APPENDIX C

SWAMPIM ASSESSMENT PROTOCOL DOCUMENTATION

Stream Watershed Assessment and Measurement Protocol Interaction Model (SWAMPIM) for Streams and On-Channel Impoundments Prepared for Lake Ralph Hall Environmental Assessment

1.0 Introduction

1.1 General Notes and Information

Recognizing that streams provide many functions and that the interaction of streams with their respective watersheds is key to the quantity and quality of functions provided, various stream assessment protocols have been developed for use across the country (Somerville and Pruitt 2004). The breadth and scope of stream assessments are as varied as the reasons for undertaking them. The SWAMPIM provides an assessment tool based primarily on geological and morphological habitat characteristics, floodplain and riparian condition, and water quality. It was developed based on existing protocols in use that have been extensively peer reviewed and field-tested across a wide variety of environmental settings. The evaluation used in this protocol can reasonably evaluate the aquatic resources within a project area through assessing the condition level of selected variables related to each function such that a holistic evaluation of the physical, biological, and chemical parameters of the aquatic system is accomplished within the context of its watershed.

The SWAMPIM was developed to provide an assessment tool for quantifying impacts on streams and impoundments within the U.S. Army Corps of Engineers (USACE), Fort Worth District, especially within the north central and east Texas area (refer to Figure 1). Information gathered using the SWAMPIM can be used to determine the appropriate amount of compensatory mitigation required for permitted impacts. The SWAMPIM is not intended to replace other decision-making tools, but to be used to develop relative assessments of environmental functions in the pre- and post-project phase, and provide a realistic basis for determining mitigation needs.

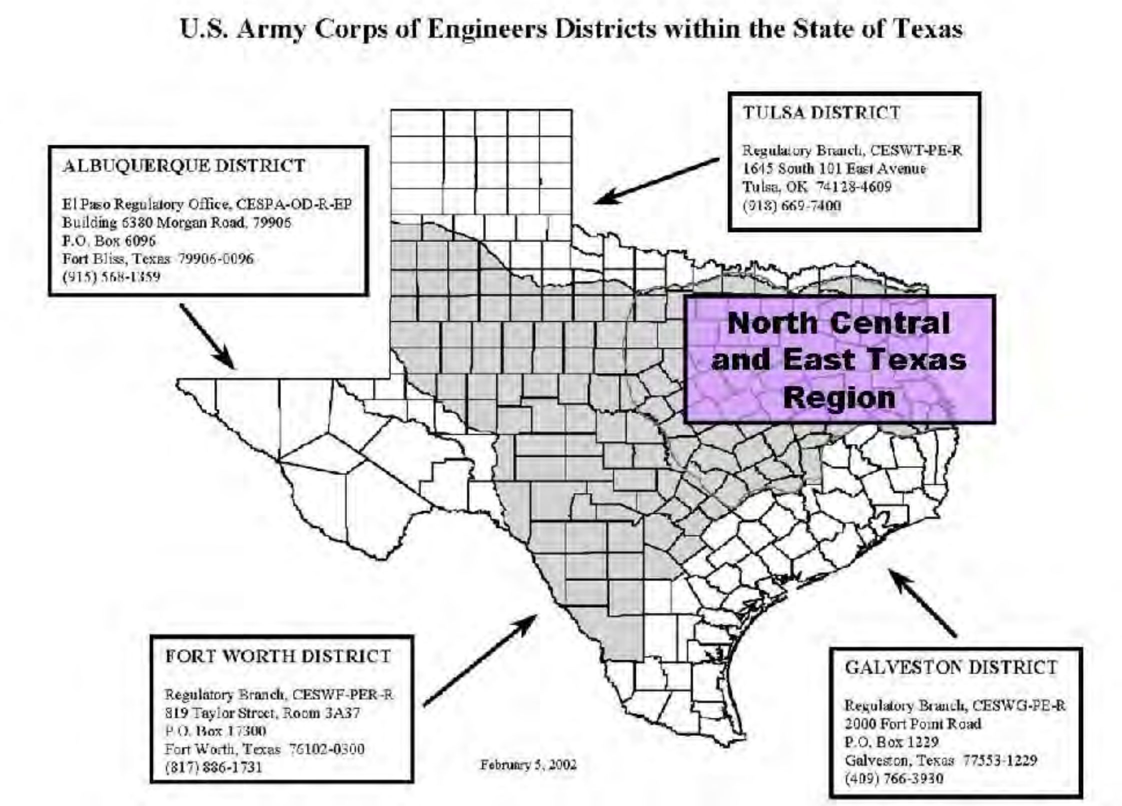


Figure 1. USACE Fort Worth District, north central and east Texas region

1.2 SWAMPIM Overview

Figure 2 (following this section) shows an overview of the SWAMPIM process. Functional capacity of aquatic resources on a watershed basis is evaluated using the SWAMPIM by defining stream assessment reaches based on geomorphic characteristics of stream size, valley characteristics, and underlying geology. Specific characteristics used in defining assessment reaches may include valley width, stream width, valley slope, geologic materials, and tributary influence. Representative reaches are then selected for evaluation for the identified stream assessment reaches. Section 2 of this document provides a detailed description of the SWAMPIM process for streams and rivers.

On-channel impoundments are characterized by relative impoundment size and representatives of each impoundment size category are selected for evaluation. The data collected at the representative reaches and impoundments are used to determine overall quality on a relative basis for the aquatic resources in a project area. Section 4 describes the SWAMPIM process for impoundments.

Due to the complex and dynamic conditions within stream channels and based on the proposed use of the data collected, assessment protocols have been developed that range from subjective, visual-based assessment protocols that are rapid and relatively easy-to-use to objective, quantitative assessments that are usually labor intensive, time consuming, and costly. Selected stream assessment and mitigation protocols were reviewed and summarized (Somerville and Pruitt, 2004) in an effort to recommend components to best assess and document physical stream conditions pertinent to the Clean Water Act (CWA) Section 404 regulatory program. Five suggestions for programmatically complete stream assessment protocols were developed for use in the regulatory program.

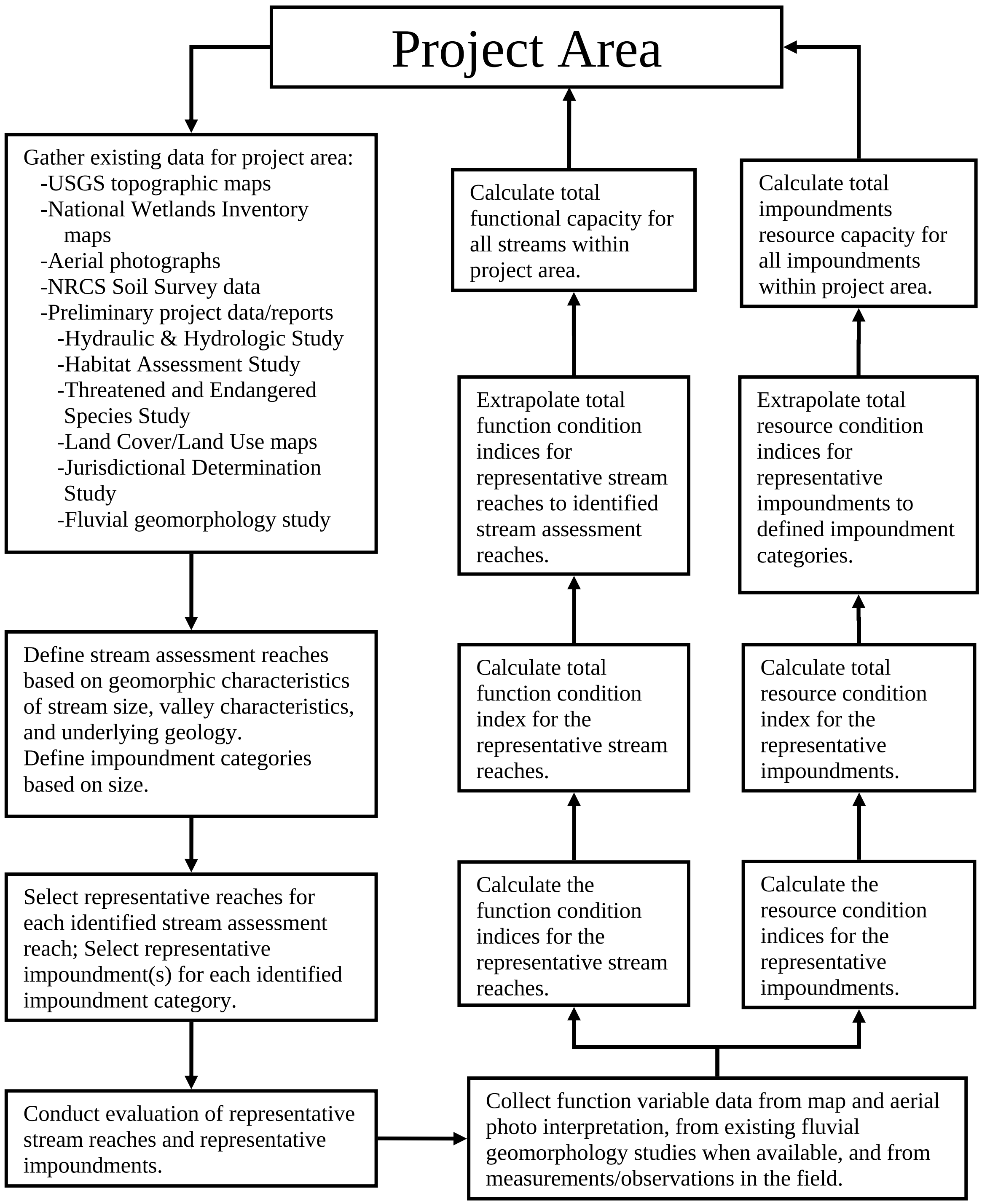
1) Classification: Stream assessment should be preceded by classification to narrow the natural variability of physical stream variables.
2) Objectivity: The assessment procedure should remove as much observer bias as possible by providing well-defined procedures for objective measures of explicitly defined stream variables.

3) Quantitative Methods: The assessment procedure should utilize quantitative measures of stream variables to the maximum extent practicable.
4) Fluvial Geomorphological Emphasis: Stream assessments undertaken to prioritize watersheds or stream reaches for management or aid the design of stream enhancement or restoration projects should be based on fluvial geomorphic principles.
5) Data Management: Data from stream assessments should be catalogued by designated entities in each region of the country. This is especially true of reference data.

Although most states, including Texas, include biological assessment as part of their water quality programs, biological variables tend to be seasonally variable and labor intensive to sample. Physical stream features are relatively stable over short-time frames in most stream environments, are relatively easy to measure in the field, and provide a tangible resource for decision making, management, and restoration plans. (Somerville and Pruitt, 2004). Habitat assessment is a nearly ubiquitous component of all stream assessment protocols. Geomorphological data is also increasingly being included. Evaluation of the parameters related to physical and geomorphological habitat allows the development of direct and indirect inference of functional capacity of the assessed stream for each of the functions identified in Table 1. This protocol utilizes measures of defined stream variables to quantify to the degree practicable the relative condition of the assessed stream.

The impoundment evaluation is designed to provide a qualitative assessment of the lentic habitat provided by these aquatic resources. The assessment, as with the stream assessment, incorporates geological and morphological habitat characteristics, riparian and watershed condition, biological components, and water chemistry into the protocol. The merging of these variable characteristics of an impoundment into an assessment provides a means to rapidly produce a reproducible, consistent, quality determination of habitat characteristics and ecological conditions based on observations and measurements taken at a single point in time.

Figure 2. SWAMPIM OVERVIEW



2.0 Streams and Rivers

Stream functions and interactions within a watershed basis were divided into three major function categories: hydrologic, water quality improvement/biogeochemical, and habitat. Table 1 provides a listing of the three major function categories and the individual functions identified within each major category.

TABLE 1. STREAM FUNCTIONS

Major Categories	Functions
1. Hydrologic	A. Groundwater Interactions – discharge/recharge
	B. Channel Condition and Energy Dissipation
	C. Flood Capacity/Flow Conveyance
	D. Flow Attenuation and Desynchronization of Peak Flows
	E. Dynamic surface water storage
2. Water Quality Improvement/Biogeochemical	A. Sediment Transport/Deposition
	B. Nutrient cycling/Assimilation
	C. Removal/Assimilation of Imported Contaminants
3. Habitat	A. Maintains Spatial Structure of Habitat
	B. Maintains Distribution and Abundance of Vertebrates
	C. Maintains Distribution and Abundance of Invertebrates
	D. Production of Allochthonous Materials
	E. Supports Riparian Vegetation
	F. Maintains Interspersion and Connectivity with Terrestrial Habitats/supports Biological Diversity

SWAMPIM uses variables that are easily identified and evaluated in the field or with the use of mapping resources to determine the level of functions provided. Evaluation of these parameters allows the development of direct and indirect inference of functional capacity of the assessed stream reach for each of the function categories identified in Table 1. Selection of the function variables used in SWAMPIM was based primarily on physical criteria that were derived from existing peer-reviewed and field-tested protocols that assess stream and impoundment functions within a watershed context. Detailed descriptions of the function variables for assessment of streams and rivers are provided in Section 3 of this document.

2.1 Reach Length Determinations

Several protocols for rapid assessment of biological habitat such as the U.S. Environmental Protection Agency's (EPA) *Rapid Bioassessment Protocols for Use In Streams and Rivers, Benthic Macroinvertebrates and Fish* were designed and tested in wadeable fresh-water streams, rather than large rivers (Plafkin, et al., 1989). However, the fundamental approach was deemed applicable to large rivers as well, and portions of the Rapid Bioassessment Protocols were validated for both freshwater streams and large rivers. Assessment of stream classification should be conducted prior to determination of appropriate stream reaches to be evaluated. The stream reach encompasses the biological and chemical collection areas and includes as many different geomorphic channel units as possible. Examples of geomorphic units include riffles, runs, glides, and pools. Note that some of these geomorphic units may not be found in some streams.

Streams are considered wadeable if most of the stream channel is accessible by wading during normal flow conditions. Generally, these streams are third order or less based on a Strahler (1957) classification. Pool areas or high-flow conditions may cause the stream to be inaccessible to wading in certain places or at certain times; however, the stream would still be considered wadeable in determining reach length. A length of a Reference Reach (RR) should be about 40 times the average stream width in wadeable streams, but with a minimum of 150 m (492 feet). The maximum reach length for wadeable streams is 500 m (1640.5 feet) (TCEQ 2005).

Streams are considered non-wadeable if water depth in the stream channel prohibits wading and requires use of a floatation device (boat or tube) during normal flow conditions. Generally, these are fourth order streams or larger and are usually considered rivers. Riffle areas or low-flow conditions may cause the stream to be accessible to wading in certain places or at certain times; however, the stream would still be considered non-wadeable in determining reach length. The reach length of a non-wadeable stream is based on incorporating one full meander of the stream channel, if possible, and includes two examples of at least two types of geomorphic channel units. The minimum reach length for a non-wadeable stream is 500 m (1640.5 feet). The maximum length is 1 km (3,281 feet) (TCEQ 2005). On some rivers, one full meander may be longer than 1 km. In other rivers, the channel may be dominated by only one geomorphic unit, such as a glide. In these cases, limit the reach length to 1 km with as many different types of geomorphic units represented as possible (TCEQ 2005).

Variation in results of stream order classification occurs when small scale maps are used (USGS 1:100,000 map) as opposed to larger scale maps (USGS 1:24,000 map) and use of actual channels mapped on ground results in larger stream orders due to identification of small ephemeral streams not typically identified on maps (Leopold 1994). *[Since the majority of stream channels identified within the Lake Ralph Hall project area are ephemeral headwater streams, which are not typically considered in habitat assessment protocols, but which are considered jurisdictional under the Clean Water Act and require assessment under Section 404 permit review, the Strahler stream classification system was not used for this assessment. Instead, delineated stream channels are classified as ephemeral or intermittent. No perennial streams are located within the Lake Ralph Hall reservoir project area.]*

2.2 General Instructions for Streams and Rivers Assessment Using SWAMPIM

A. Determine the Stream Assessment Reach(s) (SAR) within the proposed project area. The SAR is the linear feet of stream channel of like characterization (i.e., ephemeral, intermittent, 1st order, 2nd order, major tributary, river channel) within the proposed project impact area. All stream reaches within the project area should be included in appropriate SARs.

B. Determine Reference Reaches (RR) for each identified SAR. Number of RRs to be assessed for each identified SAR should be based on the quantity and variability of quality within the SAR as determined during initial reconnaissance so that all conditions within a SAR are adequately represented.

C. Complete Stream Functions Assessment Forms for each major functions category based on measurements and assessment of conditions within all identified RRs. Certain variables (e.g., sinuosity, riparian continuity, land use) may be evaluated first through review of topographic maps and recent aerial photographs with subsequent verification based on field observations. The classification of variables based on map or aerial photograph interpretation may be done on a SAR basis with the score applied to each RR within the SAR.

D. Calculate the Function Condition Index (FCI) for each function category based on the scoring of variables for each RR. The scores for the variables for each Stream Function Category (e.g., hydrologic, water quality/biogeochemical, and habitat) are summed and divided by the highest total possible score to determine the FCI for each category. If multiple RRs are identified within a SAR, the FCIs for each function category for each RR are totaled and divided by the total number of RRs to determine the average FCI for each Stream Function Category for the SAR. Based on a total maximum FCI of 1.0 for each major Functions Category, the maximum Total FCI for the SAR is 3.0.

E. The FCIs determined for the SAR are then multiplied by the linear feet of stream channel in the SAR and by a multiplication factor determined by the stream characterization (i.e., ephemeral, intermittent, or perennial) to determine the Functional Capacity (FC) for the SAR. The multiplication factor incorporates a typical width of stream channel and appropriate riparian buffer for each stream type so that when multiplied by the linear feet of stream channel, the result or FC represents an area comparable to acres. The typical width of stream channel and appropriate riparian buffer for each stream type used in determining the multiplication factors is comparable to those used for the Trinity River Mitigation Bank (Fort Worth, Texas) credit calculations for stream channels (i.e., ephemeral = 5-foot wide channel with 25-foot wide riparian buffers each side; intermittent = 10-foot wide channel with 50-foot wide riparian buffers each side; and perennial = 15-foot wide channel with 75-foot wide riparian buffers each side). The resulting calculation for FC is as follows:

FC = FCI * (Linear Feet of SAR) * Multiplication Factor

The Total FC for each SAR is the sum of the FCs for the three Stream Function Categories.

F. The Project FC for streams and rivers is the summation of the Total FCs for all the identified SARs within the defined project area.

G. Post-project FC for stream and rivers is determined by the same process as for the existing conditions within the project area except scoring of variables for each of the function categories is based on projections of changes in condition relative to proposed project activities, including compensatory mitigation activities, or resulting impacts of the proposed project.

3.0 Description of Function Category Variables for Streams and Rivers

3.1 Hydrologic Function Variables

3.1.1. Flow Regime. The stream flow regime identified by this variable indicates the importance of the stream to the aquatic community. Although ephemeral and intermittent drainages are essential to the function of a watershed, they are not as valuable as perennial streams due to the fact that they typically do not provide year-round habitat for aquatic organisms. Evaluators should take into account regional and site-specific climatic conditions (i.e., extended drought, recent heavy rains, etc.) when determining the flow characteristics of a stream. A scoring range is provided for various stream types to efficiently characterize differences in quality within stream types. For example, some intermittent streams have groundwater input that sustains flow at a higher rate and for a longer period of time than other streams. The evaluator may choose to provide a higher score within the stream type for this system.

Ephemeral stream – A drainageway that may or may not have a well-defined channel that carries flow only during periods of surface runoff. These drainages are not hydrologically connected to subsurface inputs (i.e., springs, subterranean flow, etc.) and often lack a well-defined channel with easily identifiable bed and banks.

Intermittent stream – A drainageway with a well-defined channel that generally flows only during a part of the year. It continues to flow after cessation of surface runoff, but effluent groundwater (springs/subterranean flow) will not sustain flows through moderate periods of little or no precipitation. It may contain reaches of perennial flow or have permanent pools that support aquatic wildlife. Some special conditions, such as the discharge from a wastewater treatment plant or irrigation flows, can cause portions of an intermittent stream to have qualities of a perennial stream.

Perennial stream – A drainageway with a well-defined channel in which perennial flow persists throughout the length of the drainage during normal climate conditions. The permanency of flow is usually attributable to groundwater effluent.

Selected References: KDWP 2000

3.1.2. Channel Condition and Energy Dissipation

3.1.2a. Channel Condition/Alteration (natural, altered, or downcutting).

Stream meandering generally increases as the gradient of the surrounding valley decreases. Many streams in urban and agricultural areas have been straightened, deepened, or diverted into concrete channels, often for flood control or irrigation purposes. These changes in turn may affect stream functions, such as transport of sediment and the development and maintenance of habitat for fish, aquatic insects, and aquatic plants. Some modifications to stream channels have more impact on stream health than others. For example channelization and dams affect a stream more than the presence of pilings or other supports for road crossings. Signs of channelization or straightening of a stream may include an unnaturally straight section of the stream, high banks, dikes or berms, lack of flow diversity, and uniform-sized bed materials. Newly channelized reaches may have vegetation missing or vegetation different from reaches that were not channelized. Older channelized reaches may also have little or no vegetation or have grasses instead of woody vegetation. Drop structures (such as check dams), irrigation diversions, culverts, bridge abutments, and riprap also indicate changes to the stream channel.

Active downcutting and excessive lateral cutting are serious impairments to stream function. Both conditions are indicative of an unstable stream channel. Indicators of downcutting in the stream channel include nickpoints associated with headcuts in the stream bottom and exposure of cultural features, such as pipelines that were initially buried under the stream. Exposed footings in bridges and culvert outlets that are higher than the water surface during low flows are other examples. A lack of sediment depositional features, such as regularly spaced point bars, is normally an indicator of incision. A low vertical scarp at the toe of the streambank may indicate downcutting, especially if the scarp occurs on the inside of a meander. Excessive bank erosion is indicated by raw banks in areas of the stream where they are not normally found, such as straight sections between meanders or on the inside of curves.

Selected References: Newton, et al., 1998; Barbour, et al., 1999

3.1.2b. Channel Capacity to Flow Freq uency Ratio (for 2-year peak flow). Channel capacity is the maximum flow that a given channel is capable of conveying without overtopping its banks. For evaluation purposes, the 2-year flow is considered the base condition for bankfull capacity when projected based on hydrological modeling of stream flow from watershed runoff. Optimal conditions fall within a 1.5 to 2.5 year frequency of storm events which causes flow to exceed bankfull stream capacity providing overflows into adjacent wetlands and floodplains. This frequency can be expressed as a ratio related to the 2 year flow as 0.75 to 1.25. Suboptimal conditions would have overbank flow events on a more frequent basis than every 1.5 years (ratios <0.75) or less frequent than 2.5 years (ratios >1.25). Conditions are considered marginal if overbank flow events are more frequent than every year (ratios <0.5) or less frequent than every 5 years (ratios >2.5). Conditions are considered poor if overbank flow events are more frequent than every ½ year (ratios <0.25) or less frequent than every 10 years (>5).

