	0			
		WQ2. Water Clarity	0	0			
		WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation	0	0			
		WQ4. Composition of Organic Matter	0	0			
		WQ5. Land Use Pattern Beyond Immediate Riparian Zone	1.5	0			
		WQ6a. Riparian Zone Width (from stream edge to field)	1.5	0			
		WQ6b. Riparian Zone Vegetation Protection/Completeness	1.5	0			
		Water Quality Subtotal FCI *(d)*	**0.11**	**0**			
		HB1. Flow Regime	1	0			
		HB2. Epifaunal Substrate and Available Cover	1	0			
		HB3. Stream Bottom Substrate	1	0			
		HB4. Pool Variability	0	0			
		HB5. Sediment Deposition and Scouring	0	0			
		HB6. Channel Flow Status	0	0			
		HB7. Channel Alteration	0	0			
		HB8. Channel Sinuosity	0	0			
		HB9. Bank Stability	3	0			
		HB10. Vegetative Protection	1.5	0			
		HB11. Riparian Zone	1.5	0			
		HB12. Riparian Habitat Condition	1.5	0			
		Habitat Subtotal FCI *(e)*	**0.09**	0			
		TOTAL - FCI *(f)*	**0.25**	**0**			

Notes:
(a) Refer to SWAMPIM Documentation (included in Appendix C of Proposed Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality/Biogeochemical Functions; "HB" = Habitat Functions.
(c) Hydrology Subtotal FCI Score = Sum of individual scores ÷100 (highest possible score for Hydrology). Shown as rounded to the nearest hundredth.
(d) Water Quality Subtotal FCI Score = Sum of individual scores ÷80 (highest possible score for Water Quality). Shown as rounded to the nearest hundredth.
(e) Habitat Subtotal FCI Score = Sum of individual scores ÷120 (highest possible score for Habitat). Shown as rounded to the nearest hundredth.
(f) Total FCI = Hydrology Subtotal FCI + Water Quality Subtotal FCI + Habitat Subtotal FCI. Value for the Total is calculated using spreadsheet values for the Subtotals, then rounded to the nearest hundredth.

APPENDIX H

WATER USE PERMIT NO.: 5821

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

WATER USE PERMIT

Permit No. 5821 Type §§ 11.121, 11.085

Permittee:	Upper Trinity Regional Water District	Address:	P.O. Drawer 305 Lewisville, Texas 75067
Filed:	August 13, 2004	Granted:	DEC 1 1 2013
Purposes:	Municipal, Industrial, Agricultural, and Recreation	Counties:	Fannin, Collin, Cooke, Dallas, Denton, Grayson, and Wise
Watercourse:	North Sulphur River, Tributary of the Sulphur River	Watershed:	Sulphur and Trinity River Basins

WHEREAS, Upper Trinity Regional Water District (UTRWD, Applicant or Permittee) applied for a water use permit to construct and maintain a dam and reservoir (Lake Ralph Hall) with a maximum capacity of 180,000 acre-feet of water and a surface area of approximately 8,500 acres, on the North Sulphur River, tributary of the Sulphur River, Sulphur River Basin in Fannin County for recreation purposes; and

WHEREAS, Applicant seeks to divert and use not to exceed 45,000 acre-feet of water per year from the perimeter of Lake Ralph Hall for municipal, industrial, and agricultural purposes at a maximum combined diversion rate of 205 cfs (92,000 gpm); and

WHEREAS, Applicant indicates that diversions from the reservoir may be "overdrafted" as a part of the system operation with existing UTRWD supplies from other basins to achieve maximum conservation of limited water resources; and

WHEREAS, Applicant indicates that of the 45,000 acre-feet of water per year requested, 34,082 acre-feet of water per year is available on a firm basis; and

WHEREAS, Applicant seeks to use the water within its service area in all or parts of Collin, Cooke, Dallas, Denton, Fannin, Grayson, and Wise Counties and also seeks authorization for the interbasin transfer of water to those counties in the Trinity River Basin pursuant to Texas Water Code (TWC) ' 11.085; and

WHEREAS, the proposed Lake Ralph Hall is located 22.5 miles in a southeast direction from City of Bonham and 4.8 miles in a northeast direction from City of Ladonia. Station 70+00 on the centerline of the proposed dam is S 32E W, 1,600 feet from the northeast corner of H. McMillian Survey, Abstract No. 713, in Fannin County, Texas also being at 33.463E N Latitude, 95.901E W Longitude; and

WHEREAS, to the extent that return flows exist, they will be returned to various streams in the Trinity River Basin and the Sulphur River Basin; and

WHEREAS, the Texas Commission on Environmental Quality (TCEQ) finds that jurisdiction over the application is established; and

WHEREAS, Applicant submitted the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall*, which was accepted and approved by the Executive Director; and

WHEREAS, Applicant submitted the *Lake Ralph Hall Accounting Plan*, which was accepted and approved by the Executive Director; and

WHEREAS, the Executive Director performed a water availability analysis and determined that 34,082 acre-feet of water per year is available on a firm basis from the proposed reservoir; and

WHEREAS, the Executive Director recommends that special conditions be included in the permit to protect instream uses, water quality conditions, and senior and superior water rights; and

WHEREAS, notice of the application was mailed and published, and public meetings were held on March 27, 2006 and March 28, 2006; and

WHEREAS, numerous requests for a contested case hearing were received for this application; and

WHEREAS, the Commission has complied with the requirements of the Texas Water Code and Rules of the Texas Commission on Environmental Quality in issuing this water use permit;

NOW, THEREFORE, this Water Use Permit No. 5821 is issued to Upper Trinity Regional Water District subject to the following terms and conditions:

1. IMPOUNDMENT

Permittee is authorized to construct and maintain a dam and reservoir (Lake Ralph Hall) with a maximum capacity of 180,000 acre-feet of water on the North Sulphur River, tributary of the Sulphur River, Sulphur River Basin in Fannin County. Station 70+00 on the centerline of the dam will be located S 32E W, 1,600 feet from the northeast corner of H. McMillian Survey, Abstract No. 713 in

Fannin County, at 33.463E N Latitude, 95.901E W Longitude, 22.5 miles in a southeast direction from City of Bonham, and 4.8 miles in a northeast direction from City of Ladonia in Fannin County, Texas.

2. USE

A. Permittee is authorized to use the impounded water for recreation purposes.

B. Permittee is authorized to divert and use not to exceed 45,000 acre-feet of water per year, of which 34,082 acre-feet of water per year is available on a firm basis, for municipal, industrial, and agricultural purposes.

C. Permittee is authorized an interbasin transfer to use the authorized water within its service area in all or parts of Fannin, Collin, Cooke, Dallas, Denton, Grayson, and Wise Counties within the Sulphur and Trinity River Basins.

3. DIVERSION

A. Permittee is authorized to divert the authorized water from any point on the perimeter of Lake Ralph Hall.

B. Permittee is authorized to divert the authorized water at a maximum combined diversion rate of 205 cfs (92,000 gpm).

4. TIME PRIORITY

The time priority for this right is August 13, 2004.

5. CONSERVATION

Permittee shall implement water conservation plans that provide for the utilization of those practices, techniques, and technologies that will reduce or maintain the consumption of water, prevent or reduce the loss or waste of water, maintain or improve the efficiency in the use of water, increase the recycling and reuse of water, and prevent the pollution of water, so that a water supply is made available for future or alternative uses. Permittee shall develop, submit, and implement water conservation plans as required by law. Each water conservation plan submitted to the Executive Director shall comply with relevant state conservation standards and shall be designed to result in the highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the Permittee at the time of submission. Such plans shall include a requirement that in every wholesale water contract entered into, on or after the effective date of this permit, including any contract extension or renewal, each successive wholesale customer will develop and implement conservation measures that will result in the highest practicable levels of water conservation and efficiency in

order to comply with TWC § 11.085 (l)(2). If Permittee authorizes the resale of water by a customer, then the contract for resale must have water conservation requirements so that each successive wholesale customer in the resale of the water will be required to implement water conservation measures.

6. SPECIAL CONDITIONS

A. Permittee shall only impound and divert water authorized by this permit in accordance with the most recently approved *Lake Ralph Hall Accounting Plan*. Permittee shall maintain said plan in electronic format and make the data available to the Executive Director upon request. Any modifications to the *Lake Ralph Hall Accounting Plan* shall be approved by the Executive Director. Only such modification that changes the permit terms must be in the form of an amendment to the permit. Should Permittee fail to maintain the accounting plan or notify the Executive Director of any modifications to the plan, Permittee shall immediately cease impoundments and diversions authorized in Paragraph 1. IMPOUNDMENT and Paragraph 2. USE, and either apply to amend the permit, or voluntarily forfeit the permit. If Permittee fails to amend the accounting plan or forfeit the permit, the Commission shall be notified immediately by Permittee upon modification of the accounting plan and provided with the appropriate documents effectuating such changes.

B. All mitigation plans and monitoring required herein shall comply with conditions set forth in 33 United States Code, § 1341, commonly known as the federal Clean Water Act (CWA) § 401 and Title 30 TAC § 279. Mitigation and monitoring plans shall also comply with § 404 of the CWA.

C. Following deliberate impoundment of water in Lake Ralph Hall to elevation 510 feet mean sea level (MSL), Permittee shall complete and maintain the restored channel mitigation area with stored water released from Lake Ralph Hall as described in the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall (revised March 18, 2010)* and documented in the *Lake Ralph Hall Accounting Plan.* Prior to operation of the recirculation pump system in the restored channel mitigation area, Permittee shall obtain the appropriate authorizations under § 11.042 of the Texas Water Code.