Selected References: Dr. Mike Harvey and Stu Travant, 2005

3.1.2c. Channel Bank Stability. This parameter evaluates the existence of or the potential for detachment of soil from the upper and lower stream banks and its movement into the stream. This parameter measures active stream bank erosion. Signs of erosion include raw, exposed soil on banks, or banks that are sloughing, crumbling, or otherwise unstable. Some banks may exhibit exposed soil, but are "crusted/healed over" and are not actively eroding. Such banks may exhibit early signs of stabilizing that include colonization by lichens and mosses, herbaceous vegetation establishing at the toe of the bank, etc. Eroded banks indicate a problem of sediment movement and deposition, and suggest a scarcity of cover and organic input to streams. Each bank is evaluated separately and the average score (left and right) is used for this parameter. For convention, right and left banks are determined when facing downstream.

Selected References: Newton, et al., 1998; Barbour, et al., 1999, USACE, Norfolk District, 2004

3.1.3. Channel Roughness Factors

3.1.3a. Channel Sinuosity. This parameter evaluates the meandering or sinuosity of the stream Sinuosity is used as an indication of how a river has adjusted to the slope of its valley (Rosgen, 1996) and is measured as Channel Length divided by Valley Length. The degree of sinuosity is related to channel dimensions, sediment load, stream flow, and the bed and bank materials. A sinuosity of 1 indicates the stream is flowing in a straight line and would typically be indicative of some anthropogenic activity such as channelization. Most low-gradient streams that are functioning efficiently in transportation of bedload will have a sinuosity value of 1.5 or greater (Rosgen, 1996; Cole, 1994; Gordon, et al., 1992).

A high degree of sinuosity provides for diverse habitat and fauna, and the stream is better able to handle surges when the stream flow fluctuates as a result of storms. The absorption of stream flow energy by bends protects the stream from excessive erosion and flooding and provides refugia for benthic invertebrates and fish during storm events. To gain an appreciation of this parameter in low gradient streams, a longer segment or reach than that designated as a reference reach (RR) may be incorporated into the evaluation. In some situations, this parameter may be rated on a macro-scale by evaluation of the SAR by interpretation of accurate topographical maps or aerial photographs and application of the results to all RRs within the SAR. The “sequencing” pattern of the stream morphology is important in rating this parameter (Barbour, et al., 1999). In “oxbow” streams of coastal areas and deltas, meanders are highly exaggerated and transient. Natural conditions in these streams are shifting channels and bends, and alteration is usually in the form of flow regulation and diversion.

Selected References: Barbour, et al., 1999; KDWP, 1996

3.1.3b. Substrate Composition. Substrate can vary significantly in a stream, horizontally, vertically, and lengthwise throughout a reach, with frequent changes relating to fluctuations in flow regimes. Both inorganic and organic materials are included in substrate composition, and will vary spatially and temporally. Vertical variations may occur seasonally as with the presence of leaf litter in the late fall through the spring, covering gravel or cobble substrates that would be visible in the summer. In addition, temporal variability related to sediment deposition and accumulation of detritus during periods when spates have been absent (i.e., no “flush” effect) may influence the evaluator’s perception of substrate composition.

The deposition of substrate, and its composition can affect the hydrology of a stream. Sediment accumulation can lead to channel enlargement or division. Further, unstable substrates can lead to sediment accumulation downstream. The evaluator should note any changes in stream hydrology based on the deposition or instability of a stream’s substrate.

Selected References: KDWP, 1996

3.1.3c. Instream Bottom Topography or Manning’s n. Instream structure or channel bottom topography influences flow within the channel by increasing roughness and thereby, turbulence. Turbulent areas improve aeration and influence other water quality parameters as well as provide habitat features. Structural elements within a stream also impact water flow direction, which in turn influences erosional patterns that shape the channel. Instream bottom topography includes occurrence of deep pools, riffle zones, boulders/gravel, in-channel sediment bars, logs or large woody debris, backwater areas, connecting oxbows or other side-channel pools, overhanging vegetation, vegetated shallows, rootwads, or undercut banks. Manning's n is a roughness coefficient used as a factor in hydrologic and hydraulic modeling. The U.S. Geological Survey (USGS) has developed a guide for selecting Manning's n coefficients for natural channels and floodplains that is available at the following web address:

http://www.fhwa.dot.gov/bridge/wsp2339.pdf

In the event that Manning's n roughness coefficients are not available from hydrologic modeling conducted for the SAR or cannot be estimated using the USGS guidance, professional judgment from site evaluation of observed structural elements within the stream as described under the category conditions for instream bottom topography should be used to estimate the roughness coefficient of a RR based on observations of RR and comparison to described ranges for Manning's n.

Selected References: KDWP, 1996; Newton et al., 1998

3.1.3d. Channel I ncision. The degree of channel incision is evaluated by determining the Bank Height Ratio (BHR) of a representative section of the RR. The BHR is calculated by dividing the Top of Lowest Bank (TOLB) by the Maximum Bankfull Depth (BFD). Both the TOLB and BFD are measured in a riffle, from the thalweg, and at the same cross-section. The lowest bank refers to the lower of the left or right bank (where the bank intersects the floodplain or terrace) on any given cross-section, and is not a low bank or bar within the channel cross-section. There may be instances whereby an incised stream has reestablished a stable pattern, profile and dimension at a lower elevation and stable bankfull benches are apparent. In these instances, the bankfull bench should be considered as the new TOLB. Bankfull discharge is the discharge that fills a stable alluvial channel to the elevation of the active floodplain.

This discharge is morphologically significant because it identifies the point where the active channel stops and the floodplain begins. The height of water, or stage, during bankfull flow is the point at which flooding occurs on the floodplain. This may or may not be the top of the streambank. If the stream has downcut due to changes in the watershed or streamside vegetation, the floodplain stage indicator may be a small bench or scour line on the streambank. The top of the bank, which was formerly the floodplain, is called a terrace in this case. A stream with a terrace near the top of the banks is an incised, or entrenched, stream.

For actively incising streams, where BFD is difficult to locate, make your best estimate of bankfull based upon watershed size and condition, and in stream features. The Bank Full Depth is the average depth measured during a dominant channel forming flow with a recurrence interval averaging approximately 1.5 years. A good bankfull indicator is the uppermost scour line. Other bankfull indicators include the back of a point bar, the upper break in slope of the bank, and occasionally the top of the bank. Often, there is another prominent feature known as the inner berm. The Army Corps of Engineers refers to the inner berm as the mean high water mark. This feature is usually identified as a scour line or small bench halfway between the low flow water surface and the bankfull stage. Streams with large watersheds will have bankfull stage indicators at a higher elevation on the bank than streams with smaller watersheds. If necessary, walk upstream and downstream of the SAR and locate other indicators of bankfull stage.

Values will always be greater than or equal to one. A BHR ratio equal to 1 indicates a stream is not incised. Ratios greater than 1 indicate a stream is incised.

Additional guidance regarding the identification of field indicators of bankfull stage is found in Appendix 2 of the USACE, Norfolk District Stream Attribute Assessment Methodology Instruction Manual (2004).

Figures below are from the USACE, Norfolk District Stream Attribute Assessment Methodology Instruction Manual (2004)

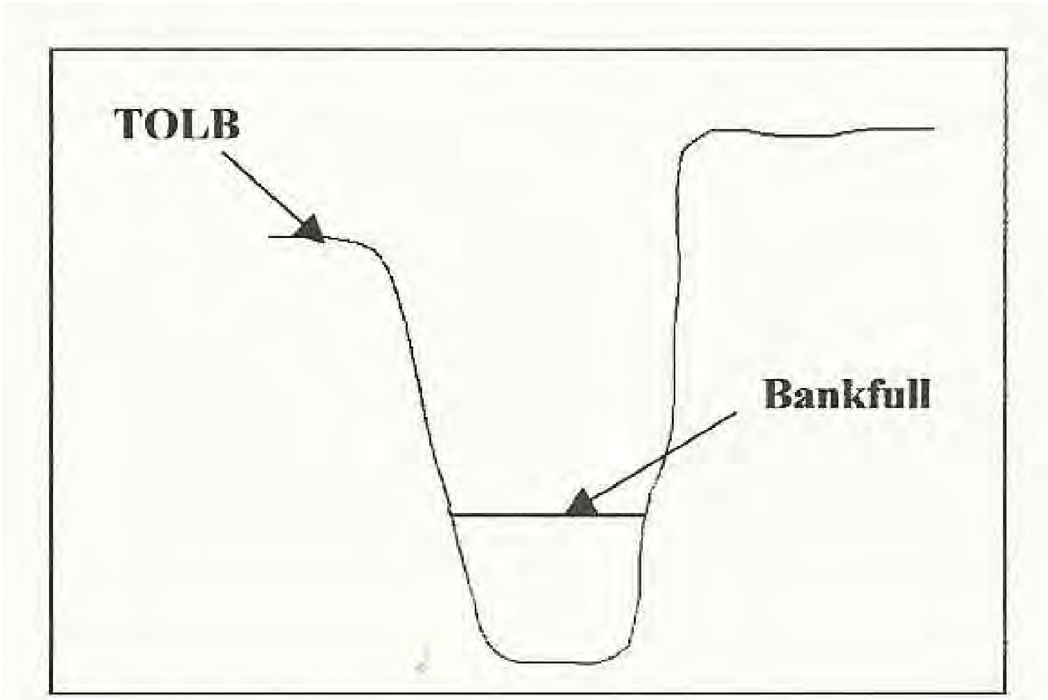


Figure 2. Relationship between Bankfull and TOLB in an incised channel without a bankfull bench.

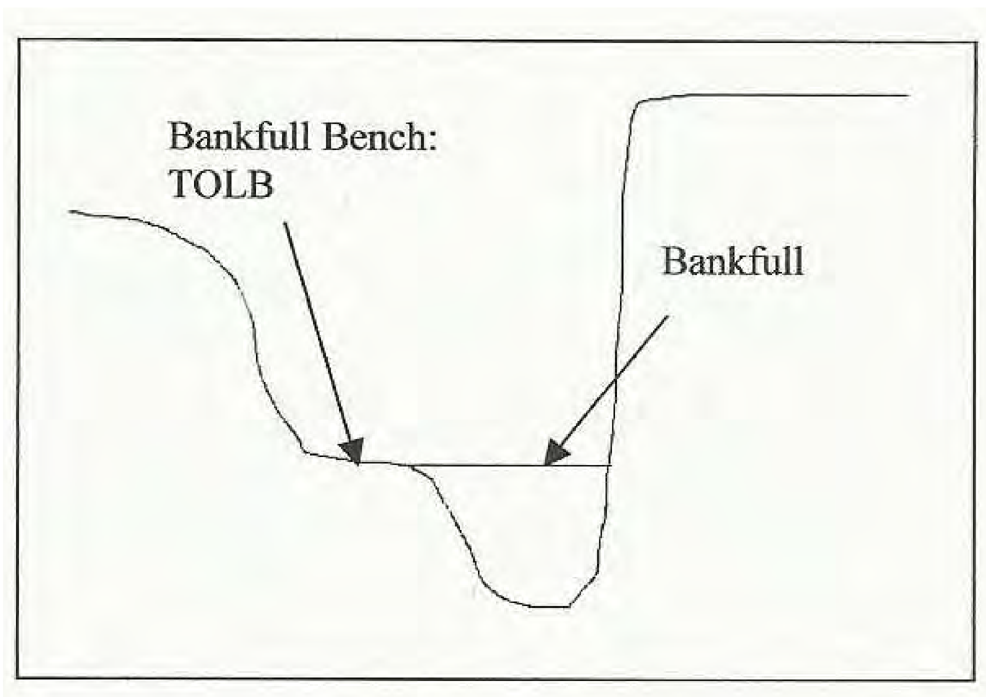


Figure 3. Relationship between Bankfull and TOLB in an incised channel with a bankfull bench.

Figure 4. Channel Incision: without bankfull bench - TOLB -

Figure 5. Channel Incision: Early channel evolution of bankfull bench within incised channel

Figure 6. Channel Incision: Channel has stabilized at a new base-elevation with an established bankfull bench

Figure 7. Channel Incision: Change in BHR due to head-cut

Figure 8. Looking upstream and downstream to establish bankfull stage from field indicators

Selected References: USACE Norfolk, 2004, Kline, et al., 2005.

3.1.4. Dynamic Surface Water Storage

3.1.4a. Pools. Pools are important resting and feeding sites for fish. A healthy stream has a mix of shallow and deep pools. A stream with many pool types will support a wide variety of aquatic species. Rivers with low sinuosity (few bends) and monotonous pool characteristics do not have sufficient quantities and types of habitat to support a diverse aquatic community. A deep pool is 1.6 to 2 times deeper than the prevailing depth, while a shallow pool is less than 1.5 times deeper than the prevailing depth. Pools are abundant if a deep pool is in each of the meander bends in the reach being assessed. Generally, only 1 or 2 pools would typically form within a reach as long as 12 active channel widths. In low order, high gradient streams, pools are abundant if there is more than one pool every 4-channel widths.

Pool diversity and abundance are estimated based on walking the stream or probing from the streambank. You should find deep pools on the outside of meander bends. In shallow, clear streams a visual inspection may provide an accurate estimate.

Selected References: Newton, et al., 1998; Barbour, et al., 1999

3.1.4b. Channel Flow Status. Channel flow status is the degree to which water covers the entire available channel substrate, from bank to bank. The flow status will change as the channel enlarges (e.g., aggrading stream beds with actively widening channels) or as flow decreases as a result of dams and other obstructions, diversion for irrigation, or drought. When water does not cover much of the streambed, the amount of suitable substrate for aquatic organisms is limited. In high-gradient streams, riffles and cobble substrate are exposed; in low-gradient streams, the decrease in water level exposes logs and snags, thereby reducing the areas of good habitat. Channel flow is especially useful for interpreting biological condition under abnormal or lowered flow conditions. This parameter becomes important when more than one biological index period is used for surveys or the timing of sampling is inconsistent among sites or annual periodicity.

When measuring this parameter you should consider the area from the toe of the streambank to the toe of the opposite streambank. Whether due to natural runoff patterns or human-induced impacts, streams have different flow characteristics ranging from intermittent, to perennial. A stream that is naturally intermittent is more likely to exhibit poorer channel flow status condition than a perennial stream. Evaluation of channel flow status should be made based on normal flow within a stream channel. Best professional judgment should be used to determine normal flow conditions. Review of climatic data for the local area of the stream assessment can provide indication of rainfall patterns prior to the field assessment work. Field indicators would include water levels relative to Ordinary High Water Mark (OHWM) for the stream channel.

Selected References: Barbour, et al., 1999; TCEQ 1999; Vermont Agency of Natural Resources, 2005.

3.2 Water Quality/Biogeochemical Function Variables

3.2.1. Sediment Transport/Deposition

3.2.1a. Channel Bank Erosion. As with channel bank stability (#2c variable under Hydrologic Functions), this parameter evaluates the existence of or the potential for detachment of soil from the upper and lower stream banks and its movement into the stream. Stream channels with poor riparian vegetation are subjected to accelerated streambank erosion and corresponding channel adjustments leading to instability and increased sedimentation within the channel, both at the point of bank erosion and downstream (Rosgen, 2001). Steep banks are more susceptible to collapse and suffer from erosion more than gently sloping banks, and are therefore considered to be unstable. A healthy riparian corridor with a vegetated floodplain contributes to bank stability. The roots of perennial grasses or small woody vegetation typically extend to the baseflow elevation of water in streams that have bank heights of 6 feet or less. Mature tree roots typically extend to deeper depths. The root masses help hold the bank soils together and physically protect the bank from scour during bankfull and flooding events.

Signs of erosion include crumbling, unvegetated banks, bank sloughing/slumping, recently exposed non-woody tree roots (e.g., fine hair-like roots and or smaller lateral roots less than 0.5 inch in diameter), the general absence of any vegetation within the lower one-third portion of the bank, recent tree falls, and exposed soil. Eroded banks indicate a problem of sediment movement and deposition, and suggest a scarcity of cover and organic input to streams. Each bank is evaluated separately and the average score (left and right) is used for this parameter. For convention, right and left banks are determined when facing downstream.

Selected References: Newton et al., 1998; Barbour, et al., 1999, Rosgen, 2001; Galli, 1996

3.2.1b. Channel Bottom Bank Stability. This parameter is a subset of Channel Bank Stability and the existence of or the potential for erosion of the lower stream bank and its movement into the stream. Resistant plant or soil material will prevent frequent compromise of the bank, increased erosion, or shifting of channel morphology. However, vegetation seldom becomes established below the elevation of the bankfull surface because of the frequency of inundation and the unstable bottom conditions as the stream moves its bedload, which facilitates the erosion of the bottom of the stream's bank. The more stable the channel bottom is the greater ability of the stream to provide or develop physical aquatic habitat.

Selected References: Galli, 1996

3.2.1c. Substrate Composition or Channel Sediments. Silt deposition may influence substrate composition and water quality and biogeochemical functions, if significant high-flow events have been absent during drought periods to provide a "flush" effect on the site. This often leads to deposition of fine sediments that become embedded within the interstitial spaces between substrate particles; thereby depleting the hyporheic zone of subsurface flow of oxygen-containing water through the interstitial spaces beneath the stream bed (Alan, 1995). This variable is evaluated by taking into consideration the amount of substrates that create interstitial spaces on the streambed suitable for colonization by macroinvertebrates, and the amount of sediment that is present in the streambed that may impact the availability of this habitat.

Selected References: Barbour, et al., 1999, Petersen, 1992.

3.2.2. Water Clarity. The clarity of water is evaluated by turbidity. The deeper an object can be seen, the lower the amount of turbidity. This variable is determined from color, clarity, and any other visual characteristics, such as oil sheen.. Soil or organic matter in the stream may increase turbidity. Water may be colorless or naturally colored (brown or green) due to the natural setting of the stream. Heavy sediment loads or algae may affect water color and clarity. Other visual characteristics may be present from pollutants, submerged objects, watershed usage or discharges.

Selected References: Newton et al., 1998

3.2.3. Presence of Aquatic Vegetation

3.2.3a. Nutrient Enrichment. Nutrient enrichment is often reflected by the types and amounts of aquatic vegetation in the water. High levels of nutrients promote an overabundance of algae and floating and rooted macrophytes. The presence of some aquatic vegetation is normal in streams and beneficial for most stream life. Nutrient enrichment in excess, however, is not beneficial to most stream life. Plant respiration and decomposition of vegetation consume dissolved oxygen in the water. Lack of dissolved oxygen creates stress for all aquatic organisms and can result in fish kills.

Healthy streams may have some aquatic vegetation including rooted macrophytes, floating plants, and algae attached to substrates. Excess nutrients can cause excessive growth of algae and macrophytes, which can create a greenish color to the water. More intense nutrient loads lead to lusher aquatic vegetation and deeper green color. Intense algal blooms, thick mats of algae, or dense stands of macrophytes degrade water quality and habitat. Clear water and a diverse aquatic plant community without dense plant populations are optimal for this parameter.

Selected References: Newton et al., 1998

3.2.3b. Aquatic Vegetation. This variable is similar to Nutrient Enrichment, but is a quick look measure of the amount of aquatic vegetation and algae present. The intensity of vegetation and algae cover is scored based on presence and abundance of aquatic vegetation.

Selected References: Petersen, et al., 1992

3.2.4. Composition of Organic Matter. The detritus present in streams affects water quality. Detritus may consist of wood, leaves, organic debris, and sediment. The size and amount of the detritus affects water quality by filling the channel, floating in the stream, and causing the water to be more turbid. Excessive fine organic matter may further degrade the water quality by consuming oxygen and causing anaerobic conditions in the stream.

Selected References: Petersen, et al., 1992

3.2.5. Land Use Pattern. The land beyond the immediate riparian zone can affect water quality based on its usage. If the land consists of forest or wetlands, the riparian zone would be buffered against excessive runoff and sediment loads. If the land is used for pasture or agriculture, the riparian zone and the stream may be required to absorb or be impacted by nutrient, pollutant, or sediment laden inputs that can degrade water quality. A stream with undisturbed or natural lands outside the immediate riparian zone is better able to support an aquatic community and maintain more stable natural conditions.

Selected References: Petersen, et al., 1992

3.2.6. Riparian Zone Width and Continuity

3.2.6a. Riparian Zone Width. This variable measures the width of natural vegetation from the edge of the stream bank out through the riparian zone. The riparian vegetation zone provides a buffer from pollutants or sediment entering a stream from runoff, helps control erosion, dissipates energy during floods, provides habitat, and nutrients to the stream. An undisturbed and wider riparian zone that has not been impacted by human activities is optimal. Riparian zones may be impacted by human activities including roads, fields, lawns, bare soil, buildings, residential developments, golf courses, and rangeland.

The width of the riparian zone can determine the amount of buffer provided although depending on the size of the stream a specific width for one riparian zone on a stream may or may not be sufficient for another stream with larger or smaller dimensions and flow. The width specified under each condition category should be evaluated relative to the width of the stream within the RR first, but riparian zone width should be no less than 50 feet (each side) for streams characterized as intermittent for optimal condition. Optimal conditions for streams characterized as perennial should be at least 100-150 feet (each side). Each bank is evaluated separately. Score for this variable is calculated as an average of the scores for each bank.

Selected References: Barbour, et al., 1999, Petersen, et al., 1992, Newton, et al., 1999.

3.2.6b. Riparian Zone Vegetation Protection/Completeness. This variable measures the amount of vegetation protection along the stream banks. Banks with full native vegetation growth are best for water quality and habitat. The type of vegetation is also an important component when measuring the completeness of vegetative protection. Vegetation protection is important because root systems of plants hold soil in place reducing the amount of erosion that may occur along the bank and also providing buffering from anthropogenic activities outside the riparian zone.

Is the vegetation natural and diverse, and does it consist of all structural components appropriate for the locale? If exotics are present or have replaced native species, do they support the habitat structure and protect water quality? What activities are occurring outside the riparian zone and does the riparian zone buffer these activities or do these activities impact the riparian zone? If activities are impacting the riparian zone, the zone may need to be wider to provide protection. How complete is the vegetation zone along each bank? Each bank is evaluated as both sides will be affected and are important for the health of the stream. Score for this variable is calculated as an average of the scores for each bank.

Selected References: Barbour, et al., 1999, Petersen, et al., 1992.