D. As identified in the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall,* Permittee shall construct approximately 14,500 linear feet of riparian habitat along a segment of the abandoned channel of the original North Sulphur River (the restored channel mitigation area) located on the south bank of the existing river channel immediately downstream of the proposed dam for Lake Ralph Hall.

E. Impoundment of water and diversions under this permit are contingent upon commencement of construction of the approved *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall.* Modifications or changes to this design must be approved by the Executive Director. Only such modification that changes the permit terms must be in the form of an amendment to the permit.

F. Permittee shall install flow measurement devices to measure flow associated with the recirculation pump system identified in the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall.* Those measurement devices shall be connected to the SCADA system as required by Special Condition G.

G. Permittee shall install multiple water quality and water level logger instrumentation in the deeper pool habitats, as identified in the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall,* in the restored channel mitigation area to continuously monitor dissolved oxygen, temperature, and water level within the pools. Permittee shall connect the monitoring instruments to a supervisory control and data acquisition (SCADA) system to detect a measurement below the *Texas Surface Water Quality Standards* (Title 30 Texas Administrative Code (TAC) § 307) for Segment 0305 for a period of greater than 24 hours or detect if the water surface in the pools drops more than one foot below its normal level. The instrumentation and SCADA system shall be maintained in good working order throughout the term of the permit. Permittee shall maintain records of the SCADA system data for a period of not less than five years after its collection and shall make it available to the Executive Director upon request.

H. In the event that the above mentioned water level and/or water quality parameters within the restored channel mitigation area drop below the Water Quality Standards for Segment 0305 for a period greater than 24 hours, Permittee shall release water from Lake Ralph Hall, and/or utilize the recirculation pump system to provide flow through the mitigation area in order to restore the water level or help ensure compliance with the Water Quality Standards.

I. Upon completion of the construction and enhancement of the restored channel mitigation area, Permittee shall establish and maintain an appropriate fish community representative of the aquatic life use designation for Segment 0305 of the *Texas Surface Water Quality Standards* (Title 30 TAC § 307). If available, the initial fish stocking shall be composed of, at a minimum, fish species listed in the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian*

Habitat Mitigation Area for Lake Ralph Hall. Permittee shall obtain the fish to be stocked in the restored channel from local sources if available.

J. Permittee shall visit the restored channel mitigation area at a minimum of once per month for a period of five years following deliberate impoundment of water in Lake Ralph Hall and completion of the mitigation area to inspect and observe the condition of the mitigation area and take any appropriate action, such as initiate reservoir releases or engage the recirculation pump system, so as to ensure compliance with the *Conceptual Design and Analysis of the Proposed North Sulphur River Riparian Habitat Mitigation Area for Lake Ralph Hall.*

K. In consultation with the Executive Director, Permittee shall conduct monitoring of the restored channel mitigation area twice a year for a period of five years following deliberate impoundment of water in Lake Ralph Hall and completion of the mitigation area. Monitoring shall include discharge measurements, assessment of fish and macroinvertebrate communities, physical habitat assessment, and documenting survival success of the planted vegetation within the restored channel riparian area. All aquatic biological monitoring and physical habitat assessments shall take place in the index period (March 15 – October 15) with at least one of the twice a year monitoring events taking place in the critical period (July 1 – September 15). Aquatic biological monitoring and habitat characterization shall follow TCEQ protocols set forth in the *Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Community and Habitat Data.* (TCEQ 2005).

L. Permittee shall submit a report to the Executive Director every two years summarizing the twice a year monitoring activities in Special Condition K. Permittee shall also submit a final report at the end of the five-year monitoring period summarizing the monitoring efforts. The report shall include an assessment of the fish and macroinvertebrate communities and the biological metric scoring criteria used to assess aquatic life uses. In the event that aquatic life is not meeting the water quality standards for Segment 0305, the report shall identify and outline remedial management strategies to be implemented to meet the designated aquatic life use.

M. Permittee shall establish and maintain a riparian buffer zone of permanent vegetation around the perimeter of the reservoir averaging at least 50 feet in width with the exception of reasonable access areas and the area of the dam and spillway. Permittee shall also establish and maintain riparian buffer zones 25 to 50 feet wide at or below elevation 560 feet MSL along Bear Creek, Brushy Creek, Pickle Creek, Davis Creek, Leggets Branch, Bralley Pool Creek, Merrill Creek, the North Sulphur River, and along unnamed tributaries within the area of the reservoir project. The buffer zone shall be planted with native vegetation as necessary to ensure

complete coverage at maturity.

N. Permittee shall implement measures to minimize impacts to aquatic resources due to entrainment or impingement including, but not limited to, the installation of screens at the diversion facilities.

O. Permittee shall install and maintain measuring devices which account for, within 5% accuracy, the quantity of water diverted from the points authorized above in Paragraph 3. DIVERSION and maintain measurement records. Permittee shall allow representatives of the TCEQ reasonable access to the property to inspect the measuring device and records.

7. TIME LIMITATIONS

A. Construction of the dam and reservoir shall be in accordance with plans approved by the Executive Director. Construction of the dam without final approval of the construction plans is a violation of this authorization.

B. Construction shall begin within two years of issuance of this permit and be completed within ten years of the issuance of this permit, unless Permittee applies for and is subsequently granted an extension of time before the expiration of these time limitations.

This water use permit is issued subject to all superior and senior water rights in the Sulphur River Basin.

Permittee agrees to be bound by the terms, conditions, and provisions contained herein and such agreement is a condition precedent to the granting of this permit.

All other matters requested in the application which are not specifically granted by this water use permit are denied.

This water use permit is issued subject to the Rules of the Texas Commission on Environmental Quality and to the right of continuing supervision of State resources exercised by the Commission.

Bryan W. Shaw
For the Commission

ISSUED: DEC 11 2013

Appendix M

Draft Programmatic Agreement

PROGRAMMATIC AGREEMENT

AMONG
THE UNITED STATES ARMY, CORPS OF ENGINEERS, FORT WORTH DISTRICT, THE TEXAS STATE HISTORIC PRESERVATION OFFICER, THE UPPER TRINITY REGIONAL WATER DISTRICT, REGARDING COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 (AS AMENDED) FOR THE PROPOSED LAKE RALPH HALL TO BE LOCATED NORTH OF THE CITY OF LADONIA, FANNIN COUNTY, TEXAS AND REQUIRING AN INDIVIDUAL PERMIT ISSUED UNDER SECTION 404 UNDER THE CLEAN WATER ACT

Permit Number: SWF-2003-00336

WHEREAS, the United States Army Corps of Engineers, Fort Worth District (USACE), the lead Federal agency, is reviewing a permit application under Section 404 of the Clean Water Act for construction of the Lake Ralph Hall by the Upper Trinity Regional Water District (UTRWD); and

WHEREAS, the UTRWD has proposed to construct the Lake Ralph Hall (Project), which will be located on the North Sulphur River north of Ladonia, Fannin County, Texas (see attached map); and

WHEREAS, construction of the Lake Ralph Hall will require a permit in order to comply with Section 404 of the Clean Water Act; and

WHEREAS, issuing a permit pursuant to Section 404 of the Clean Water Act requires review of the undertaking under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended); and

WHEREAS, the USACE, in consultation with the Texas State Historic Preservation Officer (SHPO), considered the potential effects of the Project as provided in 36 CFR 800 and 33 CFR 325 and established an Area of Potential Effects (APE) for direct and indirect effects that encompasses the entire area covered by the terms of the Environmental Impact Statement (EIS), which includes the 8,500-acre area comprising the conservation pool (elevation 551 feet msl, 7,568 acres) and the 100-year storm event (elevation of 554 feet msl, 932 acres), all areas ancillary facilities, all areas of the mitigation plan, all roads, and pipeline rights-of-way; and

WHEREAS, the APE shall cover the entire 100-year storm event elevation of the proposed Lake Ralph Hall reservoir, associated ancillary facilities such as pump stations, pipelines and associated workspace and facilities for pipelines, areas determined as mitigation land for the Project's impacts to waters of the U.S., public

roads to be impacted, new roads to be built as a result of the Project, and public roads that require expansion or upgrades as a result of the Project; and

WHEREAS, the USACE has determined that the proposed Project has the potential to adversely affect historic properties that are eligible for listing in the National Register of Historic Places (National Register), and has consulted with the SHPO, pursuant to the Advisory Council on Historic Preservation (ACHP) regulations, *Protection of Historic Properties* (36 CFR 800), implementing Section 106 of the National Historic Preservation Act (54 USC 300101); 33 CFR 325 (Appendix C) *Procedures for the Protection of Historic Properties*; Revised Interim Guidance for Implementing Appendix C of 33 CFR 325 with the ACHP regulations at 36 CFR 800 (2005); and

WHEREAS, UTRWD is a political subdivision of the State of Texas, and as such, is subject to compliance with the Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code); and

WHEREAS, the Texas Historical Commission (THC) is the agency that administers the Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code) and issues state Antiquities permits for archeological studies in accordance with that statute, and also has responsibilities under the Chapter 711 of the Texas Health and Safety Code regarding the discovery and disposal of abandoned or unknown cemeteries; and

WHEREAS, the Executive Director of the THC serves as the SHPO for Texas and has the authority to enter into Section 106 agreements; and

WHEREAS, the USACE and the SHPO agreed to accomplish compliance with Section 106 through the development and execution of this Programmatic Agreement (PA), and to streamline compliance with the regulations by developing procedures to satisfactorily take into account the effects of this Project on historic properties, and to increase flexibility in applying the regulations and reduce redundant documentation in a manner that will allow the UTRWD to proceed with construction in an expeditious manner; and