3.3 Habitat Function Variables

<u>3.3.1. Flow Regime</u>. The stream flow regime identified by this variable indicates the importance of the stream to the aquatic community. Although ephemeral and intermittent drainages are essential to the function of a watershed, they are not provided a point value equal to perennial streams due to the fact that they typically do not provide year-round habitat for aquatic organisms. Evaluators should take into account regional and site-specific climatic conditions (i.e., extended drought, recent heavy rains, etc.) when determining the flow characteristics of a stream. A range of point values is provided for various stream types to efficiently characterize differences in quality within that stream type. For example, some intermittent streams have groundwater input that sustains flow at a higher rate and for a longer period of time than other streams. The evaluator may choose to provide a higher score within the stream type for this system.

<u>Ephemeral stream</u> – A drainageway that may or may not have a well-defined channel that carries flow only during periods of surface runoff. These drainages are not hydrologically connected to subsurface inputs (i.e., springs, subterranean flow, etc.) and often lack a well-defined channel with easily identifiable bed and banks.

Intermittent stream – A drainageway with a well-defined channel that generally flows only during a part of the year. It continues to flow after cessation of surface runoff, but effluent groundwater (springs/subterranean flow) will not sustain flows through moderate periods of little or no precipitation. It may contain reaches of perennial flow or have permanent pools that support aquatic wildlife. Some special conditions, such as the discharge from a wastewater treatment plant or irrigation flows, can cause portions of an intermittent stream to have qualities of a perennial stream.

Perennial stream – A drainageway with a well-defined channel in which perennial flow persists throughout the length of the drainage during normal climate conditions. The permanency of flow is usually attributable to groundwater effluent. Some streams considered perennial may cease surface flow during periods of seasonal drought.

Selected References: KDWP 2000.

3.3.2. Epifaunal Substrate/Available Cover. Substrate and available cover refer to the relative quantity and variety of natural structures in the stream, such as cobble, large rocks, fallen trees, logs and branches, persistent leaf packs, and undercut banks, available to aquatic habitat for hiding, feeding, spawning and nursery functions. A wide variety of substrate provides macroinvertebrates and fish with a large number of niches, thus increasing habitat diversity. As variety and abundance of cover decreases, habitat structure becomes monotonous, diversity decreases, and the potential for recovery following disturbance decreases. Riffles and runs are critical for maintaining a variety and abundance of insects and serving as spawning and feeding refugia for certain fish. Riffles and runs offer a diversity of habitat through variety of particle size. Less variety or scarcity of substrate leads to less diversity of aquatic species. Also, sedimentation in the stream channel can lead to decreased condition of the habitat. Snags and submerged logs are among the most productive habitat structure for macroinvertebrate colonization and fish populations in low-gradient streams. However, “new fall” will not yet be suitable for colonization.

The variable score is determined by visual observation of percent of substrate and features present. When evaluating epifaunal substrate and available cover look at the relative quantity and variety of natural structures in the stream. In general, consider the entire bankfull area of the channel, but give greater weight to the area of the channel that remains wetted during lower flow conditions (such as those during late summer).

Selected References: USACE Norfolk, 2004, Barbour, et al, 1999, Parsons, et al, 2001.

3.3.3. Stream Bottom Substrate. The type and condition of the substrate found in the pools of the channel is a factor in determining if the pools can support organisms. Firmer substrate (gravel and sand) and rooted aquatic plants provide better substrate than mud or bedrock with no plants. Also, more variety of substrate typically supports a more diverse community of organisms. Visual observance of the substrate materials in pools is used to determine the score. The evaluator should consider these variables and use professional judgment when scoring the components related to substrate.

Waters (1995) reports on several studies that have demonstrated that substrate and biological diversity are often correlated, with substrates having greater surface area and interstitial space (i.e., gravel, cobble) indicative of greater aquatic macroinvertebrate and vertebrate diversity. These habitats are particularly productive in riffles where numerous benthic macroinvertebrates inhabit these areas and require substrates unimpeded by excessive sedimentation. At sediment embeddedness levels greater than one-third (i.e., more than 33% of the substrate fixed by surrounding sediment) oxygen flow decreases and insect abundance can decline by approximately 50% for riffle inhabiting taxa.

In cases where a stream's substrate is monotypic, but not indicative of less-than-optimal habitat, the evaluator should provide a score that reflects the site's substrate quality in relation to the geographical region in which the evaluation is being performed. The evaluator should consider if the lack of substrate diversity is hindering the habitat quality of the stream for the geographical area the site is located in. If not, then exceptions can be made and appropriate points provided along with a brief explanation. Best professional judgment on the substrate parameters should address these dynamic circumstances to provide the optimal score the habitat provides for aquatic organisms on a consistent basis.

Selected References: Barbour, et al, 1999, Parsons, et al, 2001, Petersen, 1992.

3.3.4. Pool Variability. For low gradient streams, this variable rates the overall mixture of pool types found in streams, according to size and depth. The four basic types of pools are large-shallow, large-deep, small-shallow, and small-deep. A stream with many pool types will support a wide variety of aquatic species. Rivers with low sinuosity (few bends) and monotonous pool characteristics do not have sufficient quantities and types of habitat to support a diverse aquatic community. General guidelines for determining large or small pools are any pool dimension (ie., length, width, oblique) greater than half the cross section of the stream qualifies as a large pool. In wadeable streams, a deep pool is 1.5 to 2 times deeper than the prevailing depth, while a shallow pool is less than 1.5 times deeper than the prevailing depth.

Selected References: Barbour, et al., 1999, Parsons, et al., 2001.

3.3.5. Sediment Deposition. Measures the amount of sediment that has accumulated in pools and the changes that have occurred to the stream bottom as a result of deposition. Deposition occurs from large-scale movement of sediment. Sediment deposition may cause the formation of islands, point bars (areas of increased deposition usually at the beginning of a meander that increase in size as the channel is diverted toward the outer bank) or shoals, or result in the filling of runs and pools. Usually deposition is evident in areas that are obstructed by natural or manmade debris and areas where the stream flow velocity decreases, such as bends. High levels of sediment deposition are symptoms of an unstable and continually changing environment that becomes unsuitable for many organisms.

Selected References: Barbour, et al., 1999, Parsons, et al., 2001, USACE Norfolk, 2004.

<u>3.3.6. Channel Flow Status</u>. Channel flow status is the degree to which water covers the entire available channel substrate, from bank to bank. The flow status will change as the channel enlarges (e.g., aggrading stream beds with actively widening channels) or as flow decreases as a result of dams and other obstructions, diversion for irrigation, or drought. When water does not cover much of the streambed, the amount of suitable substrate for aquatic organisms is limited. In high-gradient streams, riffles and cobble substrate are exposed; in low-gradient streams, the decrease in water level exposes logs and snags, thereby reducing the areas of good habitat. Channel flow is especially useful for interpreting biological condition under abnormal or lowered flow conditions. This parameter becomes important when more than one biological index period is used for surveys or the timing of sampling is inconsistent among sites or annual periodicity.

When measuring this parameter you should consider the area from the toe of the stream bank to the toe of the opposite stream bank. Whether due to natural runoff patterns or human-induced impacts, streams have different flow characteristics. A stream that is naturally intermittent is more likely to exhibit poorer channel flow status condition than a perennial stream. Evaluation of channel flow status should be made based on normal flow within a stream channel. Best professional judgment should be used to determine normal flow conditions. Review of climatic data for the local area of the stream assessment can provide indication of rainfall patterns prior to the field assessment work. Field indicators would include water levels relative to ordinary high water mark (OHWM) for the stream channel.

Selected References: TCEQ, 1999, Barbour, et al., 1999, Parsons, et al., 2001; Vermont Agency of Natural Resources, 2005.

<u>3.3.7. Channel Alteration</u>. Channel alteration is a measure of large-scale changes in the shape of the stream channel. Many streams in urban and agricultural areas have been straightened, deepened, or diverted into concrete channels, often for flood control or irrigation purposes. Such streams have far fewer natural habitats for fish, macroinvertebrates, and plants than do naturally meandering streams. Channel alteration is present when artificial embankments, riprap, and other forms of artificial bank stabilization or structures are present; when the stream is very straight for significant distances; when dams and bridges are present; and when other such changes have occurred. Scouring is often associated with channel alteration.

Selected References: USACE Norfolk, 2004, Barbour, et al., 1999, Parsons, et al., 2001.

3.3.8. Channel Sinuosity. Evaluates the meandering or sinuosity of the stream. A high degree of sinuosity provides for diverse habitat and fauna, and the stream is better able to handle surges when the stream fluctuates as a result of storms. The absorption of stream flow energy by bends protects the stream from excessive downstream erosion and flooding and provides refugia for benthic invertebrates and fish during storm events. To gain an appreciation of this parameter in low gradient streams, a longer segment or reach than that designated for sampling may be incorporated into the evaluation. In some situations, this parameter may be rated from viewing accurate topographical maps or aerial photographs. The "sequencing" pattern of the stream morphology is important in rating this parameter. In "oxbow" streams of coastal areas and deltas, meanders are highly exaggerated and transient. Natural conditions in these streams are shifting channels and bends, and alteration is usually in the form of flow regulation and diversion. A stable channel is one that does not exhibit progressive changes in slope, shape, or dimensions, although short-term variations may occur during floods (Gordon et al. 1992).

Selected References: Barbour, et al., 1999, Parsons, et al., 2001.

3.3.9. Bank Stability. Measures whether the stream banks are eroded (or have the potential for erosion). Steep banks are more likely to collapse and suffer from erosion than are gently sloping banks, and are therefore considered to be unstable. Signs of erosion include crumbling, unvegetated banks, exposed tree roots, and exposed soil. Eroded banks indicate a problem of sediment movement and deposition, and suggest a scarcity of cover and organic input to streams. Each bank is evaluated separately and the cumulative score (right and left) is used for this parameter.

Selected References: Barbour, et al., 1999, Parsons, et al., 2001, USACE Norfolk, 2004.

3.3.10. Vegetation Protection. Measures the amount of vegetative protection afforded to the stream bank and the near-stream portion of the riparian zone. The root systems of plants growing on stream banks help hold soil in place, thereby reducing the amount of erosion that is likely to occur. This parameter supplies information on the ability of the bank to resist erosion as well as some additional information on the uptake of nutrients by the plants, the control of in-stream scouring, and stream shading. Banks that have full, natural plant growth are better for fish and macroinvertebrates than are banks without vegetative protection or those shored up with concrete or riprap. This parameter is made more effective by defining the native vegetation for the region and stream type (i.e., shrubs, trees, etc.). In some regions, the introduction of exotics has virtually replaced all native vegetation. The value of exotic vegetation to the quality of the habitat structure and contribution to the stream ecosystem must be considered in this parameter. In areas of high grazing pressure from livestock (or from uncontrolled wildlife populations) or where residential and urban development activities disrupt the riparian zone, the growth of a natural plant community is impeded and can extend to the bank vegetative protection zone. Damage may also result from exotic animals (e.g., nutria) that forage on both herbaceous and small diameter woody vegetation as well as burrow into banks. Each bank is evaluated separately and the average score (right and left) is used for this parameter.

Selected References: Barbour, et al., 1999, Parsons, et al., 2001, KDWP, 2000, Petersen, et al., 1992.

3.3.11. Riparian Zone Width. Measures the width of natural vegetation from the edge of the stream bank out through the riparian zone. The vegetative zone serves as a buffer to pollutants entering a stream from runoff, controls erosion, and provides habitat and nutrient input into the stream. A relatively undisturbed riparian zone supports a robust stream system; narrow riparian zones occur when roads, parking lots, fields, lawns, bare soil, rocks, or buildings are near the stream bank. Residential developments, urban centers, golf courses, and rangeland are the common causes of anthropogenic degradation of riparian zone. Conversely, the presence of "old field" (i.e., a previously developed field not currently in use), paths, and walkways in an otherwise undisturbed riparian zone may be judged to be inconsequential to altering the riparian zone and may be given relatively high scores. For variable size streams, the specified width of a desirable riparian zone may also be variable and may be best determined by some multiple of stream width (e.g., 4X wetted stream width). The riparian zone is influenced by the depth to groundwater, and is related to the interaction of the stream and groundwater. As one moves landward, the groundwater may become deeper beneath the surface. At some point, the groundwater is of sufficient depth below the surface that it is not a source of water for trees. This point is the natural demarcation that defines the extent of the riparian zone. Since it is usually impractical to make this determination, default values of 25-foot wide buffers fro ephemeral streams, 50-foot buffers for intermittent streams, or 75-150-foot wide buffers for perennial stream are often used to evaluate this variable. Each bank is evaluated separately and the cumulative score (right and left) is used for this parameter.

Selected References: Barbour, et al., 1999, Parsons, et al., 2001.

3.3.12. Riparian Habitat Condition. Evaluate the riparian area condition within a 25-foot wide buffer for ephemeral streams, a 50-foot buffer for intermittent streams, or a 75-150 foot wide buffer for perennial streams. The buffer should be evaluated from the top of each bank and to the appropriate buffer width for the stream flow regime along the entire length of the SAR. The SAR Area may be homogeneous (for example: all pasture land on both banks) or heterogeneous (example: 33% forested, 33% cropland, and 33% pavement). It is possible that the SAR could contain multiple condition categories; each with one or more scores. In that case, each condition category present within the SAR is scored and weighted by the percent it occupies within the SAR.

Land use cover data from aerial photographs and other sources should be used to determine the land use cover within buffer zones of the SARs. Each Riparian Area condition category (Optimal, Suboptimal, Marginal, Poor) present should be categorized and scored accordingly, based upon the condition description in the Riparian Areas variable. An estimate of the condition categories may be made from aerial photographs and land use maps, but visual verification of conditions based on observations during field investigations for Reference Reaches should be made.

The score is calculated as a weighted Sub-Condition Index (SCI) for each bank and then total Riparian Area Condition Index (CI) for the SAR. Percentages and scores are determined separately for Right and Left banks. For example: Suboptimal comprises 30% of the Right Bank SAR and its score is 7; Marginal comprises the other 70% of the Right Bank SAR and its score is 3. A weighted SCI for each bank is calculated by multiplying the percentage by the score. Summing the SCI scores provides the CI for the bank. The left and right bank CI are averaged together to obtain the CI for the entire SAR. From the above example: (0.3 x 7) + (0.7 x 0.3) = SCI 4.2

Selected References: USACE Norfolk, 2004.

4.0 Impoundments

Impoundments in Texas are man-made structures used for water supply, recreational, agricultural, or flood-control and grade stabilization purposes. These structures may be constructed to capture sheet runoff from the watershed (upland ponds) or as on-channel impoundments. On-channel impoundments are considered jurisdictional waters of the U.S. where the impoundment expands the breadth of ordinary high water mark (OHWM) of a defined stream and therefore, are protected under the Clean Water Act. Impacts to on-channel impoundments require a Section 404 permit, and potentially, compensatory mitigation since these structures provide a number of benefits to wildlife adapted to lentic habitat types. The parameters included in the SWAMPIM for on-channel impoundments are adapted from a similar evaluation system utilized by the Kansas Department of Wildlife and Parks (KDWP 2000). The impoundment evaluation is designed to provide a qualitative assessment of the habitat available to species, as well as water quality conditions. The impoundment assessment, as with the stream assessment, incorporates geological and morphological habitat characteristics, riparian and watershed condition, biological components, and water chemistry into the protocol. The merging of these variable characteristics of an impoundment into an assessment protocol provides a means to rapidly produce a quality determination of habitat characteristics and ecological conditions based on observations and measurements taken at a single point in time.

Although on-channel impoundments are jurisdictional waters of the U.S., they function differently within a watershed than a stream. Therefore, evaluation of impoundments should be related to the aquatic functions provided in these lentic environments. Especially in areas dominated by ephemeral and intermittent streams, the more perennial nature provided by the pool of an on-channel impoundment increases both habitat availability and diversity, provides flood storage, captures sediment load, provides capture and degradation of organic loads from the watershed, and many of the other functions also related to streams. Detailed descriptions of the variables for assessment of impoundments are provided in Section 5 of this document.

4.1 Size Categories

Four size categories were identified for on-channel impoundments for this evaluation:

- Small ponds ($\leq$1 acre);
- Ponds (>1 acre $\leq$ 5 acres);
- Lakes (>5 acres $\leq$ 500 acres); and
- Reservoirs (>500 acres)

For calculation of the Resource Capacity (RC) (similar to Functional Capacity (FC) for Streams and Rivers), a multiplication factor was developed for each impoundment size category to reflect the corresponding increase in overall habitat area provided with the addition of a representative buffer zone along the impoundment shoreline. The multiplication factor was determined by calculating the habitat area increase based on the increased radius provided by a buffer zone of 25 feet for a small pond, 25 feet for a pond, 100 feet for a lake, and 150 feet for a reservoir based on a hypothetical circular impoundment of median size for each category (i.e., 0.5 acre for small pond, 2.5 acres for pond, 250 acres for lake, and 5,000 acres for reservoir). The impoundment plus buffer zone area was divided by the impoundment area to determine the multiplication factor for each category.

4.2 General Instructions for Impoundments Assessment Using SWAMPIM

A. Determine the On-Channel Impoundments present within the proposed project area. Categorize all identified on-channel impoundments based on the size categories listed in Section 4.1.

B. Determine representative impoundments to be assessed within each category based on the quantity and variability of quality of the identified impoundments within each category (based on initial reconnaissance and studies).

C. Complete Impoundment Resource Assessment Forms for each representative impoundment based on measurements and assessment of conditions. Certain variables (e.g. shoreline development, watershed land use) may be evaluated first through review of topographic maps and recent aerial photographs with subsequent verification based on field observations.

D. Total the scores for physical, watershed/management, biological, and water quality variables.

D. Calculate the Resource Condition Index (RCI) for each representative impoundment based on the total score for the impoundment divided by 100 (the maximum total score possible).

E. If multiple representative impoundments are assessed for a category, add the RCIs calculated for all representative impoundments in the category and divide by the number of impoundments assessed to determine an average RCI score.

F. The RCIs determined for the impoundment category are then multiplied by the total acreage of all impoundments within each category then multiplied by the multiplication factor (described in Section 4.1) for the specific category represented to determine the total Resource Capacity (RC) for the category.

The resulting calculation for RC is as follows:

RC = RCI * (Total Acreage of All Impoundments In Category) * Multiplication Factor

G. The Project RC for impoundments is the summation of the total RCs for all Impoundment Categories within the defined project area.

H. Post-project RC for impoundments is determined by the same process as for the existing conditions within the project area except scoring of physical, watershed/management, biological, and water quality variables for each impoundment category is based on projections of changes in condition relative to proposed project activities, including compensatory mitigation activities, or resulting impacts of the proposed project.

5.0 Description of Resource Variables for Impoundments

5.1 Physical Habitat

5.1.1 Shoreline Development. The Shoreline Development Index (SDI) is a common morphometric measurement used to calculate the amount of littoral zone present on a water body (McMahon et al., 1996). The littoral zone of a water body provides spawning and nursery habitat for the majority of lentic fish species, as well as being the area of greatest biological productivity and habitat use by other aquatic and semi-aquatic wildlife. The SDI incorporates the area of the impoundment and shoreline length, and is calculated from the following equation:

$$\mathrm{SDI} = \frac{L}{(2)\sqrt{A\pi}}$$

Where L = shoreline length (feet) and A = surface area of the impoundment (square feet). The SDI represents the ratio of the circumference of an impoundment compared to a circle of the same area. A circular shaped impoundment would have an SDI of 1, offering the minimal amount of littoral zone compared to the surface area of the water body. Circumference and area measurements of an impoundment can be obtained from aerial photographs, topographical maps, or Global Positioning Systems (GPS).

5.1.2 Average Depth. Average depth of small impoundments can be estimated with the use of a weighted bobber with incremental depths identified or by measuring the depth with a depth stick. Increased average depth provides critical refugia during drought as water pools shrink as well as for various aquatic species that prefer deep-water areas.

5.1.3 Annual Storage Ratio. The annual storage ratio is a hydrodynamic variable commonly used to describe the rate at which water moves through an impoundment (McMahon et al. 1996). It is synonymous with other calculations such as flushing rate and turnover time, which describe water transport through impoundments. Storage ratio is measured as:

$$\text{Storage Ratio} = \frac{\text{Storage Volume (Acre feet)}}{\text{Annual discharge rate (Acre feet)}}$$

For example, if the evaluator is calculating the storage ratio for the 3 acre impoundment listed above, and it is estimated the average depth is 5 feet, the impoundment would have a storage volume of 15 acre feet. If the average annual discharge is estimated at 0.01 cfs (approximately 5 gallons/minute), the annual discharge rate could be calculated as:

$$\begin{aligned} \textit{Annual Discharge} &= 0.01\frac{\text{ft}^3}{\text{sec ond}} \times 60\frac{\text{sec onds}}{\text{min ute}} \times 60\frac{\text{min utes}}{\text{hour}} \times 24\frac{\text{hours}}{\text{day}} \times 365\frac{\text{days}}{\text{year}} \times \frac{1}{43560}\frac{\text{acre}\cdot\text{ft}}{\text{ft}^3} \\ &= 7.28\frac{\text{acre}\cdot\text{ft}}{\text{year}} \end{aligned}$$

Thus, storage ratio would be equal to 2.1(15 ÷ 7.2) and would receive a score of "3" on the evaluation form. Studies have indicated that there is an optimal rate of water movement through an impoundment that reduces the number of fish lost through discharge events (Willis and Stephen, 1987).

The following table will help describe discharge amounts when estimating storage ratio:

Average discharge Gallons/minute	**CFS**	**Annual discharge rate (acre-feet)**
4.5	0.01	7.2
45	0.1	72
450	1	720

Note: For impoundments that do not normally have a discharge except for short periods following substantial rainfall events that result in capture of sufficient water to allow variable spillage, this parameter can be deleted from the assessment with the corresponding adjustment to the calculation for RCI. Impoundments such as the ones within the Lake Ralph Hall project area which are sited on streams characterized as ephemeral would be in this category.

5.1.4-6. Substrate, Number of Substrate Types, and Amount of Cover. As in streams, substrate diversity is correlated to biological diversity and is an important habitat characteristic. When estimating the amount of cover for component #6 (Amount of Cover), the percentage of available cover should be estimated from the littoral zone, not the water body as a whole.

5.1.7. Native Vegetative Buffer. Native vegetation adjacent to the water body provides similar benefits to an impoundment as does a riparian zone along a stream. Benefits include protection against bank erosion, water quality benefits to surface runoff, aquatic habitat and nutrient input to the impoundment, and habitat to terrestrial species that may in turn provide resources to the aquatic community (i.e., terrestrial insects).

5.1.8. Bank erosion. Erosion of banks through sloughing from wave action and livestock trampling can degrade water quality and habitat for aquatic species, and decrease the sediment storage for the impoundment.