WHEREAS, the USACE has consulted with the Caddo Nation of Oklahoma, Choctaw Nation of Oklahoma, Comanche Nation of Oklahoma, Tonkawa Tribe of Oklahoma, and Wichita and Affiliated Tribes, and invited them to sign this agreement by letter dated May 2, 2017; and

WHEREAS, the Caddo Nation of Oklahoma, the Choctaw Nation of Oklahoma, and the Comanche Nation have requested consulting party status by phone, and the USACE invited the Caddo Nation of Oklahoma, the Choctaw Nation of Oklahoma, and the Comanche Nation to be Consulting Parties to this PA; and

WHEREAS, the UTRWD and other consulting parties have been notified and provided an opportunity to comment on and participate in consultation on this Project; and

WHEREAS, the USACE has invited the ACHP to participate in consultation for this Project, and the ACHP has chosen not to participate in development of this PA; and

NOW, THEREFORE; the USACE, the SHPO, and UTRWD agree that the Project shall be implemented in accordance with the following stipulations in order to take into account the effect of the Project on historic properties to satisfy the USACE's Section 106 responsibilities for this Project.

STIPULATIONS

The USACE will ensure that the following stipulations are carried out by UTRWD to identify historic properties and address adverse effects to such properties that will result from construction of Lake Ralph Hall.

I. FRAMEWORK

A. All work conducted under the PA will be performed in a manner that is consistent with the Secretary of Interior's (SOI's) "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716-44740; September 23, 1983) as amended, or the SOI's "Standards for the Treatment of Historic Properties" (36 CFR 68) as appropriate.

B. Critical steps in the identification process include a literature review, tribal consultation (as appropriate), historical and archival research, consultation with other knowledgeable parties, and field investigations.

II. LITERATURE REVIEW AND RESEARCH DESIGN

A. UTRWD prepared a report summarizing and synthesizing all previous archeological and architectural studies conducted at the proposed reservoir. A 15 percent sample survey was conducted to assist in planning for the survey of the remainder of the lake and a report of results was prepared in 2005. The background research and sample survey results are needed to plan the research design (RD) that will guide the survey strategy for the remainder of the reservoir and will assist in the preparation of the scope-of-work required for the Antiquities permit. The RD will guide the survey strategy for the direct and indirect APE. The report shall contain:

1. Full references to all previous investigations.
2. Complete list of sites identified in prior work, including National Register of Historic Places and State Antiquities Landmark status.
3. Separate tabular listings for archeological sites and above-ground architecture.
4. Summary of any identified Traditional Cultural Properties (TCPs) or Traditional Cultural Landscapes.
5. Maps of areas where historic properties have been identified.

6. Maps of areas where historic properties have not been fully inventoried.
7. Maps of the proposed reservoir, any proposed recreation areas, mitigation areas, roads to be impacted or constructed, associated ancillary facilities, and pipelines associated with the Project.

B. UTRWD shall prepare a draft RD that shall be submitted to the SHPO, Tribes, consulting parties and USACE. The RD may be revised based on the comments received within 30 days. The USACE shall be responsible for final comments and acceptance before implementation of the final RD. A copy of the final RD shall be made available to all signatories and concurring parties.

C. The RD will identify research questions of importance to the region that can be reasonably addressed by resources that are likely to be encountered within the proposed reservoir and will set forth procedures for the identification and evaluation of these resources. These will include methods for finding and documenting archeological sites and architectural resources, analysis of data, and the curation of artifacts.

III. IDENTIFICATION OF HISTORIC PROPERTIES

Identification efforts should follow the ACHP's Section 106 Archaeology Guidance, the SOI's Standards and Guidelines for Archeology and Historic Preservation, the SOI's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act. This includes standards defined by the Council of Texas Archeologists. For all archaeological activities and architectural assessments resulting in a written report, the SHPO, Tribes, and consulting parties will be afforded 30 days after receipt of any document to submit comments. Documents may then be revised considering the comments received. The USACE shall be responsible for final comments.

A. Phase I (Survey)

1. For the proposed reservoir, recreation facilities, associated ancillary facilities, areas used for mitigation, roads to be impacted or constructed, or pipelines defined in the final RD, UTRWD will complete a pedestrian survey, including shovel-testing, augering, and backhoe trenches (as necessary) to identify archeological sites.

    a. All archeological sites and above ground architecture recorded will be assessed, if possible, for eligibility to the NRHP. This will consist of the categorization of all sites as NRHP eligible, listed, not eligible, or unevaluated. Archival research will be necessary to assess standing architecture and historic sites. Sites that cannot be determined ineligible for the NRHP will be assessed by more detailed work in Phase II.

b. A draft report shall follow reporting standards developed by the Council of Texas Archeologists, as per Texas Administrative Code, Title 13, Part 2, Chapter 26.16.

c. The draft report shall be distributed to all signatories for a 30-day period of review and comment. The USACE shall ensure that comments are addressed in a final report and distributed to all signatories.

B. Phase II (Testing)

1. A testing plan that complies with Texas Administrative Code, Title 13, Part 2, Chapter 26, shall be developed in consultation with the Tribes and consulting parties. Work may include remote sensing, additional shovel tests, hand-excavated test units, and mechanical excavation as necessary. The plan must include at the minimum:

   a. Criteria for assessing eligibility to the NRHP under 36 CFR 60.4 and State Antiquities Landmarks (SALs) under Texas Administrative Code, Title 13, Part 2, Chapter 26, that can be applied to every site tested.

   b. A draft report shall follow reporting standards developed by the Council of Texas Archeologists as per Texas Administrative Code, Title 13, Part 2, Chapter 26.16. This report shall consist of the categorization of all sites as NRHP eligible, or not eligible. For all sites determined eligible, the report should also document the effect of the Project on the resource, noting whether it will be adverse or not.

   c. The draft report shall be distributed to all signatories for a 30 day period of review and comment. The USACE shall ensure that comments are incorporated into a final report and distributed to all signatories.

The USACE will determine the NRHP eligibility of all archeological and historical resources identified within the APE of the Project in consultation with the SHPO and the Tribes. If the USACE and the SHPO concur on eligibility, the USACE will proceed to a determination of effect. If the USACE and the SHPO disagree on NRHP eligibility, the matter will be referred to the Keeper of the Register in the Department of the Interior, as per 36 CFR 63. The resource will be treated as if it is eligible for inclusion in the NRHP until a decision is rendered by the Keeper. If the Keeper determines that the resource is eligible, the USACE will proceed to an assessment of adverse effect. If the USACE cannot evaluate the NRHP eligibility of a property due to lack of access, the property will be treated as eligible for listing in the NRHP.

IV. ASSESSMENT OF ADVERSE EFFECT

A. For all resources determined eligible for inclusion in the NRHP, the USACE will apply the Criteria of Adverse Effect (36 CFR 800.5(a)) to assess whether or not adverse effects will occur to historic properties as a result of the Project. In consultation with the SHPO, Tribes, and other consulting parties, the USACE shall make a determination of effect.

B. *Finding of no Adverse Effect (NAE).* USACE, in consultation with, the SHPO, and consulting parties, shall apply the criteria of adverse effect to historic properties within the APE in accordance with 36 CFR 800.5. Historic properties determined to have NAE shall be avoided and or protected from all potential current and future impacts by the UTRWD. Historic properties with NAE designation that may be adversely affected by use or design changes in the Project will require re-assessment of effects.

C. *Finding of Adverse Effect.* The signatories to this agreement concur that all eligible historic properties identified within the APE that do not have a final determination of NAE are presumed to be adversely affected by the Project. UTRWD, in consultation with the USACE, the SHPO, the Tribes, and other consulting parties, shall apply the criteria within the APE on a case-by-case basis in accordance with 36 CFR 800.5. For all historic properties that will be adversely affected, an avoidance plan or mitigation plan will be developed in consultation with all consulting parties in accordance with Stipulation V. The draft mitigation plan shall be distributed to the SHPO, the UTRWD, the Tribes, and the other consulting parties for a 30 day period of review and comment. The USACE shall ensure that comments are incorporated into a final data recovery plan and distributed to all signatories.

D. *Public Involvement.* Public notice for the Project was sent in 2008. Public meetings were held in both 2010 and 2011 for discussion of potential adverse effects on cultural resources within the Project. Additional opportunities involving the public will be available including commenting on the EIS and invitations sent to consulting parties to participate in this PA.

V. RESOLUTION OF ADVERSE EFFECT

A. UTRWD and the USACE, shall consult with the SHPO, the Tribe(s) and other consulting parties to resolve adverse effects in accordance with 36 CFR 800.6. For archeological sites, the mitigation plan will specify the problems set forth in the RD that can be addressed by data from the site being excavated, the areas to be excavated, the excavation methods to be used, special samples to be collected, the specialists who will conduct specialized analyses, and include reporting methods and curation of artifacts and records. For architectural resources, adaptive reuse shall be considered whenever possible. For buildings

and structures that will be destroyed by the Project, the mitigation plan will specify the level of HABS-HAER drawings and photographs that will be necessary to document the resources.

B. All work conducted to treat adverse effects will be described in a draft report that shall follow reporting standards developed by the Council of Texas Archeologists as per Texas Administrative Code, Title 13, Part 2, Chapter 26.16 .

C. The draft report shall be distributed to all signatories for a 30-day period of review and comment.

D. If the USACE, SHPO, UTRWD, the Tribes, and consulting parties fail to agree on how adverse effects will be resolved, the USACE shall request that the ACHP join the consultation and provide the ACHP and all consulting parties with documentation pursuant to 36 CFR 800.11 (g).