5.2. Watershed Land Use And Impoundment Management

5.2.1. Impoundment Management. Various strategies can be implemented to provide benefits to the aquatic habitat of an impoundment as well as enhancement of adjacent riparian habitat. Drawdowns in water elevation allows for areas in the littoral zone that are typically inundated to colonize with vegetation and invertebrates, thus providing excellent food resources and nursery habitat for fish species following subsequent inundation. Management of water levels can be implemented with draw-down valves and can be coupled with flow-augmentation for the downstream channel, thus reducing de-watering effects downstream or enhancing flow regimes for ephemeral or intermittent downstream waters. Fish fences around spillways prevent the escape of impoundment fishes and reduce their influence on stream fish communities. Excluding livestock from the impoundment will improve water quality and protect banks from trampling effects. Fish feeders can increase growth and vigor of many sport fishes, and along with supplemental stockings and managed harvest rates, the quality of the fishery can be improved and overpopulations and growth stunting reduced. Other management strategies that maintain a quality sport fishery such as following strict harvest guidelines for large predators (i.e., Bass, Crappie, Catfish) and preventing the introduction of nuisance fish. Also, management strategies that control introduction of nuisance exotic species, including plant species, and enhance native habitat features should be awarded points when applicable.

5.2.2. Watershed Land Uses. Poorly implemented agricultural activities and human settlement are the two most influential factors that lead to degradation of an impoundment primarily by increasing sedimentation and degrading water quality. The evaluator should estimate the extent of minimal and significant impact land uses in the upstream watershed, as described in the stream evaluation guidelines, and provide the appropriate points.

5.3. Biological Diversity and Abundance

5.3.1. Fishery Characteristics. Impoundments are virtually all man-made structures in Texas, and as such, their fishery components typically consist of sport fishes stocked for recreational purposes. This fact is recognized in this component, and provides a higher habitat value to an impoundment that provides high-quality recreational fishing opportunities. In addition, most high-quality sport fisheries are an indication of a well-managed facility and upstream watershed, and can be considered an indicator of overall biological health for the aquatic community. Occasionally, exotic fish may be a detriment to the fishery potential of an impoundment. In these instances, the evaluator may deduct 5 points for this component. The negative aspects of impoundments on native stream fish communities are not considered in this component, but are addressed in the stream evaluation.

5.3.2. Aquatic Insects. Aquatic insects are imperative to the overall aquatic community of lentic systems. Since most aquatic insects native to the central plains evolved in streams, much of the habitat these organisms require does not exist in impoundments; therefore, macroinvertebrate assemblages found in lentic environments will differ from those found in lotic (swift flowing water) environments. This component of the impoundment evaluation addresses species richness (i.e., number of species) of

Phylogenetic Orders of macroinvertebrates, rather than the presence/absence of species indicative of antropogenic (habitat destruction, water quality impairment, etc.).

<u>5.3.3-4. Mollusc/Crayfish and Aqua tic and Semi-Aquatic V ertebrates</u>. These two components provide an estimation of various aquatic and semi-aquatic organisms that may exist in impoundments. As with aquatic insects, most of these organisms evolved in streams, and the majority of species that exist in impoundments evolved in lentic habitat types that exist in slow-moving streams, back-water oxbows, or wetlands. The evaluator should account for live or recently dead individuals to estimate existing populations for mussels and crayfish. Evaluators should check for the presence of nuisance exotic organisms (i.e., Zebra mussels (*Dreissena polymorpha*) or nutria (*Myocastor coypus*)) in or around the impoundment and deduct 5 points from the score if present. Other aquatic vertebrates may include amphibians, reptiles, birds, and mammals that live or breed in or near impoundments.

5.4. Water Quality

Water quality will affect an impoundment's ability to support aquatic life. Five main parameters (DO/BOD, Nutrient Enrichment, Pesticides, Turbidity, and Temperature) have been selected for the evaluator to assess based upon the effects degradation of these components can have on aquatic organisms; however, if it is determined other parameters are influencing aquatic life, those should be included along with a narrative description identifying their importance. The evaluator should determine if the parameter is frequently, occasionally, or rarely limiting aquatic life in the impoundment. Best professional judgment should be used when making this determination.

5.5. Impoundment Characteristics, Project Comments, and Species Information

This section is not included in the qualitative score for the impoundment, but rather allows the evaluator to provide data on physical characteristics, species observed during the evaluation, and any comments related to specific components that the evaluator modified during the assessment.

6.0 Glossary of Terms

Bankfull Depth (BFD): Maximum water depth as measured from the bottom of the channel in the thalweg (see below) portion of a riffle (that portion of the channel between an upstream pool and the next downstream pool) to bankfull stage elevation (Note: Measures of BFD should never be taken in a stream's pool zone).

Bank Height Ratio (BHR): The relationship between the top of the lowest bank (TOLB) and maximum bankfull depth (see above). Bank Height Ratio is a measure of channel incision (see below). Bank Height Ratio is determined by dividing the TOLB height by the maximum bankfull depth.

Bankfull Stage (BFS): A physical and/or biological indicator on the stream bank or in the stream channel that marks the elevation of ordinary high flows. These flows generally have a re-occurrence interval of 1.5 to 1.8 years and are the primary channel-forming flows. Bankfull Stage can be determined by such features as the elevation associated with the highest point bars/mid-channel bars, break in slope on the banks, particle size distribution (finer material that is associated with over-flow rather than more coarse material deposited in the active channel), water staining on rocks, trees, bridge abutments, exposed root hairs below an intact soil layer, the lower limit of woody vegetation on the channel banks, shelving, etc.

Base flow: The sustained portion of stream discharge that is drawn from natural storage sources, and not affected by human activity or regulation.

Bed load: Sediment moving on or near the streambed and transported by jumping, rolling, or sliding on the bed layer of a stream.

Bed material: The sediment mixture that a streambed is composed of.

Benthic invertebrates: Aquatic animals without backbones that dwell on or in the bottom sediments of fresh or salt water. Examples: clams, crayfish, insect larvae, and worms.

Berms: Mounds of dirt, earth, gravel, or other fill built parallel to the stream banks designed to keep flood flows from entering the adjacent floodplain.

Biota: All living organisms of a region, as in a stream or other body of water.

Buffer strip: A barrier of permanent vegetation, either forest or other vegetation, between waterways and land uses such as agriculture or urban development, designed to intercept and filter out pollution before it reaches the surface water resource.

Channel: An area that contains continuously or periodically flowing water that is confined by banks and a streambed.

Channel Incision: The extent that a stream channel has down-cut through its floodplain. Bank Height Ratio, as described above, is a measure of channel incision. A BHR greater than 1 generally indicates that a stream has some degree of incision and that storm events in excess of 1.5 to 1.8 year events are necessary before the stream overtops its banks onto the floodplain.

Channelization: The process of artificially straightening a stream channel by using equipment to cut a new channel thereby eliminating a stream's natural meanders, or containing a stream by streambank filling or hardening. In some circumstances, channelized streams, over time, equilibrate to a new base elevation and re-establish stable dimension, pattern, and profile. As this occurs, new floodplains can evolve within the incised channel. While it may be evident that some streams were channelized in the past, they may not be considered channelized if they have evolved a new stable meander pattern and floodplain within a historic channelized section.

Contiguous Habitat: Habitat suitable to support the life needs of a species that is distributed continuously or nearly continuously across the landscape.

Detritus: Organic material such as leaves, twigs, and other dead plant matter, that collects on the stream bottom. It may occur in clumps, such as leaf packs at the bottom of a pool, or as single pieces, such as a fallen tree branch.

Epifaunal: "Epi" means surface, and "fauna" means animals. Thus "epifaunal substrate" is structures in the stream (on the stream bed) that provide surfaces on which animals can live. Animals such as aquatic invertebrates live on or under cobbles, boulders, logs, snags, and in cracks and crevices found in these structures.

Ephemeral Streams: Streams that flow only in direct response to precipitation and whose channel is at all times above the water table.

Eutrophication: A process through which excessive plant growth, typically algae, induced by excess nutrients is followed by the decomposition of vegetative material and the depletion of the water's oxygen supply.

Floodplain: The portion of the river valley adjacent to the active channel that is built of sediments deposited during the present regimen of the stream and is covered with water when the river overflows its banks at flood stages.

Function Capacity Index (FCI): A numerical value representing the quantity and quality of a function present in a Reference Reach (RR). FCI is the sum of variable scores from the parameters of each function category divided by the maximum possible score for each function category. Where multiple RRs are evaluated for a SAR, the FCI for each function category is calculated as the average of the FCIs for the function category calculated for each RR.

Functional Capacity (FC): A numerical value that represents the quality and quantity of functional area (comparable to acres of stream and associated riparian corridor) affected by a project. The FC is derived from the FCI which qualitatively measures hydrological, water quality/biogeochemical, and habitat functions.

Function Variables: Stream Function Variables are physical, biological, and geomorphologic parameters selected to enable collection of uniform, consistent data when evaluating different aquatic resources (i.e. ephemeral vs. intermittent vs. perennial; small impoundments vs. large lakes) to provide a qualitative and quantitative value of Stream.

Geomorphology: The science that treats the general configuration of the earth's surface, including the classification, description, nature, origin, and development of landforms and their functional relationships to underlying structures.

Glide: A section of stream that has little or no turbulence.

Gradient: Vertical drop per unit of horizontal distance.

Incised River: A river that erodes its channel by the process of degradation to a lower base level than existed previously or is consistent with the current hydrology.

Instream Cover: The layers of vegetation, like trees, shrubs, and overhanging vegetation, that are in the stream or immediately adjacent to the wetted channel.

Intermittent Stream: Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition, but where evidence of groundwater inflows can be discerned along the stream bank.

Large Woody Debris (LWD): Pieces of wood at least 6 feet long and 1 foot diameter (at the large end) contained, at least partially, within the bankfull channel.

Left Bank/Right Bank: Left Bank and Right Bank designations are always determined while facing downstream.

Littoral Zone: Shallow area along or near a shoreline.

Low Gradient: Streams typically appear slow moving and winding and have poorly defined riffles and pools. Low gradient streams have wider and less rugged valleys, with a tendency for the stream to meander. These are older streams, in geological time.

Nutrients: The elements required to support the bodily structure and metabolism of biological organisms. These elements include nitrogen and phosphorus, which can become pollutants if present in excessive quantities or result in the generation of adverse secondary effects, such as eutrophication in slow moving or standing water.

Perennial Stream: A stream that flows continuously throughout the year.

Pond: A body of water smaller than a lake, often artificially formed.

Pool: A reach of stream that is characterized by deep, low-velicity water and a smooth surface river (normally found in the bends of the stream or river).

Reach: An uninterrupted length of stream channel with similar physical characteristics, including discharge conveyance capacity, cross section geometry, and slope.

Reference Reach (RR): Reference reaches are segments of a Stream Assessment Reach (SAR) that are deemed representative of the entire Stream Assessment Reach so that evaluation of the Reference Reach is used to characterize the conditions for the Stream Assessment Reach. A Reference Reach should be 40 times the average stream width in wadeable streams with a minimum length of 150 m (492 feet) and maximum length of 500 m (1640.5 feet).

Reference Impoundment: An impoundment in the project area that is considered representative of other impoundments of like size and type within the project area.

Riffle: Riffles are the topographic highs between an upstream pool and a downstream pool generally characterized by “rapids” in a stream or river where shallow water flows swiftly over a rough or rocky surface.

Riparian Area: An area of land and vegetation adjacent to a stream that has a direct effect on the stream. This includes woodlands, other vegetation, and floodplains.

Riparian Buffer: The width of naturally vegetated land adjacent to the stream between the top of the bank (or top of slope, depending on site characteristics) and the edge of other land uses. A buffer is largely undisturbed and consists of the trees, shrubs, groundcover plants, duff layer, and naturally uneven ground surface, which serve to protect the water body from the impacts of adjacent land uses.

Riparian Corridor: Includes lands defined by the lateral extent of a stream's meanders necessary to maintain a stable stream dimension, pattern, profile, and sediment regime. In addition, the riparian corridor typically corresponds to the land area surrounding and including the stream that supports (or could support if unimpacted) a distinct ecosystem, generally with abundant and diverse plant and animal communities (as compared with upland communities).

Riparian: Located on the banks of a stream or other body of water.

Roughness: Features that create resistance to the downstream movement of water in a channel. The features may include sediment particles, sediment deposits, bank irregularities, the type, amount, and distribution of living and dead vegetation, and other obstructions to flow. The term is modified to "relative roughness" when the scale of the roughness elements to the water depth is considered. Streambed roughness is commonly expresses as a Manning's "n" value.

Run (in stream or river): A reach of stream characterized by fast-flowing, low-turbulence water.

Runoff: Water that flows over the ground and reaches a stream as a result of rainfall (or other precipitation).

Sediment: Solid, fragmented material that is transported and deposited by wind, water, or ice, chemically precipitated from solution, or secreted by an organism, that forms in layers or a loose unconsolidated form.

Sinuosity: The amount of curvature in a channel defined as the ratio of the active channel length to the valley length.

Stream Assessment Reach (SAR) : Stream Assessment Reaches are stream systems of like characteristics within a project area. While many stream projects may be evaluated with one

Stream Assessment Reach being assessed, some projects may need to be split into several Stream Assessment Reaches depending on the differing stream characteristics within the project area.

Stream Gradient: The ratio of drop in a stream per unit distance, usually expressed as feet per mile or meters per kilometer.

Thalweg: The general meander line of deepest water in a stream when viewed from above. The thalweg is normally associated with the zone of greatest velocity and flow.

Top of Lowest Bank (TOLB): Bank height as measured from the bottom of the channel in the thalweg portion of a riffle (that portion of the channel between an upstream pool and the next downstream pool) to the top of the lowest bank. Top of Lowest Bank measurements in the stream channel are made at the same location in the thalweg as the Maximum Bankfull Depth. However, the location on the banks being measured may vary short distances up or down stream of the thalweg measurement location. The TOLB and the MBD are used to determine the bank height ratio; the BHR is a measure of channel incision as described above.

Watershed: The land area that drains water, sediment, and dissolved materials to a common outlet. The term is synonymous with drainage basin and catchment.

Wetland: Term used to describe areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions, including swamps, marshes, bogs, and other similar areas.

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APPENDIX A

FIELD FORMS FOR ASSESSMENT
OF
STREAMS AND RIVERS

ITEM	VARIABLES	I. HYDROLOGIC FUNCTIONS											SCORE	Reference Source
1.	FLOW REGIME:													*KDWP 2000* Kansas Subjective
	TYPE	Perennial			Intermittent w/ Perennial Pools			Intermittent		Ephemeral				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
2.	CHANNEL CONDITION: Measurement or Observation of Stream Channel Conditions													
		CONDITION CATEGORY GRADE or SCORE												*Barbour, 1999* EPA RBA page 5-21; *Newton, 1998* USDA/ NRCS SVAP page 7
		Optimal			Suboptimal			Marginal		Poor				
	2a.Channel Condition/Alteration (natural, altered, or downcutting)	Natural channel; no structures or channelization minimal. No evidence of downcutting or excessive lateral cutting. Normal frequency of hydrological connection between channel and floodplain.			Some channelization (usually in bridge areas) or past channel alteration, but with significant recovery of channel bed and banks. Acceptable frequency of overbank flows onto floodplain.			Altered channel; 40-80% of the reach channelized or disrupted. Excess aggradation; braided channel with excessive frequency of overbank flows onto the floodplain. Historical incision,dikes or levees restrict floodplain.		Channel is actively downcutting or widening. >80% of the reach riprap or channnelized. Degradation,dikes or levees prevent access to the floodplain.				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
		CONDITION CATEGORY GRADE or SCORE												w/ assistance and input from Dr. Mike Harvey and Stu Travant
		Optimal			Suboptimal			Marginal		Poor				
	2b.Channel Capacity to Flow Frequency Ratio (for 2-year peak flow)	Channel Capacity to Flow Frequency Ratio is such that bank overflow from storm events occur at a 1.25 to 2.5 year frequency. 0.75-1.25			Channel Capacity to Flow Frequency Ratio is such that bank overflow from storm events are more frequent than every 1.25 years or less frequent than every 2.5 years. <0.75 or >1.25			Channel Capacity to Flow Frequency Ratio is such that bank overflow from storm events are more frequent than every year or less frequent than every 5 years. < 0.5 or >1.5		Channel Capacity to Flow Frequency Ratio is such that bank overflow from storm events are more frequent than every half year or less frequent than every 10 years. <0.24 or >2				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
		CONDITION CATEGORY GRADE or SCORE												*Newton, 1998* USDA/ NRCS SVAP page 10; *Barbour, et al., 1999* EPA RBA page 5-26; *USACE, Norfolk District, 2004*
		Optimal			Suboptimal			Marginal		Poor				
	2c.Channel Bank Stability (score each bank, left or right facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; (<5% of bank affected), perennial vegetation to waterline; no raw or undercut banks (some erosion on outside of meander bends O.K.); no recently exposed roots; no recent tree falls;			Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of minor erosion and/or bank undercutting; perennial vegetation to waterline in most places; recently exposed tree roots rare but present.			Moderately unstable; perennial vegetation to waterline sparse (mainly scoured or stripped by lateral erosion), bank held by hard points (trees, rock outcrops) and eroded back elsewhere; 30-60% of bank in reach has areas of erosion and bank undercutting; recently exposed tree roots and fine root hairs common;		Unstable; no perennial vegetation at waterline; severe erosion of both banks; recently exposed tree roots common; tree falls and/or severely undercut trees common; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
3	CHANNEL ROUGHNESS FACTORS													
		CONDITION CATEGORY GRADE or SCORE												*Barbour, 1999* EPA RBA Chapter 5 page 5-25; *KDWP, 1996*
		Optimal			Suboptimal			Marginal		Poor				
	3a.Channel Sinuosity (bends in low gradient stream)	The bends in the stream increase the stream length 2.5 to 4 times longer than if it was straight. Channel length/valley length at least >1.5.			The bends in the stream increase the stream length 1.5 to 2.5 times longer than if it was a straight line. Channel length/valley length 1.2 to 1.5			The bends in the stream increase the stream length 1 to 1.5 times longer than if it was a straight line. Channel length/valley length 1.0 to 1.2.		Channel straight; waterway has been channelized for a long distance. Channel length/valley length $\leq$ 1.0				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
		CONDITION CATEGORY GRADE or SCORE												*KDWP, 1996* Kansas Subjective Evaluation of Aquatic Habitats
		Optimal			Suboptimal			Marginal		Poor				
	3b. Bottom Substrate Composition	Little or no channel enlargement resulting from sediment accumulation; channel is stable			Some gravel bars of coarse stones and well-washed debris present, little silt; moderately stable			Sediment bars of rocks, sands, and silt common; moderately unstable		Channel divided into braids or stream is channelized; substrate is uniform sand, silt, clay, or bedrock; unstable				

	Variable	10	9	8	7	6	5	4	3	2	1	0	Score	Reference
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
Enter Score for Only One Variable	3c. Instream Bottom Topography	CONDITION CATEGORY GRADE or SCORE												*KDWP, 1996; Newton et al., 1998* USDA/NRCS SVAP page 13/
		Optimal			Suboptimal			Marginal		Poor				
		Diverse bottom topography including >7 of the following: deep pools, boulders/gravel, logs/large woody debris, backwaters/oxbows, overhanging vegetation, riffles, vegetated shallows, rootwads, undercut banks, or side channel pools			Channel bottom includes 5-7 of the items listed in Optimal Category			Channel bottom includes < 5 of the items listed in Optimal Category		Channel bottom includes <3 of the items listed in Optimal Category				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
	or 3c. Manning's n	CONDITION CATEGORY GRADE or SCORE												
		Optimal			Suboptimal			Marginal		Poor				
		0.05 to 0.099			0.035 to 0.05			0.021 to 0.03 or >0.10 to 0.15		0.16 to 0.20 due to excessive obstruction to flow or 0.01 to 0.02 due to channelization and clean, smooth channel.				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
	3d. Channel Incision (TLB/BFD=BHR; 1/BHR*Adj Factor =CI)	CONDITION CATEGORY GRADE or SCORE												*USACE, Norfolk District, 2004* SAAM Form 1 #1 and VT Stream Geomorphic Assessment Phase 2
		Optimal			Suboptimal			Marginal		Poor				
		Incision ratio ≥1.0 <1.2 **and** Where channel slope >2%; Entrenchment ratio >1.4; Where channel slope ≤2%; Entrenchment ratio >2.0			Incision ratio ≥1.2 <1.4 **and** Where channel slope >2%, Entrenchment ratio >1.4; Where channel slope ≤2%, Entrenchment ratio >2.0			Incision ratio ≥ 1.4 < 2.0 **and** Where channel slope > 2%, Entrenchment ratio >1.4; Where channel slope ≤2%, Entrenchment ratio >2.0		Incision ratio ≥2.0 **and** Where channel slope >2%, Entrenchment ratio ≤1.4; Where channel slope ≤2%, Entrenchment ratio ≤2.0				
	TLB =	15			BHR =	3								
	BFD =	5												
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
4	DYNAMIC SURFACE WATER STORAGE													
	4a.Pools (abundant, present or absent)	CONDITION CATEGORY GRADE or SCORE												*Newton, et al., 1998* USDA/ NRCS SVAP page 14; *Barbour, et al., 1999*
		Optimal			Suboptimal			Marginal		Poor				
		Deep and shallow pools abundant; greater than 30% of the pool bottom is obscure due to depth, or pools are at least 5 feet deep.			Pools present, but not abundant; from 10-30% of the pool bottom is obscure due to depth, or the pools are at least 3 feet deep.			Pools present, but shallow; from 5-10% of the pool bottom is obscure due to depth, or the pools are less than 3 feet deep.		Pools absent, or the entire bottom is discernible. No water = zero.				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
	4b. Channel Flow Status (degree to which channel is filled)	CONDITION CATEGORY GRADE or SCORE												*Barbour, et al., 1999* EPA RBA page 5-19 /A-9#5; *TCEQ 1999; VANR, 2005*
		Optimal			Suboptimal			Marginal		Poor				
		Water reaches base of both lower banks and minimal amount of channel substrate is exposed.			Water fills >75% of the available channel; or <25% of channel substrate is exposed.			Water fills 25-75% of the available channel, and /or riffle substrates are mostly exposed.		Very little water in channel and mostly present as standing pools. No water = zero.				
	Grade	10	9	8	7	6	5	4	3	2	1	0	0	
	Calculation of Function Capacity Index = Total Score/Total Possible Score												0	
	FCI = #/100													