VI. CURATION AND DISPOSITION OF RECOVERED MATERIALS, RECORDS AND REPORTS

A. *Curation.* UTRWD materials and associated records are considered Held-in-Trust Collections by the State of Texas (Texas Administrative Code, Title 13, Part 2, Chapter 29, Rules of Management and Care of Artifacts and Collections). Therefore, UTRWD shall ensure that all such materials and records that result from identification, evaluation, and treatment efforts conducted under this PA are accessioned into a curatorial facility that has been certified, or granted provisional status, by the THC in accordance with Chapter 29.6, except as specified for human remains in Stipulation VII.

B. *Reports.* UTRWD shall provide copies of final technical reports of investigations to the signatories and consulting parties. The signatories and consulting parties shall withhold from the public all site location information and other data that may be of a confidential or sensitive nature pursuant to 36 CFR 800.11(c).

VII. TREATMENT OF HUMAN REMAINS

A. TREATMENT PLAN. UTRWD shall develop a treatment plan for discovery of human remains in consultation with the USACE, SHPO, the Tribes, and other consulting parties. The plan will comport with the ACHP Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects as well as any requirements under Chapter 711 of the Texas Health and Safety Code. USACE shall ensure that Tribes and other consulting parties are afforded a reasonable opportunity to identify concerns, advise on identification and evaluation, and determination of the ultimate disposition of human remains and associated funerary artifacts.

B. INADVERTENT DISCOVERY. Immediately upon the inadvertent discovery of human remains during historic properties investigations or construction activities conducted pursuant to this PA, UTRWD shall ensure that all ground disturbing activities cease in the vicinity of the human remains and any associated grave goods, and that the site is secured from further disturbance or vandalism. UTRWD will be responsible for immediately notifying local law enforcement officials and a medical examiner or coroner, and if the archeologist is reasonably certain that the human remains are archeological in nature, he will discuss the matter with the medical examiner or coroner and be on site when they or their designees (e.g., police officers) are examining the remains to prevent disturbance to the remains resulting from unscientific excavation methods. Within 48 hours of the discovery, UTRWD shall be responsible for initiating consultation with the USACE, the SHPO, the Tribes, and consulting parties to develop a plan for resolving the adverse effects. The course of action shall comport with Title 13, Part II, Chapter 22, Cemeteries, which are the rules regarding abandoned cemeteries and the disinterment of graves, as well as any other requirements under Chapter 711 of the Texas Health and Safety Code.

VIII. INADVERTENT DISCOVERIES OF HISTORIC PROPERTIES

The UTRWD recognizes the possibility that inadvertent effects may occur to a recorded or previously unidentified historic property or unevaluated cultural resource. Upon such a discovery, the UTRWD will use the following procedures:

A. The USACE, the SHPO, the Tribes, and other consulting parties will be notified by the UTRWD immediately upon discovery that a protected or previously unidentified cultural resource has been, or could be, inadvertently affected by the Project.

B. If the Project has not been completed at the time the effect is discovered, all activities in the vicinity (minimum of 50 meters) of the discovery shall cease, and reasonable efforts shall be taken to avoid or minimize harm to the cultural resource.

C. The Principal Investigator will evaluate the discovery, assess the effects, develop possible treatment recommendations and implement additional protection measures as necessary to prevent further harm to the cultural resource.

D. Within seven (7) days of this evaluation, the UTRWD will initiate consultation with the USACE, the SHPO, the Tribes and other consulting parties to determine if the resource is a historic property and, if so, to develop a treatment plan to mitigate any adverse effects.

E. If the Project has already been concluded when an effect to a property has been discovered, the UTRWD shall provide the SHPO, the Tribes and other consulting

parties with a report describing the Project, the circumstances surrounding the effects, and the results of treatment plan implementation.

F. Within six months (or an alternate agreed upon schedule), of the discovery of the inadvertent effect, the UTRWD shall provide the SHPO, USACE, Tribes and other consulting parties with a report describing the Project, the circumstances surrounding the effects, and the results of treatment plan implementation.

G. For discoveries on non-Indian, non-Federal lands or State lands, applicable laws and regulation of the State of Texas statutes shall be followed, including the Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code). In the event unknown or abandoned cemeteries are discovered, a Notice of Existence should be filed. The Texas Health and Safety Code 711 and the Texas Administrative Code 22.5 should be referenced for requirements on documenting unknown or abandoned cemeteries on projects permitted under the Antiquities Code of Texas.

IX. PROFESSIONAL QUALIFICATIONS

All historic preservation-related investigations specified in this Agreement shall be carried out by Principal Investigators meeting the pertinent professional qualifications of the SOI's *Professional Qualification Standards (*36 CFR Part 61) in a discipline appropriate for the task and the nature of the historic properties. Since this project will be conducted on land controlled by the UTRWD, principal investigators must also meet the professional qualification standards found in Title 13, Part II, Chapter 26, Rules of Practice and Procedure, and must be eligible to receive an Antiquities Permit.