II. WATER QUALITY/BIOGEOCHEMICAL FUNCTIONS

ITEM	VARIABLES												SCORE	Reference Source
	TYPE													
	NOTES													
1.	SEDIMENT TRANSPORT/DEPOSITION													
	1a. Bank Stability (score each bank, left or right facing downstream)	CONDITION CATEGORY GRADE or SCORE												*Newton, et al., 1998* USDA/NRCS SVAP page 10; *Barbour, et al., 1999* EPA
		Optimal			Suboptimal			Marginal		Poor				
		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.			Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.			Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.		Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
Enter Score for Only One Variable	1b. Channel Bottom Bank Stability	CONDITION CATEGORY GRADE or SCORE												*Galli, 1996* Wash-COG RSAT No. 1
		Optimal			Suboptimal			Marginal		Poor				
		Bottom 1/3 of bank is generally highly resistant plant/soil matrix or material.			Bottom 1/3 of bank is generally resistant plant/soil matrix or material.			Bottom 1/3 of bank is generally highly erodible material; plant/soil matrix compromised.		Bottom 1/3 of bank is generally highly erodible material; plant/soil matrix severely compromised.				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
	or 1c. Channel Sediments or Substrate Composition	CONDITION CATEGORY GRADE or SCORE												*Barbour, et al., 1999 ; Petersen, et al., 1992*
		Optimal			Suboptimal			Marginal		Poor				
		>50% gravel or larger substrate; gravel, cobble boulders; dominant substrate type is gravel or larger; stable			30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments; moderately stable			10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be a		Substrate is uniform sand, silt, clay, or bedrock; unstable				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
2	WATER APPEARANCE: Clarity or Visibility													
	Water Clarity	CONDITION CATEGORY GRADE or SCORE												*Newton, et al., 1998* USDA/NRCS SVAP page 11
		Optimal			Suboptimal			Marginal		Poor				
		Very clear, or clear but tea-colored; objects visible at depth 3-6 feet (less if slightly colored); no oil sheen on surface;no noticeable film on submerged objects or rocks.			Occasionally cloudy, especially after storm event, but clears rapidly; objects visible at depth 1.5-3 ft; may have slightly green color; no oil sheen on water surface.			Considerable cloudiness most of the time; objects visible to depth 0.5-1.5 ft; slow sections may appear pea-green; bottom rocks or sumerged objected covered with film.		Very turbid or muddy appearance most the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. No water = zero.				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
3	PRESENCE OF AQUATIC VEGETATION: Presence and Percent Coverage													
Enter Score for Only One Variable	3a. Nutrient Enrichment	CONDITION CATEGORY GRADE or SCORE												*Newton, et al., 1998* USDA/NRCS SVAP page 12
		Optimal			Suboptimal			Marginal		Poor				
		Clear water along entire reach; diverse aquatic plant community includes low quantaties of many species of macrophytes; little algal growth present.			Fairly clear or slightly greenish water along entire reach; moderate algal growth on stream substrates.			Greenish water along entire reach; overabundance of lush green macrophytes; abundant algal growth, especially during warmer months.		Pea green, gray, or brown water along entire reach; dense stands of macrophytes clog stream; severe algal blooms create thick algal mats in stream or NO algae present due to unstable substrate. No water = zero.				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
	or 3b. Aquatic Vegetation	CONDITION CATEGORY GRADE or SCORE												*Petersen, et al., 1992* RCE form No. 13
		Optimal			Suboptimal			Marginal		Poor				
		When present, aquatic vegetation consists of moss and patches of algae.			Algae dominant in pools, larger plants along edge.			Algal mats present, some larger plants, few mosses.		Algal mats cover bottom, larger plants dominate the channel or NO algae present due to unstable substrate. No water = zero.				
	Grade	10	9	8	7	6	5	4	3	2	1	0		

#	Parameter	10	9	8	7	6	5	4	3	2	1	0	Score	Reference
4	COMPOSITION OF ORGANIC MATTER: Detritus.													
		CONDITION CATEGORY GRADE or SCORE												Petersen, *et al.,* *1992* RCE form No. 15
		Optimal			Suboptimal			Marginal		Poor				
		Mainly consisting of leaves and wood without sediment.			Leaves and wood scarce; fine organic debris without sediment.			No leaves or woody debris; coarse and fine organic matter with sediment.		Fine organic sediment - black in color and foul odor (anaerobic) or no sediment present due to excessive scouring				
	Grade	10	9	8	7	6	5	4	3	2	1	0		
5	LAND USE PATTERN: Beyond Immediate Riparian Zone													
		CONDITION CATEGORY GRADE or SCORE												*Petersen, et al., 1992* RCE form No. 1
		Optimal			Suboptimal			Marginal		Poor				
		Undisturbed, consisting of forest, pristine native prairie, and/or natural wetlands.			Permanent pasture mixed with woodlots and swamps, few row crops			Mixed row crops and pasture; some wooded areas may be present but as isolated patches		Mainly row crops				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		Forest in upper reaches; pasture/hay
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
6	RIPARIAN ZONE WIDTH AND CONTINUITY:													
	6a. Riparian Zone Width (from stream edge to field)	CONDITION CATEGORY GRADE or SCORE												*Barbour, et al.,* RBA # 10; *Petersen, et al., 1992* RCE # 2; USDA/ NRCS
		Optimal			Suboptimal			Marginal		Poor				
		Width of riparian zone >18 meters (1-2 channel widths with trees, shrubs, or tall grasses), human activities have not impacted zone.			Width of riparian zone 12-18 meters (1/2-1 active channel width w/trees, shrubs, or grasses), human activities have minimally impacted zone.			Width of riparian zone 6-12 meters (1/3-1/2 active channel width vegetated), impacted by human activities.		Width of riparian zone < 6 meters (natural vegation less than 1/3 active channel width), little riparian vegetation due to human activities.				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
	6b. Riparian Zone Vegetation Protection/ Completeness	CONDITION CATEGORY GRADE or SCORE												*Barbour, et al., 1999* RBA #9; *Petersen, et al., 1992* RCE form # 3 and 4
		Optimal			Suboptimal			Marginal		Poor				
		>90% plant density of mature trees or shrubs, prairie grasses, or marsh plants, riparian zone intact or disruption from grazing/mowing minimal.			75-90% streambank vegetation, mixed young species along channel and mature trees behind; disruption evident with breaks occurring at intervals of >50 meters.			50-75% streambank vegetation of mixed grasses and sparse young tree or shrub species; breaks frequent with some gullies and scars every 50 meters.		Less than 50% streambank vegetation coverage consisting mostly of pasture grasses, few trees & shrubs; low plant density; bank deeply scarred with gullies all along its length.				
	Grade (East)	10	9	8	7	6	5	4	3	2	1	0		
	Grade (West)	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score		
	Calculation of Function Capacity Index = Total Score/Total Possible Score												0	
												FCI = #/80		
	II. WATER QUALITY/BIOGEOCHEMICAL FUNCTIONS													

III. HABITAT FUNCTIONS

ITEM	VARIABLES												SCORE	Reference Source
1	1	FLOW REGIME												
		TYPE	Perennial			Intermittent w/ Perennial Pools			Intermittent		Ephemeral			Kansas Subjective
		Grade	10	9	8	7	6	5	4	3	2	1	0	
2	2	EPIFAUNAL SUBSTRATE/AVAILABLE COVER												
			Optimal			Suboptimal			Marginal		Poor			
			Within stream bed, greater than 50% coverage by stable habitat features, favorable for stream faunal colonization and/or fish/amphibian cover. Most habitat features non transient. Features may include snags, submerged logs, undercut banks, roots, cobble, rocks, persistent leaf packs, pools and glides, or other stable habitat at a stage to allow colonization			Within stream bed, 30-50% coverage by stable habitat features favorable for stream faunal colonization and/or fish/amphibian cover. Many habitat features not transient. (See Excellent Category for habitat feature components.)			Within stream bed, 10-30% coverage by stable habitat features favorable for stream faunal colonization and/or fish/amphibian cover; habitat availability may be less than desirable, substrate may be frequently disturbed. (See Excellent Category for habitat feature components.)		Less than 10% habitat features present; lack of habitat is obvious; substrate unstable or lacking; concrete lined channels. Habitat features and pools buried or lacking, channel bottom may be flat.			Norfolk SAAM Form 1 (page 2); EPA RBA; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0	
3	3	STREAM BOTTOM SUBSTRATE: Pool Substrate Characterization												
			Optimal			Suboptimal			Marginal		Poor			
			Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.			Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegatation present.			All mud or clay or sand bottom; little or no root mat; no submerged vegetation.		Hard pan clay or bedrock; no root mat or submerged vegetation.			RBA #2b page 5-14; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0	
4	4	POOL VARIABILITY												
			Optimal			Suboptimal			Marginal		Poor			
			Even mix of large-shallow, large-deep, small-shallow, small-deep pools present			Majority of pools large-deep; very few shallow.			Shallow pools much more prevalent than deep pools		Majority of pools small-shallow or pools absent			RBA #3b page 5-16; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0	
5	5	SEDIMENT DEPOSITION/SCOURING												
			Optimal			Suboptimal			Marginal		Poor			
			<5% of channel bottom affected by scour or deposition.			5-30% affected by scour or deposition; Scour at constrictions and wehre grades steepen. Some deposition in pools			30-50% affected by scour or deposition. Deposits and scour at obstructions, constrictions and bends. Some filling of pools.		More than 50% of the bottom in a state of flux or change nearly yearlong. Pools minimal or absent due to heavy deposition or excessive scouring.			RBA #4 page 5-17; AUSRIVAS; USACE Norfolk No. 5; Pfankuch Ch I
		Grade	10	9	8	7	6	5	4	3	2	1	0	
6	6	CHANNEL FLOW STATUS												
			Optimal			Suboptimal			Marginal		Poor			
			Water reaches the base of both lower banks; <5% of channel substrate is exposed			Water fills >75% of the channel; or <25% of channel substrate is exposed			Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed		Very little water in the channel and mostly present in standing pools; or stream is dry			TCEQ HAP Wrksheet; RBA #5 page 5-19; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0	
7	7	CHANNEL ALTERATION												
			Optimal			Suboptimal			Marginal		Poor			
			Channelization, alteration, or dredging absent or minimal; normal and stable stream meander pattern. Alteration by stormwater inputs absent or minimal			Some alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (I.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Minor alteration from stormwater or other inputs.			Alteration or channelization may be extensive; embankments (including spoil piles) or shoring structures present on both banks; normal stable stream meander pattern has not recovered. Alteration from stormwater inputs may be extensive. 40-80% of stream reach altered.		Banks shored with gabion, riprap, or concrete. Concrete or riprap lined channels. Instream habitat significantly altered by stormwater or other inputs. Over 80% of the stream reach altered.			Norfolk District SAAM Form 1 (Field) page 2; RBA #6; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0	
8	8	CHANNEL SINUOSITY												
			Optimal			Suboptimal			Marginal		Poor			

			The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas).			The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.			The bends in the stream increase the stream 1 to 2 times longer than if it was in a straight line		Channel straight; waterway has been channelized for a long distance				RBA #7b; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0		
9	9	BANK STABILITY (SCORE EACH BANK)													
			Optimal			Suboptimal			Marginal		Poor				
			Banks stable; evidence of erosion or bank failure absent or minimal; (<5% of bank affected), perennial vegetation to waterline; no raw or undercut banks (some erosion on outside of meander bends O.K.); no recently exposed roots; no recent tree falls;			Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of minor erosion and/or bank undercutting; perennial vegetation to waterline in most places; recently exposed tree roots rare but present.			Moderately unstable; perennial vegetation to waterline sparse (mainly scoured or stripped by lateral erosion), bank held by hard points (trees, rock outcrops) and eroded back elsewhere; 30-60% of bank in reach has areas of erosion and bank undercutting; recently exposed tree roots and fine root hairs common; high erosion potential during floods		Unstable; no perennial vegetation at waterline; severe erosion of both banks; recently exposed tree roots common; tree falls and/or severely undercut trees common; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				RBA #8; AUSRIVAS; Norfolk District SAAM #3; Scholz and Booth from Henshaw, 1999)
		Grade	10	9	8	7	6	5	4	3	2	1	0		
		Grade	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score			
10	10	VEGETATIVE PROTECTION (SCORE EACH BANK)													
			Optimal			Suboptimal			Marginal		Poor				
			More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.			70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.			50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.		Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.				RBA #9; AUSRIVAS; KDWP; RCE
		Grade	10	9	8	7	6	5	4	3	2	1	0		
		Grade	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score			
11	11	RIPARIAN ZONE (SCORE EACH BANK)													
			Optimal			Suboptimal			Marginal		Poor				
			Width of riparian zone >18 meters; human activities (I.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.			Width of riparian zone 12-18 meters; human activities have impacted zone only minimally).			Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.		Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.				RBA #10; AUSRIVAS
		Grade	10	9	8	7	6	5	4	3	2	1	0		
		Grade	10	9	8	7	6	5	4	3	2	1	0		
												Avg.Score			
12	12	RIPARIAN HABITAT CONDITION (SCORE EACH BANK)													Norfolk SAAM Form 1 Field
			Optimal			Suboptimal			Marginal		Poor				
			Tree stratum (dbh>3 inches) present, with >60% tree canopy cover. (Additional forest layers may include: sapling, shrub, herbaceous, and leaf litter including mosses/lichens and woody debris.) Score at the high end of Excellent range if ≥2 additional layers are present. Score at low end if ≤1 additional layers are present.			Tree stratum (dbh>3 inches) present, with 30% to 60% tree canopy cover. (See Excellent Category for examples of additional forest layers.) Score at the high end of Good range if ≥2 additional forest layers are present. Score at low end if ≤1 additional forest layers are present. **OR** cutover areas with stumps remaining.			Tree stratum (dbh>3 inches) present, with <30% tree canopy cover. (See Excellent Category for examples of additional forest layers.) Score at the high end of Fair range if ≥2 additional layers are present. Score at low end if ≤1 additional layers are present. **OR** area consists of non-maintained and naturalized dense herbaceous and/or woody vegetation.		Tree stratum absent; impervious surfaces, croplands, mine spoil lands, culverted streams, mowed and maintained herbaceous areas, denuded surfaces, actively grazed pasture, and etc.				
		Grade	10	9	8	7	6	5	4	3	2	1	0		
		1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the above descriptors 2. Determine square footage for each by measuring or estimating length and width. Land Use GIS maps may be used for this. 3. Enter the %Riparian Area (or for field purposes, enter length and width) and Score for each riparian category in the blocks below.											Ensure the sums of %Riparian Blocks equal 100		
		Right Bank	%Riparian Area												
			Score												
		Left Bank	%Riparian Area												
			Score												
											CI=(Sum%RA*Scores*0.001)/2				
											Rt Bank CI>			**CI**	
											LT Bank CI>				
									Calculation of Function Capacity Index = Total Score/Total Possible Score						
													FCI = #/120		

Record of Functional Assessment Results

Stream Functional Capacity Calculation

Date:
Project:
Assessment Area:
Assessors:
Project Status: ____Preproject ____Postproject

Major Function Categories	FCI	Stream Length (LF)*	Stream Characterization	Multiplication Factor**	FC
Hydrologic					0
Water Quality Improvement					0
Habitat					0
Total					0

*Stream Length is the length of the Stream Assessment Reach (SAR)
**Multiplication Factors
Ephemeral = 0.00125
Intermittent = 0.0025
Perennial = 0.0038

APPENDIX B

FIELD FORMS FOR ASSESSMENT
OF
ON-CHANNEL IMPOUNDMENTS

Impoundment Evaluation from Kansas Department of Wildlife and Parks, Subjective Evaluation of Aquatic Habitats
Developed by : Kansas Department of Wildlife & Parks, Environmental Services Section (Revised 2004)
with minor modifications to address conditions in North Central Texas

Impoundment Habitat Evaluation SCORE

												SCORE
A. PHYSICAL HABITAT KEY												
1.Shoreline Development	CONDITION CATEGORY GRADE or SCORE											
	(perimeter of impoundment/perimeter of circle of equal area)											
	High > or = 2.5					Medium 1.5 - 2.4			Low 1.0-1.4			
Grade	10	9	8	7	6	5	4	3	2	1	0	
2.Average Depth	CONDITION CATEGORY GRADE or SCORE											
	> 10 feet					3 - 10 feet			< 3 feet			
Grade	10	9	8	7	6	5	4	3	2	1	0	
3.Annual Storage Ratio	CONDITION CATEGORY GRADE or SCORE											
	1 - 2		> 2				< 1					
Grade	5		4		3		2		1		0	
4.Substrate	CONDITION CATEGORY GRADE or SCORE											
	(select two predominant types in littoral zone and average the score)											
	Boulder/Cobble		Gravel		Sand (< 0.1")		Bedrock		Mud/Detritus/Muck			
Grade	5		4		3		2		1		0	
5.Number of substrate types in	CONDITION CATEGORY GRADE or SCORE											
	4 or more		3 types present				2 types present		1 type present			
Grade	5		4		3		2		1		0	
6.Amount of Cover	CONDITION CATEGORY GRADE or SCORE											
	(aquatic vegetation, flooded timber, woody debris, large boulders, rock outcrops, overhanging vegetation, man-made structures)											
	Extensive (>75%)		Abundant (50-75%)		Moderate (25-50%)		Sparse (5-25%)		Little or none (0-5%)			
Grade	10	9	8	7	6	5	4	3	2	1	0	
7.Native vegetation buffer	CONDITION CATEGORY GRADE or SCORE											
	> 50 meters		10 - 50 meters		5 - 10 meters		1 - 5 meters				None	
Grade	5		4		3		2		1		0	
8.Bank erosion	CONDITION CATEGORY GRADE or SCORE											
	Stable banks w/little sloughing				Moderate erosion due to livestock				Severe active erosion along			
Grade	5		4		3		2		1		0	
Total for the physical habitat components (max 55)												
B. WATERSHED LAND USE AND MANAGEMENT KEY												
1.Management Strategies	CONDITION CATEGORY GRADE or SCORE											
	Fish fences		Livestock exclusion		Drawdowns		Downstream flow augmentation		Fish feeders		Other (I.e. harvest restrictions, nuisance species control, etc)	
Grade	+1		+1		+1		+1		+1			
Total												
2. Watershed Land Uses (Describe the extent of land use in the upstream watershed)												
2a.Minimal impact land uses	CONDITION CATEGORY GRADE or SCORE											
	practices.											
	Entire		Abundant		Common		Moderate		Sparse		None	
Grade	+5		+4		+3		+2		+1		0	
2b.Significant impact land uses	CONDITION CATEGORY GRADE or SCORE											
	Poor grazing practices, cropland w/ fair to poor conservation practices, urban, industrial, commercial, residential.											
	Entire		Abundant		Common		Moderate		Sparse		None	
Grade	-5		-4		-3		-2		-1		0	

Total for the watershed/management (max 10)												
C. BIOLOGICAL COMPONENT KEY												
1.Fish characteristics	CONDITION CATEGORY GRADE or SCORE											
	(If problem or exotic fish dominant Score is -5)											
	High quality sport		Pan & predaceous		Minnows/panfish/roughfish				Minnows/roughfish		No fish	
Grade	10	9	8	7	6	5	4	3	2	1	0	
2.Aquatic insects	CONDITION CATEGORY GRADE or SCORE											
	> 3 orders present				1 -3 orders present						None	
Grade	5		4		3		2		1		0	
3.Mollusc/ Crayfish	CONDITION CATEGORY GRADE or SCORE											
	Common/Abundant				Sparse		None		Zebra mussels present			
Grade	3		2		1		0		-5			
4.Other aquatic/semi-aquatic vertebrates	CONDITION CATEGORY GRADE or SCORE											
	Common/Abundant				Sparse		None		Nutria present			
Grade	3		2		1		0		-5			
Total for the biological components (max 20)												
D. WATER QUALITY COMPONENT KEY												
1.DO/BOD	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade	3			2			1			0		
2.Nutrient enrichment	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade	3			2			1			0		
3.Pesticides	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade	3			2			1			0		
4.Turbidity	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade	3			2			1			0		
5.Temperature	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade	3			2			1			0		
6.Other (if applicable)	CONDITION CATEGORY GRADE or SCORE											
	Rarely Limiting			Occasionally Limiting						Frequently Limiting		
Grade												
Total for the water quality components (max 15)												

TOTAL SCORE "RCI" = (PHYSICAL + WATERSHED/MANAGEMENT + BIOLOGICAL + WATER QUALITY)/100

E. Impoundment Characterisics (attach to aquatic habitat summary):

Watershed Area = ______________________ Shoreline Perimeter: = ______________________

Impoundment Area = ______________________ SDI (shoreline dev. Ratio) = ______________________
(permanent pool)

Project Comments: alternatives possible to accomplish project goals & lessen adverse impacts on habitat

Fish - If sampled check method: ________ seining; ________ dip-net; ________ electrofishing
Species

Other Aquatic/Semi-Aquatic Vertebrates:

Mussels:

T/E Species Known/Likely to Occur:

Impoundments/Reservoir Resource Capacity Calculation					
Date:					
Project:					
Location:					
Circle One: Small Pond (≤1 acre) Pond (>1≤ 5 acres) Lake (>5 < 500 acres) Reservoir (>500 acres)					
Represented Acreage:		Total acreage of all impoundments represented by site			
Assessors:					
Project Status:	____Preproject		____Postproject		
Major Function Categories	Score	RCI	Acreage	Multiplication Factor*	RC
Physical Habitat					
Watershed/Management					
Biological					
Water Quality					
Total Score		0			0

*Multiplication Factors
- Small Pond = 1.5
- Pond = 1.3
- Lake = 1.1
- Reservoir = 1.04

APPENDIX D

INDIVIDUAL SWAMPIM DATA SHEETS FOR REPRESENTATIVE STREAMS WITHIN THE IMPACT AREA

Table D-1: Streams Within Conservation Pool and Dam of Lake Ralph Hall

OHWM Range[1]	Representative Stream Channel	Representative Stream FCI[2]	FCI Average[3]	Stream Length (LF)[4]	Stream Type	Multiplication Factor[5]	Impact FCUs[6]
North Side, 0.5-2.0' wide	N8-TRIB9	0.63	0.70	26,835	Ephemeral	0.00125	23.48
	N6-TRIB1-A3	0.20					
	N15-TRIB1	1.42					
	N11	0.77					
	N1-TRIB2	0.50					
North Side, 2.5-5.0' Wide	N10	1.17	0.95	88,309	Ephemeral	0.00125	104.87
	N5	0.74					
North Side, 6-15' wide	N6-TRIB1	0.41	0.45	55,023	Ephemeral	0.00125	30.95
	N22-TRIB2	0.25					
	N20	0.69					
North Side, >16' wide	N12	0.62	0.55	82,713	Ephemeral	0.00125	56.87
	N1	0.54					
	N18	0.50					
South Side, 0.5-2.0' wide	S8-TRIB2	0.22	0.62	19,769	Ephemeral	0.00125	15.32
	S10-TRIB2	1.01					
South Side, 2.5-5.0' wide	S12	0.90	0.79	66,967	Ephemeral	0.00125	66.13
	S16-TRIB4	0.67					
South Side, 6-15' wide	S25	0.65	0.65	92,155	Ephemeral	0.00125	74.88
South Side, >16' wide	S21	0.50	0.50	13,717	Ephemeral	0.00125	8.57
NSR (Dam and Inundation)	HWY 34 BRIDGE	0.31	0.35	55,570	Intermittent	0.00250	48.62
	FM 2990	0.39					
TOTAL	--	--	--	**501,058**	--	--	**429.69**

Notes for Table D-1:

1. Rows show stream width range at ordinary high-water mark (OHWM). OHWM is defined as the projected line of scour along a stream channel where the channel is typically devoid of vegetation.

2. Detailed scores for individual SWAMPIM metrics shown on individual SWAMPIM sheets.

3. FCI Average is calculated from the FCIs of the Representative Stream FCIs for each OHWM range; Shown rounded to the nearest hundredth.

4. Previously presented values from the SJD report dated 6/21/2017. Rows show total impacted stream length within the conservation pool and dam for each OHWM range.

5. Multiplication Factor for stream segments. Perennial = 0.00380; Intermittent with Perennial Pools = 0.00315; Intermittent = 0.00250; Ephemeral = 0.00125.

*6. FCU = Reach Length (ft) * FCI * Multiplication Factor; Shown rounded to the nearest hundredth.*

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
N8-TRIB9	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF):	H2c. Channel Bank Stability *(d)*	0
935	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	3
Stream Classification:	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
Ephemeral	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(h)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
OHWM Range (feet) *(i)* :	WQ1a. Bank Stability *(d)*	0
0.5-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed:	WQ2. Water Clarity	0
5/19/2006	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	5
Assessment Zone:	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	7
Impact Area	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	6
Assessor:	Water Quality / Biogeochemical Subtotal	24
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.30**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes:	HB3. Stream Bottom Substrate	2
None	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	6
	HB11. Riparian Zone *(d)*	7
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.63**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N6-TRIB1-A3	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 3,015	H2c. Channel Bank Stability *(d)*	1
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	5
	Hydrologic FCI = Subtotal / 100	**0.05**
OHWM Range (feet) *(i)* : 0.5-2	WQ1a. Bank Stability *(d)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/19/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	7
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.09**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	0
	HB9. Bank Stability *(d)*	1
	HB10. Vegetative Protection *(d)*	2
	HB11. Riparian Zone *(d)*	1
	HB12. Riparian Habitat Condition	2
	Habitat Subtotal	7
	Habitat FCI = Subtotal / 120	**0.06**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.20**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N15-TRIB1	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 3,696	H2c. Channel Bank Stability *(d)*	9
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	4
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	44
	Hydrologic FCI = Subtotal / 100	**0.44**
OHWM Range (feet) *(i)* : 0.5-2	WQ1a. Bank Stability *(d)*	9
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	2
Date Assessed: 5/18/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	4
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	9
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	40
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.50**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	9
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	9
	HB10. Vegetative Protection *(d)*	8
	HB11. Riparian Zone *(d)*	9
	HB12. Riparian Habitat Condition	9
	Habitat Subtotal	58
	Habitat FCI = Subtotal / 120	**0.48**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.42**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N11	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 3,470	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	3
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
OHWM Range (feet) *(i)* : 0.5-2	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	5
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	5
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	5
	HB11. Riparian Zone *(d)*	8
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	34
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.77**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N1-TRIB2	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 793	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	0
	H4a. Pools	0
Multiplication Factor *(h)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	7
	Hydrologic FCI = Subtotal / 100	**0.07**
OHWM Range (feet) *(i)*: 0.5-2	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.20**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	4
	HB11. Riparian Zone *(d)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.50**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N10	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 5,632	H2c. Channel Bank Stability *(d)*	7
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	2
	H3d. Channel Incision	4
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	31
	Hydrologic FCI = Subtotal / 100	**0.31**
OHWM Range (feet) *(i)* : 2.5-5	WQ1a. Bank Stability *(d)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	7
Date Assessed: 5/19/2006	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	7
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	7
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.45**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	4
Field Notes: None	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	7
	HB10. Vegetative Protection *(d)*	7
	HB11. Riparian Zone *(d)*	7
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	49
	Habitat FCI = Subtotal / 120	**0.41**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.17**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N5	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 2,840	H2c. Channel Bank Stability *(d)*	5
	H3a. Channel Sinuosity	7
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	2
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
OHWM Range (feet) *(i)* : 2.5-5	WQ1a. Bank Stability *(d)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	2
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	4
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	17
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.21**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	8
	HB8. Channel Sinuosity	7
	HB9. Bank Stability *(d)*	5
	HB10. Vegetative Protection *(d)*	2
	HB11. Riparian Zone *(d)*	2
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N6-TRIB1	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 1,356	H2c. Channel Bank Stability *(d)*	2
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	2
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
OHWM Range (feet) *(i)* : 6-15	WQ1a. Bank Stability *(d)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/19/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	13
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.16**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(d)*	2
	HB10. Vegetative Protection *(d)*	4
	HB11. Riparian Zone *(d)*	4
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	18
	Habitat FCI = Subtotal / 120	**0.15**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.41**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N22-TRIB2	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 1,676	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	0
	H3d. Channel Incision	0
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	6
	Hydrologic FCI = Subtotal / 100	**0.06**
OHWM Range (feet) *(i)* : 6-15	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	3
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	7
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.09**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	1
	HB11. Riparian Zone *(d)*	3
	HB12. Riparian Habitat Condition	2
	Habitat Subtotal	12
	Habitat FCI = Subtotal / 120	**0.10**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.25**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N20	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 6,084	H2c. Channel Bank Stability *(d)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	2
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(h)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.130**
OHWM Range (feet) *(i)*: 6-15	WQ1a. Bank Stability *(d)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.338**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	1.5
	HB10. Vegetative Protection *(d)*	5
	HB11. Riparian Zone *(d)*	8
	HB12. Riparian Habitat Condition	6.5
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.225**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.69**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
N12	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF):	H2c. Channel Bank Stability *(d)*	4
5,435	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	3
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(h)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
OHWM Range (feet) *(i)* :	WQ1a. Bank Stability *(d)*	4
>16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed:	WQ2. Water Clarity	2
5/19/2006	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	19
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.24**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
None	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(d)*	4
	HB10. Vegetative Protection *(d)*	5.5
	HB11. Riparian Zone *(d)*	5
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	28.5
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.62**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N1	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 24,057	H2c. Channel Bank Stability *(d)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	5
	H3d. Channel Incision	0
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
OHWM Range (feet) *(i)* : >16	WQ1a. Bank Stability *(d)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	2
Date Assessed: 8/26/2009	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	4
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	19
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.24**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(d)*	2
	HB10. Vegetative Protection *(d)*	1
	HB11. Riparian Zone *(d)*	7
	HB12. Riparian Habitat Condition	4.8
	Habitat Subtotal	21.8
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.54**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: N18	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 12,086	H2c. Channel Bank Stability *(d)*	2
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	0
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
OHWM Range (feet) *(i)* : >16	WQ1a. Bank Stability *(d)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 8/26/2009	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	4
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	3
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	15
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.19**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(d)*	2
	HB10. Vegetative Protection *(d)*	3
	HB11. Riparian Zone *(d)*	3
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	23
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.50**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S8-TRIB2	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 602	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	0
	H3d. Channel Incision	0
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	4
	Hydrologic FCI = Subtotal / 100	**0.04**
OHWM Range (feet) *(i)* : 0.5-2	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/18/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	4
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	3
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	0
Assessor: APAI	Water Quality / Biogeochemical Subtotal	7
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.09**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	0
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	0
	HB11. Riparian Zone *(d)*	3
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	11
	Habitat FCI = Subtotal / 120	**0.09**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S10-TRIB2	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 1,705	H2c. Channel Bank Stability *(d)*	5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	4
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
OHWM Range (feet) *(i)* : 0.5-2	WQ1a. Bank Stability *(d)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/18/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	5
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	31
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.39**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	8
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(d)*	5
	HB10. Vegetative Protection *(d)*	6
	HB11. Riparian Zone *(d)*	6
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.01**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S12	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 6,304	H2c. Channel Bank Stability *(d)*	6.5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	2
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	18.5
	Hydrologic FCI = Subtotal / 100	**0.19**
OHWM Range (feet) *(i)* : 2.5-5	WQ1a. Bank Stability *(d)*	6.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/19/2006	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	1
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.42**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(d)*	6.5
	HB10. Vegetative Protection *(d)*	6
	HB11. Riparian Zone *(d)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	35.5
	Habitat FCI = Subtotal / 120	**0.30**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.90**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S16-TRIB4	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 1,423	H2c. Channel Bank Stability *(d)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	0
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	0
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
OHWM Range (feet) *(i)* : 2.5-5	WQ1a. Bank Stability *(d)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	2
Date Assessed: 8/25/2009	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	8
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	2
	HB10. Vegetative Protection *(d)*	2
	HB11. Riparian Zone *(d)*	8
	HB12. Riparian Habitat Condition	8
	Habitat Subtotal	31
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.67**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S25	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 2,772	H2c. Channel Bank Stability *(d)*	4
	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
OHWM Range (feet) *(i)* : 6-15	WQ1a. Bank Stability *(d)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	2
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	0
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	8
	HB9. Bank Stability *(d)*	4
	HB10. Vegetative Protection *(d)*	3
	HB11. Riparian Zone *(d)*	5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.65**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: S21	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 1,026	H2c. Channel Bank Stability *(d)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(h)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
OHWM Range (feet) *(i)* : >16	WQ1a. Bank Stability *(d)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/17/2006	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	0
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	3
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	17
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.21**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(d)*	4
	HB10. Vegetative Protection *(d)*	3
	HB11. Riparian Zone *(d)*	4
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.50**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: HWY 34 BRIDGE	H1. Flow Regime and Groundwater Interaction	4
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 27,785	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	0
	H3b. Bottom Substrate Composition	0
Stream Classification: Intermittent	H3c. Instream Bottom Topography OR Manning's n *(e)*	1
	H3d. Channel Incision	0
	H4a. Pools	1
Multiplication Factor *(h)* : 0.00250	H4b. Channel Flow Status	1
	Hydrologic Subtotal	7
	Hydrologic FCI = Subtotal / 100	**0.07**
OHWM (feet) *(i)* : 200+	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	1
Date Assessed: 5/5/2006	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	1
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	0
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	9
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.11**
	HB1. Flow Regime	4
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	0
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	1
	HB11. Riparian Zone *(d)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	15
	Habitat FCI = Subtotal / 120	**0.13**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.31**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c)*	BASELINE SCORES
SAR Name: FM 2990	H1. Flow Regime and Groundwater Interaction	5
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 27,785	H2c. Channel Bank Stability *(d)*	0
	H3a. Channel Sinuosity	0
	H3b. Bottom Substrate Composition	0
Stream Classification: Intermittent	H3c. Instream Bottom Topography OR Manning's n *(e)*	0
	H3d. Channel Incision	0
	H4a. Pools	2
Multiplication Factor *(h)* : 0.00250	H4b. Channel Flow Status	1
	Hydrologic Subtotal	8
	Hydrologic FCI = Subtotal / 100	**0.08**
OHWM (feet) *(i)* : 200+	WQ1a. Bank Stability *(d)*	0
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(d, f)*	0
Date Assessed: 5/10/2006	WQ2. Water Clarity	6
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(g)*	2
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(d)*	2
Assessment Zone: Impact Area	WQ6a. Riparian Zone Width (from stream edge to field) *(d)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(d)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	14
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.18**
	HB1. Flow Regime	5
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	0
	HB8. Channel Sinuosity	0
	HB9. Bank Stability *(d)*	0
	HB10. Vegetative Protection *(d)*	2
	HB11. Riparian Zone *(d)*	2
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	16
	Habitat FCI = Subtotal / 120	**0.13**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.39**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) Score shown is the average of the left and right bank scores.
(e) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(f) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(g) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(h) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(i) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: NSR-MC-PRE (Downstream of Dam)	H1. Flow Regime and Groundwater Interaction	3
	H2a. Channel Condition / Alteration	0
	H2b. Channel Capacity to Flow Frequency	0
SAR Length (LF): 6,579	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	0
Stream Classification: Intermittent	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00250	H4b. Channel Flow Status	2
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
OHWM (feet) *(j)* : 200+	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	0
Date Assessed: 8/24/2006	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	2.5
Assessment Zone: Dam Protection	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	15
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.19**
	HB1. Flow Regime	3
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	2.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.50**
	TOTAL FCU = SAR Length (6579) X Multiplication Factor (0.0025) X Total FCI	**8.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T3-BAKER-TRIB2-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 492	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	23
	Hydrologic FCI = Subtotal / 100	**0.23**
OHWM (feet) *(j)* : 2	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/9/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	4
Assessment Zone: Dam Spillway	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes: None	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	18
	Habitat FCI = Subtotal / 120	**0.15**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.61**
	TOTAL FCU = SAR Length (492) X Multiplication Factor (0.00125) X Total FCI	**0.38**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: N1-TRIB6	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 541	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	26
	Hydrologic FCI = Subtotal / 100	**0.26**
OHWM (feet) *(j)* : 2	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 4/29/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	6
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Road Realignment	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.90**
	TOTAL FCU = SAR Length (541) X Multiplication Factor (0.00125) X Total FCI	**0.61**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: N1-TRIB6-A1	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 369	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	27
	Hydrologic FCI = Subtotal / 100	**0.27**
OHWM (feet) *(j)* : 2	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 4/29/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Road Realignment	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.92**
	TOTAL FCU = SAR Length (369) X Multiplication Factor (0.00125) X Total FCI	**0.42**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: N1-TRIB6-A2	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 173	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	27
	Hydrologic FCI = Subtotal / 100	**0.27**
OHWM (feet) *(j)* : 2	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 4/29/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Road Realignment	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.84**
	TOTAL FCU = SAR Length (173) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: N1-TRIB9	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 80	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
OHWM (feet) *(j)*: 4	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 4/29/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Road Realignment	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	0
Field Notes: None	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.79**
	TOTAL FCU = SAR Length (80) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.
(j) OHWM = Ordinary High Water Mark.

APPENDIX E

BASELINE INFORMATION FOR EXISTING STREAMS WITHIN MITIGATION ZONES A, B, AND C

TABLE E-1
LAKE RALPH HALL
SUMMARY OF BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Mitigation Zone	Stream Type	Baseline Total SAR Length (Linear Feet)	Baseline Total Stream Functional Capacity Units (FCU)[1]
A	Ephemeral	88,823	81.51
B	Ephemeral	40,141	48.25
C	Ephemeral	63,865	53.16
TOTAL	**-**	**192,829**	**182.92**

Notes for Table E-1:

*1. FCU = Reach Length, ft * FCI * Multiplication Factor; Shown rounded to the nearest hundredth.*

Refer to Table E-2 for data on individual SARs within each mitigation area.

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S1-(1)	A	A-7	Ephemeral	1,356	0.39	0.00125	0.66
S1-(2)	A	A-7	Ephemeral	375	0.42	0.00125	0.20
S1-(3)	A	A-7	Ephemeral	1,467	0.45	0.00125	0.83
S1-TRIB1-(1)	A	A-7	Ephemeral	1,861	0.59	0.00125	1.37
S2-(2)	A	A-6	Ephemeral	597	0.51	0.00125	0.38
S2-(3)	A	A-6	Ephemeral	3,772	0.60	0.00125	2.83
S2-TRIB1-(1)	A	A-10, A-13	Ephemeral	2,269	0.39	0.00125	1.11
S2-TRIB1-(2)	A	A-10	Ephemeral	2,690	0.40	0.00125	1.35
S2-TRIB1-(3)	A	A-7	Ephemeral	1,091	0.33	0.00125	0.45
S2-TRIB1-(4)	A	A-6, A-7	Ephemeral	1,221	0.53	0.00125	0.81
S2-TRIB1-A1-(1)	A	A-12	Ephemeral	399	0.65	0.00125	0.32
S2-TRIB1-A1-(2)	A	A-12	Ephemeral	294	0.64	0.00125	0.24
S2-TRIB1-A1-(3)	A	A-12	Ephemeral	484	0.42	0.00125	0.25
S2-TRIB1-A1-(4)	A	A-10	Ephemeral	686	0.34	0.00125	0.29
S2-TRIB2-(1)	A	A-15	Ephemeral	196	0.92	0.00125	0.23
S2-TRIB2-(2)	A	A-15	Ephemeral	399	0.90	0.00125	0.45
S2-TRIB2-(3)	A	A-12, A-15	Ephemeral	235	0.75	0.00125	0.22
S2-TRIB2-(4)	A	A-12	Ephemeral	1,196	0.76	0.00125	1.14
S2-TRIB2-(5)	A	A-12	Ephemeral	984	0.73	0.00125	0.90
S2-TRIB2-(6)	A	A-12	Ephemeral	1,355	0.59	0.00125	1.00
S2-TRIB2-(7)	A	A-9	Ephemeral	1,329	0.85	0.00125	1.41
S2-TRIB2-(8)	A	A-9	Ephemeral	2,647	0.53	0.00125	1.75
S2-TRIB2-(9)	A	A-6	Ephemeral	1,002	0.51	0.00125	0.64
S2-TRIB2-A1-(1)	A	A-12	Ephemeral	668	0.72	0.00125	0.60
S2-TRIB2-A1-(2)	A	A-12	Ephemeral	106	0.67	0.00125	0.09
S2-TRIB2-A1-(3)	A	A-12	Ephemeral	235	0.51	0.00125	0.15
S2-TRIB2-A1-B1-(1)	A	A-12	Ephemeral	239	0.60	0.00125	0.18
S2-TRIB2-A2-(1)	A	A-12	Ephemeral	131	1.10	0.00125	0.18
S2-TRIB2-A2-(2)	A	A-12	Ephemeral	439	0.64	0.00125	0.35
S2-TRIB2-A2-(3)	A	A-12	Ephemeral	304	0.74	0.00125	0.28
S2-TRIB2-A2-B5-(1)	A	A-12	Ephemeral	57	1.06	0.00125	0.08
S2-TRIB2-A2-B6-(1)	A	A-12	Ephemeral	60	1.06	0.00125	0.08
S2-TRIB2-A2-B7-(1)	A	A-12	Ephemeral	232	1.10	0.00125	0.32
S2-TRIB2-A2-B8-(1)	A	A-12	Ephemeral	175	0.94	0.00125	0.21
S2-TRIB2-A3-(2)	A	A-12	Ephemeral	206	0.68	0.00125	0.18
S2-TRIB2-A3-(3)	A	A-12	Ephemeral	425	1.28	0.00125	0.68

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S2-TRIB2-A3-(4)	A	A-12	Ephemeral	612	0.71	0.00125	0.54
S2-TRIB2-A3-B4-(1)	A	A-12	Ephemeral	49	0.95	0.00125	0.06
S2-TRIB2-A4-(1)	A	A-15	Ephemeral	409	0.71	0.00125	0.36
S2-TRIB2-A4-(2)	A	A-12, A-15	Ephemeral	269	0.52	0.00125	0.17
S2-TRIB2-B2-(1)	A	A-15	Ephemeral	364	0.79	0.00125	0.36
S2-TRIB2-B3-(1)	A	A-15	Ephemeral	130	0.48	0.00125	0.08
S2-TRIB2-B4-(1)	A	A-12	Ephemeral	234	0.68	0.00125	0.20
S2-TRIB2-B4-(2)	A	A-12	Ephemeral	159	0.46	0.00125	0.09
S2-TRIB2-B9-(1)	A	A-9	Ephemeral	154	0.53	0.00125	0.10
S2-TRIB3-(1)	A	A-14	Ephemeral	290	0.58	0.00125	0.21
S2-TRIB3-(2)	A	A-14	Ephemeral	614	0.64	0.00125	0.49
S2-TRIB3-(3)	A	A-14	Ephemeral	244	0.60	0.00125	0.18
S2-TRIB3-(4)	A	A-11	Ephemeral	1,458	0.78	0.00125	1.42
S2-TRIB3-(5)	A	A-11	Ephemeral	604	0.74	0.00125	0.56
S2-TRIB3-(6)	A	A-11	Ephemeral	1,018	0.74	0.00125	0.94
S2-TRIB3-(7)	A	A-11	Ephemeral	774	0.81	0.00125	0.78
S2-TRIB3-(8)	A	A-9, A-11	Ephemeral	1,943	1.00	0.00125	2.43
S2-TRIB3-(9)	A	A-8, A-9	Ephemeral	1,904	0.87	0.00125	2.07
S2-TRIB3-(10)	A	A-5, A8	Ephemeral	1,461	1.60	0.00125	2.92
S2-TRIB3-(12)	A	A-6	Ephemeral	737	0.71	0.00125	0.65
S2-TRIB3-A2-(1)	A	A-6	Ephemeral	616	0.48	0.00125	0.37
S2-TRIB3-A5-(1)	A	A-11	Ephemeral	482	0.63	0.00125	0.38
S2-TRIB3-A5-(2)	A	A-8	Ephemeral	2,407	0.71	0.00125	2.14
S2-TRIB3-A5-(3)	A	A-8	Ephemeral	661	0.85	0.00125	0.70
S2-TRIB3-A5-B1-(1)	A	A-11	Ephemeral	111	1.08	0.00125	0.15
S2-TRIB3-A5-B1-(2)	A	A-11	Ephemeral	154	0.66	0.00125	0.13
S2-TRIB3-A5-B2-(1)	A	A-8	Ephemeral	79	0.82	0.00125	0.08
S2-TRIB3-A5-B3-(1)	A	A-8	Ephemeral	74	0.78	0.00125	0.07
S2-TRIB3-A5-B4-(1)	A	A-8	Ephemeral	132	0.71	0.00125	0.12
S2-TRIB3-A5-TRIBA-(1)	A	A-8	Ephemeral	588	0.68	0.00125	0.50
S2-TRIB3-A6-(1)	A	A-12	Ephemeral	831	0.80	0.00125	0.83
S2-TRIB3-A6-(2)	A	A-12	Ephemeral	413	0.57	0.00125	0.29
S2-TRIB3-A7-(1)	A	A-11	Ephemeral	1,301	0.92	0.00125	1.50
S2-TRIB3-A7-(2)	A	A-11	Ephemeral	476	0.86	0.00125	0.51
S2-TRIB3-A7-(3)	A	A-11	Ephemeral	660	1.06	0.00125	0.87
S2-TRIB3-A7-B2-(1)	A	A-11	Ephemeral	487	0.89	0.00125	0.54