X. DISPUTE RESOLUTION

Should any signatory or concurring party to this Agreement object at any time to any actions proposed or the manner in which the terms of this Agreement are implemented, the objector is encouraged to consult the other signatories in resolving the objection. If the objector determines that such objection cannot be resolved, USACE shall perform the following tasks.

A. CONSULT ACHP. Forward all documentation relevant to the dispute, including the USACE's proposed resolution, to the ACHP. The ACHP shall provide the USACE with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. The USACE will then proceed according to its final decision.

B. FINAL DECISION. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, the USACE may make a final decision on the

dispute and proceed accordingly. Prior to reaching such a final decision, the USACE shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the Agreement, and provide them and the ACHP with a copy of such written response.

C. Carry out all other actions subject to the terms of this PA that are not the subject of the dispute.

XI. DURATION, AMENDMENT, AND TERMINATION:

A. DURATION. Unless terminated or amended as outlined below, this Agreement shall remain in effect for a period of 10 years from the date the Agreement goes into effect and may be extended for a second ten-year (10) term with the written consent of all the signatories.

B. AMENDMENT. This Agreement may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

C. TERMINATION. If any signatory to this Agreement determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment. If within 30 calendar days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the Agreement upon written notification to the other signatories.

Once the Agreement is terminated, and prior to work continuing on any historic property work defined by the EIS, the USACE must either (a) execute a Memorandum of Agreement pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. The USACE shall notify the signatories as to the course of action it will pursue.

XII. REPORTING AND MONITORING:

Each year following the execution of the PA until it expires or it is terminated, UTRWD shall provide all parties to this PA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the UTRWD's efforts to carry out the terms of the PA.

XIII. EXECUTION:

Signature of this Agreement by the USACE, the SHPO, UTRWD, and implementation of its terms evidence that the USACE has taken into account the effects of this Project on historic properties and afforded the ACHP an opportunity to comment. Pursuant to 36

CFR 800.6(b)(1)(iv) this Agreement will go into effect when a fully executed version is received by the ACHP.

PROGRAMMATIC AGREEMENT

AMONG
THE UNITED STATES ARMY, CORPS OF ENGINEERS, FORT WORTH DISTRICT,
THE TEXAS STATE HISTORIC PRESERVATION OFFICER,
THE UPPER TRINITY REGIONAL WATER DISTRICT,
REGARDING COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 (AS AMENDED)
FOR THE PROPOSED LAKE RALPH HALL
TO BE LOCATED NORTH OF THE CITY OF LADONIA, FANNIN COUNTY, TEXAS
AND REQUIRING AN INDIVIDUAL PERMIT ISSUED UNDER SECTION 404 UNDER THE CLEAN WATER ACT

Permit Number: SWF-2003-00336

SIGNATORY:

United States Army, Corps of Engineers, Fort Worth District

_____ Date _____
Stephen L Brooks, Chief, Regulatory Division

PROGRAMMATIC AGREEMENT

AMONG
THE UNITED STATES ARMY, CORPS OF ENGINEERS, FORT WORTH DISTRICT,
THE TEXAS STATE HISTORIC PRESERVATION OFFICER,
THE UPPER TRINITY REGIONAL WATER DISTRICT,
REGARDING COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 (AS AMENDED)
FOR THE PROPOSED LAKE RALPH HALL
TO BE LOCATED NORTH OF THE CITY OF LADONIA, FANNIN COUNTY, TEXAS
AND REQUIRING AN INDIVIDUAL PERMIT ISSUED UNDER SECTION 404 UNDER THE CLEAN WATER ACT

Permit Number: SWF-2003-00336

SIGNATORY:

Texas State Historic Preservation Officer

_____ Date _____
Mark Wolfe, State Historic Preservation Officer

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Permit Number: SWF-2003-00336

SIGNATORY:

Upper Trinity Regional Water District

_____ Date _____
Larry N. Patterson, Deputy Executive Director

PROGRAMMATIC AGREEMENT

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Permit Number: SWF-2003-00336

CONSULTING PARTY CONCURRING IN MOA:

Choctaw Nation of Oklahoma

_____ Date _____
Gary Batton, Chief

PROGRAMMATIC AGREEMENT

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Permit Number: SWF-2003-00336

CONSULTING PARTY CONCURRING IN MOA:

Caddo Nation of Oklahoma

_____ Date _____
Tamara Francis, Chairman

PROGRAMMATIC AGREEMENT

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Permit Number: SWF-2003-00336

CONSULTING PARTY CONCURRING IN MOA:

Comanche Nation

_____ Date _____
William Nelson Sr., Chairman