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S2-TRIB3-A7-B3-(1)	A	A-11	Ephemeral	31	0.56	0.00125	0.02
S2-TRIB3-A7-B4-(1)	A	A-11	Ephemeral	505	1.07	0.00125	0.68
S2-TRIB3-A7-B5-(1)	A	A-11	Ephemeral	431	0.82	0.00125	0.44
S2-TRIB3-A8-(1)	A	A-14	Ephemeral	451	1.01	0.00125	0.57
S2-TRIB3-A8-(2)	A	A-14	Ephemeral	295	0.94	0.00125	0.35
S2-TRIB3-A8-B1-(1)	A	A-14	Ephemeral	157	0.85	0.00125	0.17
S2-TRIB3-A8-B2-(1)	A	A-14	Ephemeral	100	0.83	0.00125	0.10
S2-TRIB3-A9-(1)	A	A-14	Ephemeral	141	0.92	0.00125	0.16
S2-TRIB3-A9-(2)	A	A-14	Ephemeral	416	0.54	0.00125	0.28
S2-TRIB3-A10-(2)	A	A-14	Ephemeral	74	0.61	0.00125	0.06
S2-TRIB3-A10-(3)	A	A-14	Ephemeral	284	0.51	0.00125	0.18
S2-TRIB3-A10-B1-(1)	A	A-14	Ephemeral	105	0.51	0.00125	0.07
S2-TRIB3-B1-(1)	A	A-14	Ephemeral	240	0.60	0.00125	0.18
T1-BAKER-(1)	A	A-4	Ephemeral	888	0.42	0.00125	0.47
T2-BAKER-(1)	A	A-2	Ephemeral	1,403	0.95	0.00125	1.67
T2-BAKER-(2)	A	A-2	Ephemeral	1,095	0.65	0.00125	0.89
T2-BAKER-(3)	A	A-2	Ephemeral	568	0.46	0.00125	0.33
T2-BAKER-TRIB1-(1)	A	A-2	Ephemeral	303	0.74	0.00125	0.28
T2-BAKER-TRIB1-(2)	A	A-2	Ephemeral	611	0.58	0.00125	0.44
T3-BAKER-(7)	A	A-2	Ephemeral	388	0.59	0.00125	0.29
T3-BAKER-TRIB1-(1)	A	A-1	Ephemeral	138	0.48	0.00125	0.08
T3-BAKER-TRIB1-(2)	A	A-2	Ephemeral	182	0.98	0.00125	0.22
T3-BAKER-TRIB1-(3)	A	A-2	Ephemeral	1,034	0.60	0.00125	0.78
T3-BAKER-TRIB1-B1-(1)	A	A-2	Ephemeral	315	0.94	0.00125	0.37
T3-BAKER-TRIB1-B2-(1)	A	A-2	Ephemeral	167	1.05	0.00125	0.22
T3-BAKER-TRIB1-B2-(2)	A	A-2	Ephemeral	150	1.07	0.00125	0.20
T6-BAKER-(1)	A	A-3	Ephemeral	1,979	0.36	0.00125	0.89
AX-S2-TRIB1-(1)	A	A-16	Ephemeral	805	0.99	0.00125	1.00
AX-S2-TRIB1-(2)	A	A-13, A-16	Ephemeral	618	0.76	0.00125	0.59
AX-S2-TRIB1-(3)	A	A-13	Ephemeral	820	0.78	0.00125	0.80
AX-S2-TRIB1-(4)	A	A-13	Ephemeral	1,577	0.66	0.00125	1.30
AX-S2-TRIB1-A2-(1)	A	A-13	Ephemeral	1,380	0.61	0.00125	1.05
AX-S2-TRIB1-A2-TRIBA-(1)	A	A-13	Ephemeral	312	0.54	0.00125	0.21
AX-S2-TRIB1-A3-(1)	A	A-13	Ephemeral	104	0.60	0.00125	0.08
AX-S2-TRIB1-A4-(1)	A	A-13, A-16	Ephemeral	1,814	0.93	0.00125	2.11
AX-S2-TRIB1-A4-TRIBA-(1)	A	A-13	Ephemeral	207	0.64	0.00125	0.17

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
AX-S2-TRIB1-A4-TRIBB-(1)	A	A-16	Ephemeral	122	1.13	0.00125	0.17
AX-S2-TRIB1-A4-TRIBB-(2)	A	A-13, A-16	Ephemeral	1,220	0.94	0.00125	1.43
AX-S2-TRIB1-A4-TRIBB-AA-(1)	A	A-13	Ephemeral	198	1.23	0.00125	0.30
AX-S2-TRIB1-A4-TRIBB-AB-(1)	A	A-13, A-16	Ephemeral	215	1.30	0.00125	0.35
AX-S2-TRIB1-A4-TRIBB-AC-(1)	A	A-16	Ephemeral	132	1.24	0.00125	0.20
AX-S2-TRIB1-A4-TRIBC-(1)	A	A-16	Ephemeral	198	1.11	0.00125	0.27
AX-S2-TRIB1-A4-TRIBC-(2)	A	A-16	Ephemeral	87	0.95	0.00125	0.10
AX-S2-TRIB1-A4-TRIBD-(1)	A	A-16	Ephemeral	230	0.67	0.00125	0.19
AX-S2-TRIB1-A5-(1)	A	A-13	Ephemeral	208	0.72	0.00125	0.19
AX-S2-TRIB1-A6-(1)	A	A-16	Ephemeral	423	1.23	0.00125	0.65
AX-S2-TRIB1-A7-(1)	A	A-16	Ephemeral	254	0.65	0.00125	0.21
AX-S2-TRIB1-A7-(2)	A	A-16	Ephemeral	139	0.80	0.00125	0.14
AX-S2-TRIB2-B2-(1)	A	A-15	Ephemeral	355	1.06	0.00125	0.47
AX-S2-TRIB2-B2-TRIBA-(1)	A	A-15	Ephemeral	360	0.95	0.00125	0.43
AX-S2-TRIB3-(1)	A	A-14	Ephemeral	202	0.98	0.00125	0.25
AX-S2-TRIB3-(2)	A	A-14	Ephemeral	2,088	1.06	0.00125	2.77
AX-S2-TRIB3-A7-(1)	A	A-15	Ephemeral	150	1.11	0.00125	0.21
AX-S2-TRIB3-A7-(2)	A	A-15	Ephemeral	741	1.07	0.00125	0.99
AX-S2-TRIB3-A7-(3)	A	A-15	Ephemeral	567	1.44	0.00125	1.02
AX-S2-TRIB3-A7-TRIBA-(1)	A	A-14	Ephemeral	357	0.86	0.00125	0.38
AX-S2-TRIB3-A7-TRIBA-(2)	A	A-14	Ephemeral	227	1.48	0.00125	0.42
AX-S2-TRIB3-A7-TRIBA-(3)	A	A-14	Ephemeral	91	0.97	0.00125	0.11
AX-S2-TRIB3-A7-TRIBA-AA-(1)	A	A-14	Ephemeral	111	0.73	0.00125	0.10
AX-S2-TRIB3-A7-TRIBA-AB-(1)	A	A-14	Ephemeral	162	1.08	0.00125	0.22
AX-S2-TRIB3-A7-TRIBA-AC-(1)	A	A-14	Ephemeral	68	0.82	0.00125	0.07
AX-S2-TRIB3-A7-TRIBA-AD-(1)	A	A-14	Ephemeral	74	0.71	0.00125	0.07
AX-S2-TRIB3-A7-TRIBB-(1)	A	A-15	Ephemeral	320	0.72	0.00125	0.29
AX-S2-TRIB3-A7-TRIBB-AA-(1)	A	A-15	Ephemeral	274	0.68	0.00125	0.23
AX-S2-TRIB3-A7-TRIBC-(1)	A	A-15	Ephemeral	119	0.76	0.00125	0.11
AX-S2-TRIB3-A7-TRIBD-(1)	A	A-15	Ephemeral	265	0.69	0.00125	0.23
AX-S2-TRIB3-A7-TRIBD-AA-(1)	A	A-15	Ephemeral	86	0.60	0.00125	0.06
AX-S2-TRIB3-A7-TRIBE-(1)	A	A-14	Ephemeral	916	0.74	0.00125	0.85
AX-S2-TRIB3-A7-TRIBF-(1)	A	A-15	Ephemeral	63	0.63	0.00125	0.05
AX-S2-TRIB3-A7-TRIBG-(1)	A	A-15	Ephemeral	107	1.00	0.00125	0.13
AX-S2-TRIB3-A10-(1)	A	A-14	Ephemeral	219	1.05	0.00125	0.29
AX-S2-TRIB3-A10-(2)	A	A-14	Ephemeral	221	0.74	0.00125	0.20

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
AX-S2-TRIB3-A10-B1-(1)	A	A-14	Ephemeral	65	0.77	0.00125	0.06
AX-S2-TRIB3-A10-TRIBA-(1)	A	A-14	Ephemeral	259	1.09	0.00125	0.35
AX-S2-TRIB3-A11-(1)	A	A-14	Ephemeral	426	1.04	0.00125	0.55
AX-S2-TRIB3-A12-(1)	A	A-14	Ephemeral	143	0.99	0.00125	0.18
AX-S2-TRIB3-A13-(1)	A	A-14	Ephemeral	256	1.00	0.00125	0.32
AX-S2-TRIB3-A13-(2)	A	A-14	Ephemeral	223	0.94	0.00125	0.26
AX-S2-TRIB3-A14-(1)	A	A-14	Ephemeral	134	1.04	0.00125	0.17
AX-S2-TRIB3-A14-(2)	A	A-14	Ephemeral	321	0.96	0.00125	0.39
AX-S2-TRIB3-A15-(1)	A	A-14	Ephemeral	98	1.07	0.00125	0.13
AX-S2-TRIB3-A16-(1)	A	A-14	Ephemeral	149	0.95	0.00125	0.18
AX-S2-TRIB3-A16-(2)	A	A-14	Ephemeral	313	0.83	0.00125	0.32
AX-S2-TRIB3-A17-(1)	A	A-14	Ephemeral	206	0.75	0.00125	0.19
AX-S2-TRIB3-A18-(1)	A	A-14	Ephemeral	142	0.90	0.00125	0.16
AX-S2-TRIB3-A19-(1)	A	A-14	Ephemeral	165	0.94	0.00125	0.19
AX-S2-TRIB3-A20-(1)	A	A-14	Ephemeral	185	0.91	0.00125	0.21
A Subtotal	**-**	**-**	**-**	***88,823***	**-**	**-**	***81.51***
S15-TRIB3-(1)	B	B-3	Ephemeral	82	1.11	0.00125	0.11
S15-TRIB3-(2)	B	B-1, B-3	Ephemeral	923	1.11	0.00125	1.28
S15-TRIB3-(3)	B	B-1	Ephemeral	522	0.98	0.00125	0.64
S15-TRIB3-(4)	B	B-1	Ephemeral	1,112	1.23	0.00125	1.71
S15-TRIB3-A1-(1)	B	B-1	Ephemeral	24	0.71	0.00125	0.02
S15-TRIB3-A1-(2)	B	B-1	Ephemeral	854	1.19	0.00125	1.27
S15-TRIB3-A1-(3)	B	B-1	Ephemeral	165	0.78	0.00125	0.16
S15-TRIB3-A1-TRIBA-(1)	B	B-1	Ephemeral	132	1.10	0.00125	0.18
S15-TRIB3-A2-(1)	B	B-1	Ephemeral	532	0.84	0.00125	0.56
S15-TRIB3-A3-(1)	B	B-1	Ephemeral	175	0.89	0.00125	0.19
S15-TRIB3-A3-(3)	B	B-1	Ephemeral	299	1.02	0.00125	0.38
S15-TRIB3-A3-(4)	B	B-1	Ephemeral	375	1.07	0.00125	0.50
S15-TRIB3-A3-(5)	B	B-1	Ephemeral	360	0.72	0.00125	0.32
S15-TRIB3-A3-TRIBA-(1)	B	B-1	Ephemeral	216	1.09	0.00125	0.29
S15-TRIB3-A3-TRIBB-(1)	B	B-1	Ephemeral	55	0.96	0.00125	0.07
S15-TRIB3-A4-(1)	B	B-1	Ephemeral	69	0.94	0.00125	0.08
S15-TRIB3-A5-(1)	B	B-1	Ephemeral	1,088	0.94	0.00125	1.28
S15-TRIB3-A5-TRIBA-(1)	B	B-1	Ephemeral	264	0.86	0.00125	0.28
S15-TRIB3-A6-(1)	B	B-1	Ephemeral	693	0.92	0.00125	0.80
S15-TRIB3-A7-(1)	B	B-1	Ephemeral	472	0.98	0.00125	0.58

TABLE E-2
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Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S15-TRIB3-A8-(1)	B	B-1, B-3	Ephemeral	441	0.73	0.00125	0.40
S15-TRIB3-A9-(1)	B	B-1	Ephemeral	102	0.60	0.00125	0.08
S16-(1)	B	B-8, B-9	Ephemeral	893	1.09	0.00125	1.22
S16-(2)	B	B-5, B-8	Ephemeral	2,150	0.96	0.00125	2.58
S16-TRIB7-(1)	B	B-7	Ephemeral	572	1.37	0.00125	0.98
S16-TRIB7-(2)	B	B-7	Ephemeral	767	0.83	0.00125	0.80
S16-TRIB7-(4)	B	B-5	Ephemeral	424	1.24	0.00125	0.66
S16-TRIB7-(5)	B	B-4	Ephemeral	1,475	0.70	0.00125	1.29
S16-TRIB7-A2-(2)	B	B-4	Ephemeral	485	0.76	0.00125	0.46
S16-TRIB7-A3-(1)	B	B-4	Ephemeral	184	1.00	0.00125	0.23
S16-TRIB7-A3-(2)	B	B-4	Ephemeral	1,952	0.74	0.00125	1.81
S16-TRIB7-A3-(4)	B	B-4	Ephemeral	318	0.76	0.00125	0.30
S16-TRIB7-A3-TRIBA-(1)	B	B-4	Ephemeral	1,068	0.60	0.00125	0.80
S16-TRIB7-A3-TRIBA-AA-(1)	B	B-4	Ephemeral	154	0.49	0.00125	0.09
S16-TRIB7-A3-TRIBA-AB-(1)	B	B-4	Ephemeral	207	0.68	0.00125	0.18
S16-TRIB7-A3-TRIBB-(1)	B	B-4	Ephemeral	159	0.64	0.00125	0.13
S16-TRIB7-A3-TRIBC-(1)	B	B-4	Ephemeral	224	0.45	0.00125	0.13
S16-TRIB7-A3-TRIBD-(1)	B	B-4	Ephemeral	138	0.96	0.00125	0.17
S16-TRIB7-A3-TRIBE-(1)	B	B-4	Ephemeral	591	0.77	0.00125	0.57
S16-TRIB7-A3-TRIBF-(1)	B	B-7	Ephemeral	458	0.96	0.00125	0.55
S16-TRIB7-A3-TRIBF-(2)	B	B-4	Ephemeral	454	0.69	0.00125	0.39
S16-TRIB7-A3-TRIBF-AA-(1)	B	B-7	Ephemeral	280	1.13	0.00125	0.40
S16-TRIB7-A3-TRIBG-(1)	B	B-4	Ephemeral	400	0.49	0.00125	0.25
S16-TRIB7-A3-TRIBH-(1)	B	B-4	Ephemeral	257	0.89	0.00125	0.29
S16-TRIB7-A3-TRIBI-(1)	B	B-4	Ephemeral	372	0.72	0.00125	0.33
S16-TRIB7-A4-(1)	B	B-8	Ephemeral	409	1.53	0.00125	0.78
S16-TRIB7-A4-(3)	B	B-4, B-5	Ephemeral	264	0.77	0.00125	0.25
S16-TRIB7-A5-(1)	B	B-7	Ephemeral	393	0.95	0.00125	0.47
S16-TRIB7-A6-(1)	B	B-7	Ephemeral	572	0.47	0.00125	0.34
S16-TRIB7-A6-TRIBA-(1)	B	B-7	Ephemeral	459	0.68	0.00125	0.39
S16-TRIB7-A6-TRIBB-(1)	B	B-7	Ephemeral	331	0.50	0.00125	0.21
S16-TRIB7-A7-(1)	B	B-7	Ephemeral	646	1.82	0.00125	1.47
S16-TRIB8-(1)	B	B-3	Ephemeral	651	1.04	0.00125	0.85
S16-TRIB8-(2)	B	B-2, B-3	Ephemeral	1,762	0.64	0.00125	1.41
S16-TRIB8-A1-(2)	B	B-2	Ephemeral	132	1.17	0.00125	0.19
S16-TRIB8-A1-(3)	B	B-2	Ephemeral	230	0.71	0.00125	0.20

TABLE E-2
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Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S16-TRIB8-A2-(1)	B	B-3	Ephemeral	717	1.05	0.00125	0.94
S16-TRIB8-A2-(2)	B	B-2	Ephemeral	347	0.75	0.00125	0.33
S16-TRIB8-A3-(1)	B	B-2	Ephemeral	329	1.02	0.00125	0.42
S16-TRIB8-A3-(3)	B	B-2	Ephemeral	125	1.18	0.00125	0.18
S16-TRIB8-A4-(1)	B	B-3	Ephemeral	556	1.29	0.00125	0.90
S16-TRIB8-A4-(2)	B	B-3	Ephemeral	178	0.78	0.00125	0.17
S16-TRIB8-A5-(1)	B	B-3, B-6	Ephemeral	829	0.72	0.00125	0.75
S16-TRIB8-A6-(1)	B	B-3	Ephemeral	114	0.98	0.00125	0.14
S16-TRIB10-(1)	B	B-9	Ephemeral	1,656	1.31	0.00125	2.71
S16-TRIB10-(2)	B	B-8	Ephemeral	659	0.82	0.00125	0.68
S16-TRIB10-A1-(2)	B	B-9	Ephemeral	887	1.31	0.00125	1.45
S16-TRIB11-(1)	B	B-8	Ephemeral	983	1.08	0.00125	1.33
S16-TRIB11-(2)	B	B-8	Ephemeral	1,045	1.01	0.00125	1.32
S16-TRIB11-A1-(1)	B	B-8	Ephemeral	139	1.42	0.00125	0.25
S16-TRIB11-A1-(2)	B	B-8	Ephemeral	60	0.74	0.00125	0.06
S16-TRIB11-A2-(1)	B	B-8	Ephemeral	77	1.40	0.00125	0.13
S16-TRIB11-A2-(2)	B	B-8	Ephemeral	78	0.77	0.00125	0.08
S16-TRIB11-A3-(1)	B	B-8	Ephemeral	62	1.37	0.00125	0.11
S16-TRIB11-A3-(2)	B	B-8	Ephemeral	285	1.03	0.00125	0.37
S16-TRIB11-A3-(3)	B	B-8	Ephemeral	84	0.64	0.00125	0.07
S16-TRIB12-(1)	B	B-9	Ephemeral	1,302	1.31	0.00125	2.13
S16-TRIB13-(1)	B	B-8, B-9	Ephemeral	843	1.31	0.00125	1.38
B Subtotal	-	-	-	***40,141***	-	-	***48.25***
S25-(8)	C	C-6, C-9, C-12	Ephemeral	3,887	1.04	0.00125	5.05
S25-(9)	C	C-3, C-6	Ephemeral	4,947	0.59	0.00125	3.65
S25-TRIB1-(1)	C	C-2	Ephemeral	570	1.35	0.00125	0.96
S25-TRIB1-(2)	C	C-3	Ephemeral	1,081	0.75	0.00125	1.01
S25-TRIB1-A1-(1)	C	C-3	Ephemeral	164	0.69	0.00125	0.14
S25-TRIB2-(2)	C	C-5, C-6	Ephemeral	675	0.98	0.00125	0.83
S25-TRIB2-(3)	C	C-6	Ephemeral	404	0.64	0.00125	0.32
S25-TRIB3-(1)	C	C-6	Ephemeral	576	0.57	0.00125	0.41
S25-TRIB4-(1)	C	C-5	Ephemeral	335	0.81	0.00125	0.34
S25-TRIB4-(2)	C	C-6	Ephemeral	1,420	0.52	0.00125	0.92
S25-TRIB5-(1)	C	C-6	Ephemeral	269	0.50	0.00125	0.17
S25-TRIB6-(2)	C	C-6	Ephemeral	700	1.08	0.00125	0.95
S25-TRIB8-(1)	C	C-6	Ephemeral	670	0.60	0.00125	0.50

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S25-TRIB9-(1)	C	C-9	Ephemeral	358	0.51	0.00125	0.23
S25-TRIB10-(1)	C	C-9	Ephemeral	794	0.46	0.00125	0.46
S25-TRIB10-(3)	C	C-9	Ephemeral	473	0.70	0.00125	0.41
S25-TRIB11-(2)	C	C-9	Ephemeral	401	0.57	0.00125	0.29
S25-TRIB12-(1)	C	C-13	Ephemeral	324	0.95	0.00125	0.38
S25-TRIB12-(2)	C	C-13	Ephemeral	324	0.65	0.00125	0.26
S25-TRIB12-(3)	C	C-10	Ephemeral	399	0.63	0.00125	0.31
S25-TRIB12-(4)	C	C-10	Ephemeral	449	1.35	0.00125	0.76
S25-TRIB12-(6)	C	C-9	Ephemeral	585	0.72	0.00125	0.53
S25-TRIB12-(7)	C	C-9	Ephemeral	282	0.70	0.00125	0.25
S25-TRIB12-A2-(1)	C	C-10	Ephemeral	970	0.54	0.00125	0.65
S25-TRIB12-A3-(1)	C	C-13	Ephemeral	626	0.63	0.00125	0.49
S25-TRIB13-(2)	C	C-9	Ephemeral	747	0.57	0.00125	0.53
S25-TRIB13-A1-(1)	C	C-8, C-9	Ephemeral	866	0.60	0.00125	0.65
S25-TRIB14-(2)	C	C-12	Ephemeral	59	1.00	0.00125	0.07
S26-(4)	C	C-14	Ephemeral	506	0.85	0.00125	0.54
S26-(5)	C	C-11, C-14	Ephemeral	3,970	0.74	0.00125	3.67
S26-(6)	C	C-2, C-4, C-5, C-7, C-11	Ephemeral	9,765	0.69	0.00125	8.42
S26-TRIB1-(1)	C	C-2	Ephemeral	181	0.41	0.00125	0.09
S26-TRIB2-(1)	C	C-1	Ephemeral	991	1.24	0.00125	1.54
S26-TRIB2-(3)	C	C-4	Ephemeral	321	0.78	0.00125	0.31
S26-TRIB2-(4)	C	C-5	Ephemeral	554	0.50	0.00125	0.35
S26-TRIB3-(1)	C	C-4	Ephemeral	777	0.99	0.00125	0.96
S26-TRIB3-(2)	C	C-4	Ephemeral	2,999	0.55	0.00125	2.06
S26-TRIB4-(1)	C	C-5	Ephemeral	1,786	0.39	0.00125	0.87
S26-TRIB5-(1)	C	C-4	Ephemeral	356	0.81	0.00125	0.36
S26-TRIB6-(1)	C	C-4	Ephemeral	2,928	0.39	0.00125	1.43
S26-TRIB7-(2)	C	C-5, C-8	Ephemeral	1,176	0.47	0.00125	0.69
S26-TRIB8-(1)	C	C-7	Ephemeral	566	0.95	0.00125	0.67
S26-TRIB9-(1)	C	C-4, C-7	Ephemeral	664	0.36	0.00125	0.30
S26-TRIB10-(1)	C	C-7	Ephemeral	3,163	0.51	0.00125	2.02
S26-TRIB10-A1-(1)	C	C-7	Ephemeral	656	0.51	0.00125	0.42
S26-TRIB10-A1-(2)	C	C-7	Ephemeral	1,753	0.48	0.00125	1.05
S26-TRIB10-A2-(1)	C	C-7	Ephemeral	252	0.46	0.00125	0.14
S26-TRIB10-A2-TRIBA-(1)	C	C-7	Ephemeral	170	0.49	0.00125	0.10
S26-TRIB11-(1)	C	C-7	Ephemeral	466	0.65	0.00125	0.38

TABLE E-2
LAKE RALPH HALL
BASELINE FUNCTIONAL CAPACITY OF STREAMS WITHIN MITIGATION ZONES A, B, AND C

Stream Assessment Reach (SAR) Name	Mitigation Zone	Panel No.	Stream Type	SAR Length (Linear Feet)[1]	Total Stream Function Condition Index (FCI)[2]	Multiplication Factor[3]	Total Stream Function Capacity Units (FCU)[4]
S26-TRIB11-(2)	C	C-7	Ephemeral	297	0.54	0.00125	0.20
S26-TRIB12-(1)	C	C-7	Ephemeral	285	0.72	0.00125	0.26
S26-TRIB13-(1)	C	C-8	Ephemeral	1,366	0.83	0.00125	1.42
S26-TRIB13-(3)	C	C-7	Ephemeral	122	0.42	0.00125	0.06
S26-TRIB14-(1)	C	C-8	Ephemeral	1,019	0.53	0.00125	0.68
S26-TRIB15-(1)	C	C-11	Ephemeral	130	0.69	0.00125	0.11
S26-TRIB15-(2)	C	C-11	Ephemeral	152	0.45	0.00125	0.09
S26-TRIB16-(4)	C	C-11	Ephemeral	157	0.61	0.00125	0.12
S26-TRIB16-(5)	C	C-11	Ephemeral	593	0.58	0.00125	0.43
S26-TRIB16-A1-(1)	C	C-11	Ephemeral	467	0.58	0.00125	0.34
S26-TRIB17-(1)	C	C-11	Ephemeral	241	1.00	0.00125	0.30
S26-TRIB17-(2)	C	C-11	Ephemeral	118	0.81	0.00125	0.12
S26-TRIB17-(3)	C	C-11	Ephemeral	136	0.90	0.00125	0.15
S26-TRIB18-(5)	C	C-11	Ephemeral	499	0.58	0.00125	0.36
S26-TRIB19-(2)	C	C-14	Ephemeral	743	0.57	0.00125	0.53
S26-TRIB19-A1-(1)	C	C-14	Ephemeral	185	0.43	0.00125	0.10
C Subtotal	-	-	-	***63,865***	-	-	***53.16***
TOTAL	-	-	-	**192,829**	-	-	**182.92**

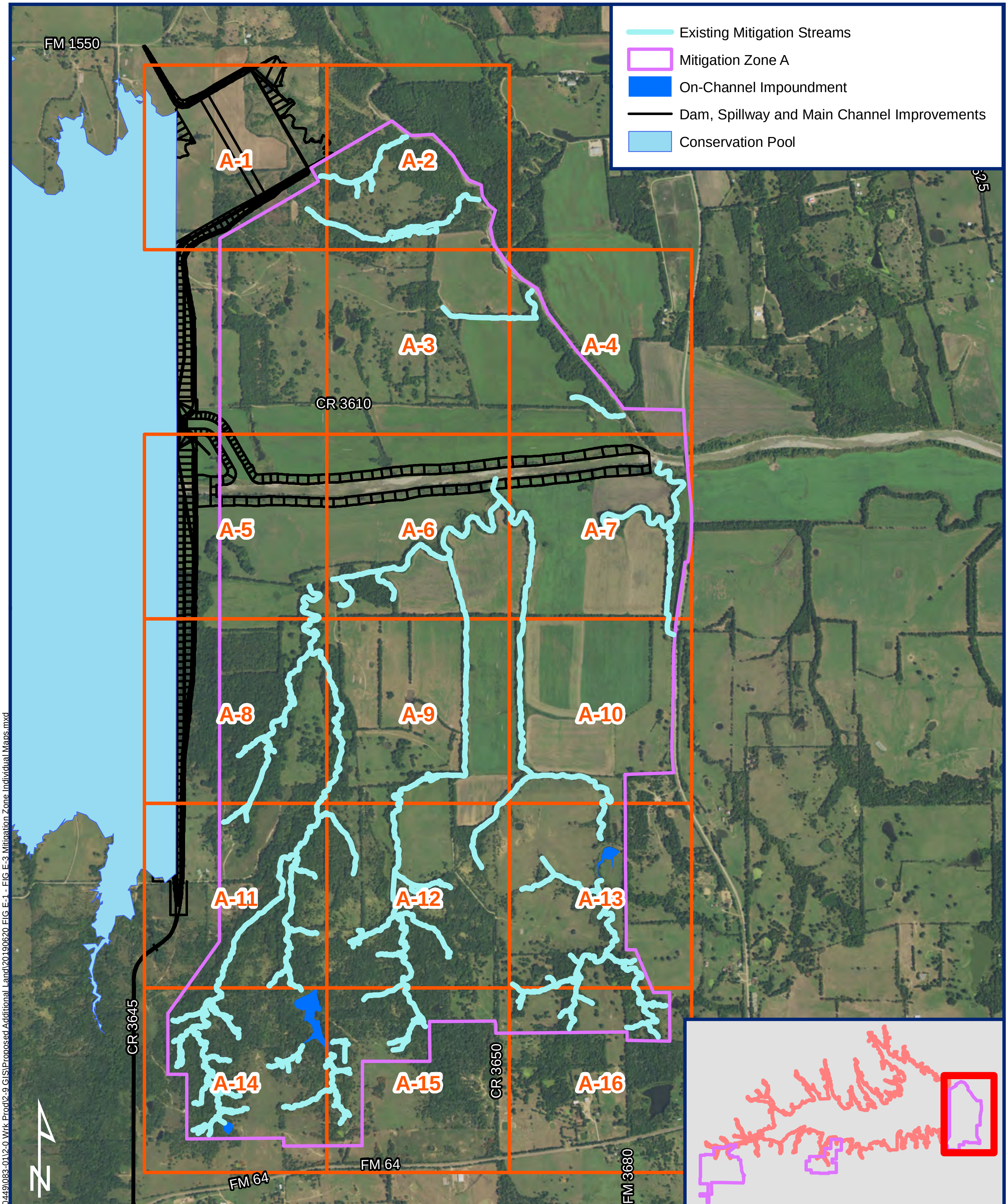
Notes for Table E-2:

1. SAR Length shown rounded to the nearest foot.

2. FCI values from SWAMPIM field assessments (Dated May/June 2018, and December 2018/January 2019); Shown rounded to the nearest hundredth.

3. Multiplication Factor for stream segment. Perennial = 0.00380; Intermittent with Perennial Pools = 0.00315; Intermittent = 0.00250; Ephemeral = 0.00125.

*4. FCU = Reach Length, ft * FCI * Multiplication Factor; Shown rounded to the nearest hundredth.*



0 625 1,250 2,500
Feet

FIGURE E-1: MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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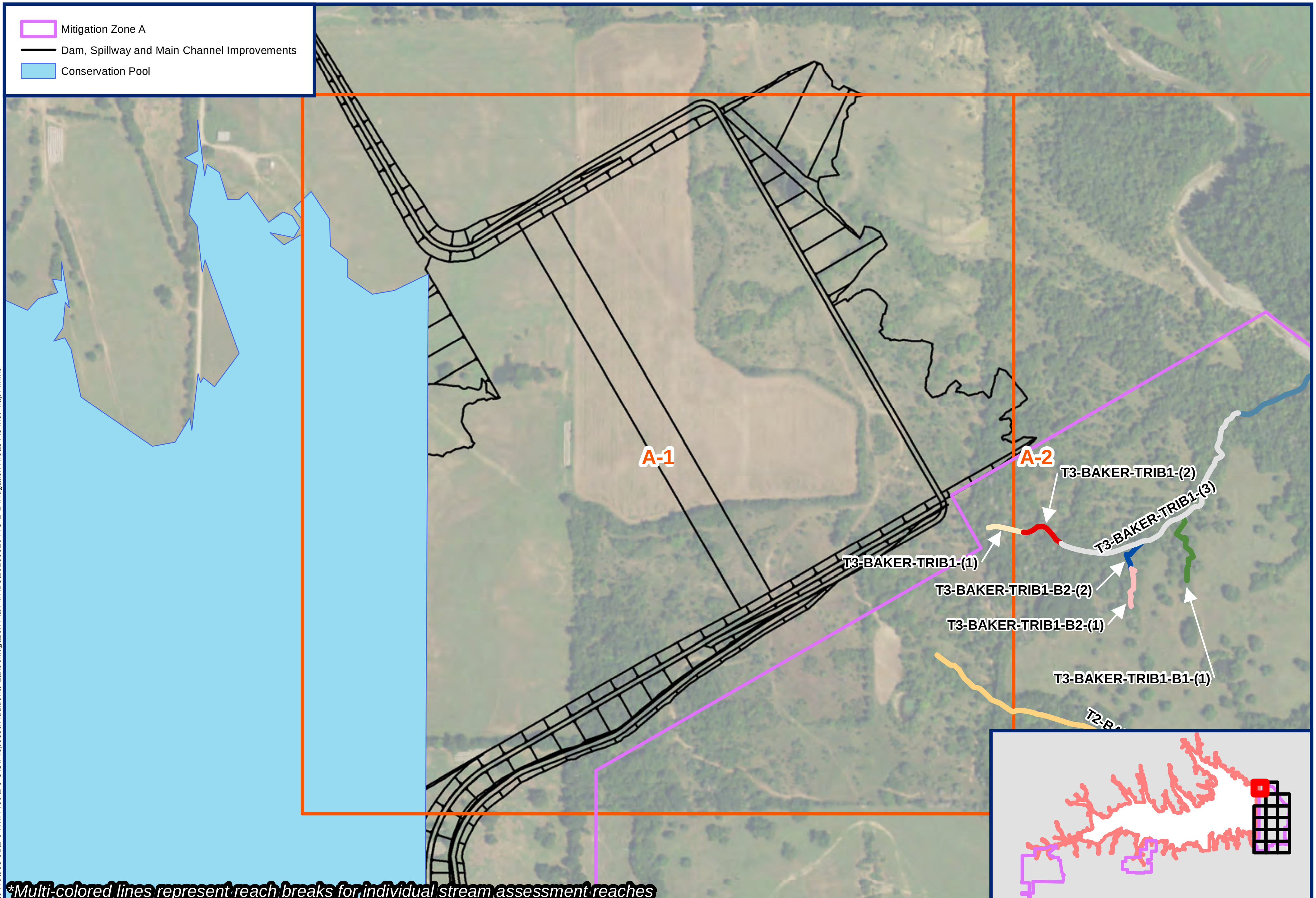

0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-1, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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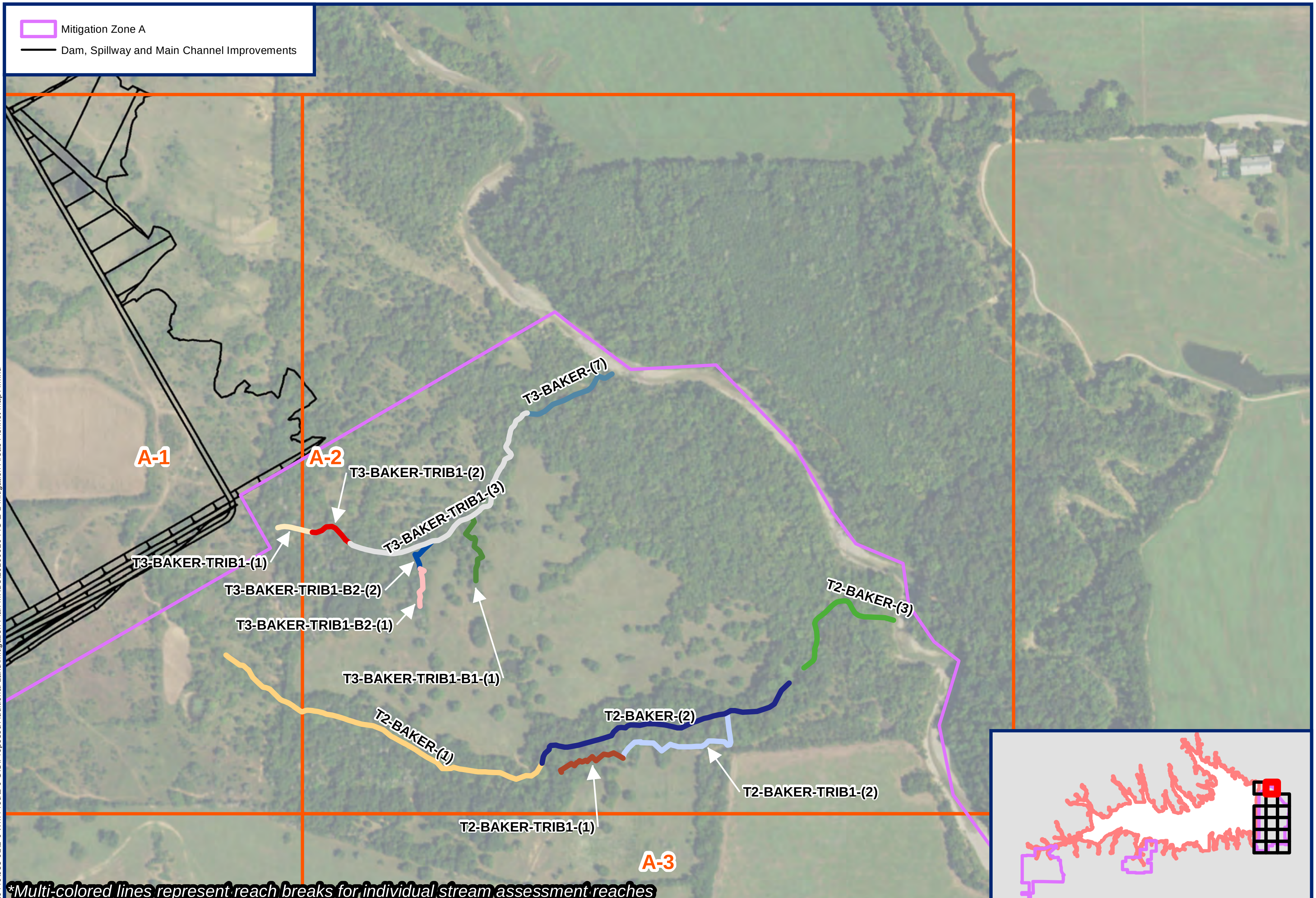
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd



0 150 300 600 Feet

N

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FIGURE E-1: PANEL A-2, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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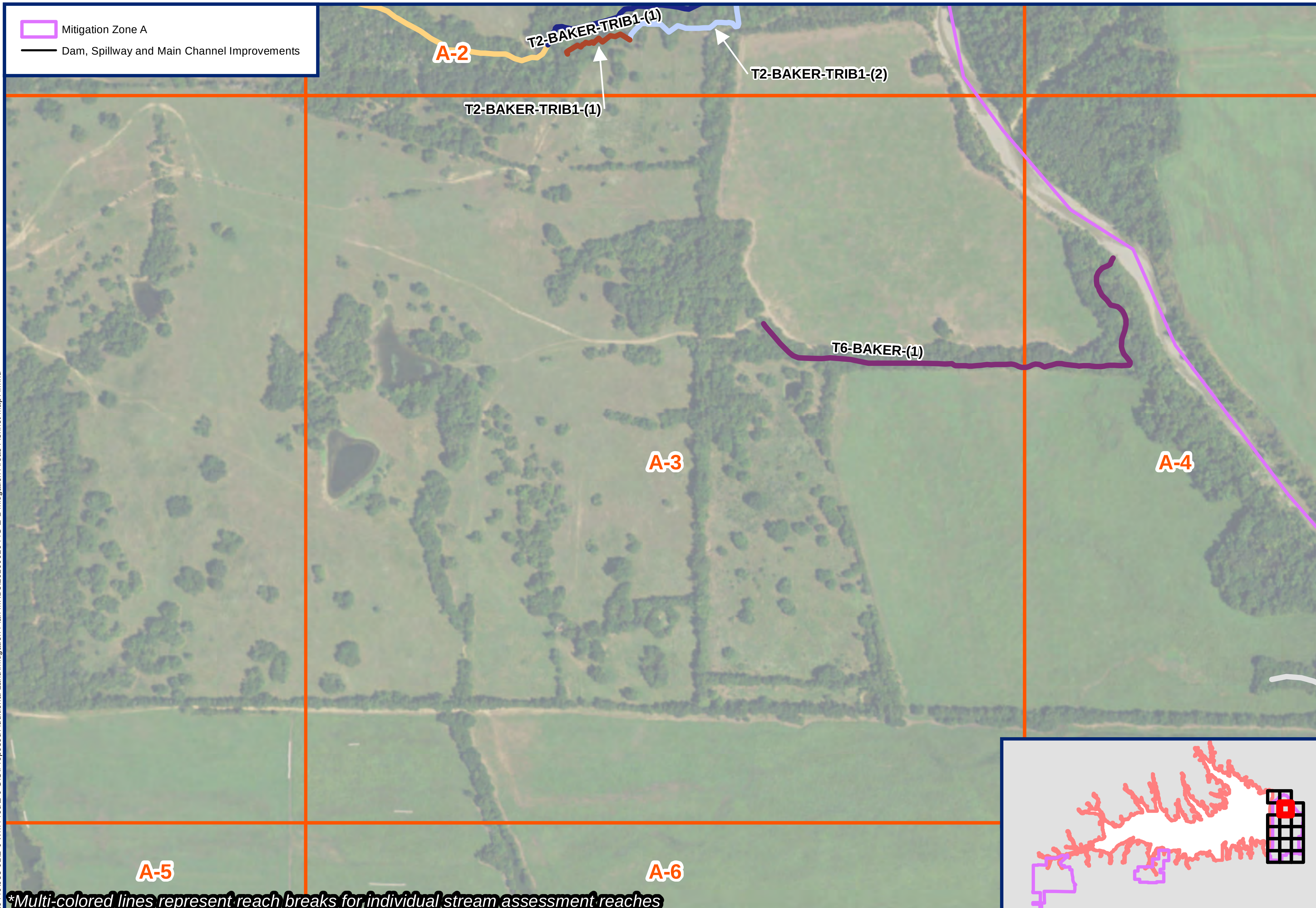

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FIGURE E-1: PANEL A-3, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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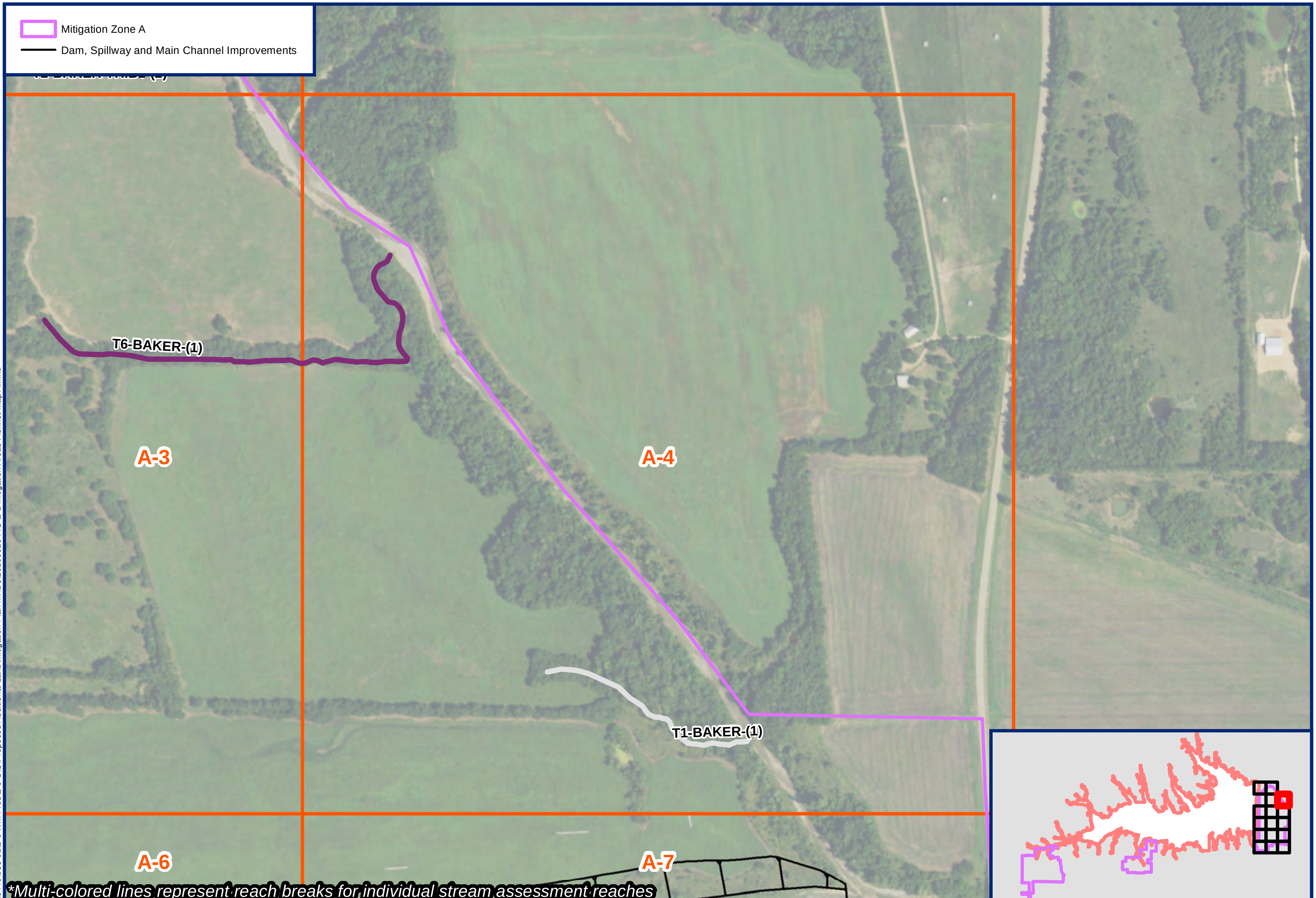
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd



0 150 300 600 Feet

N

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FIGURE E-1: PANEL A-4, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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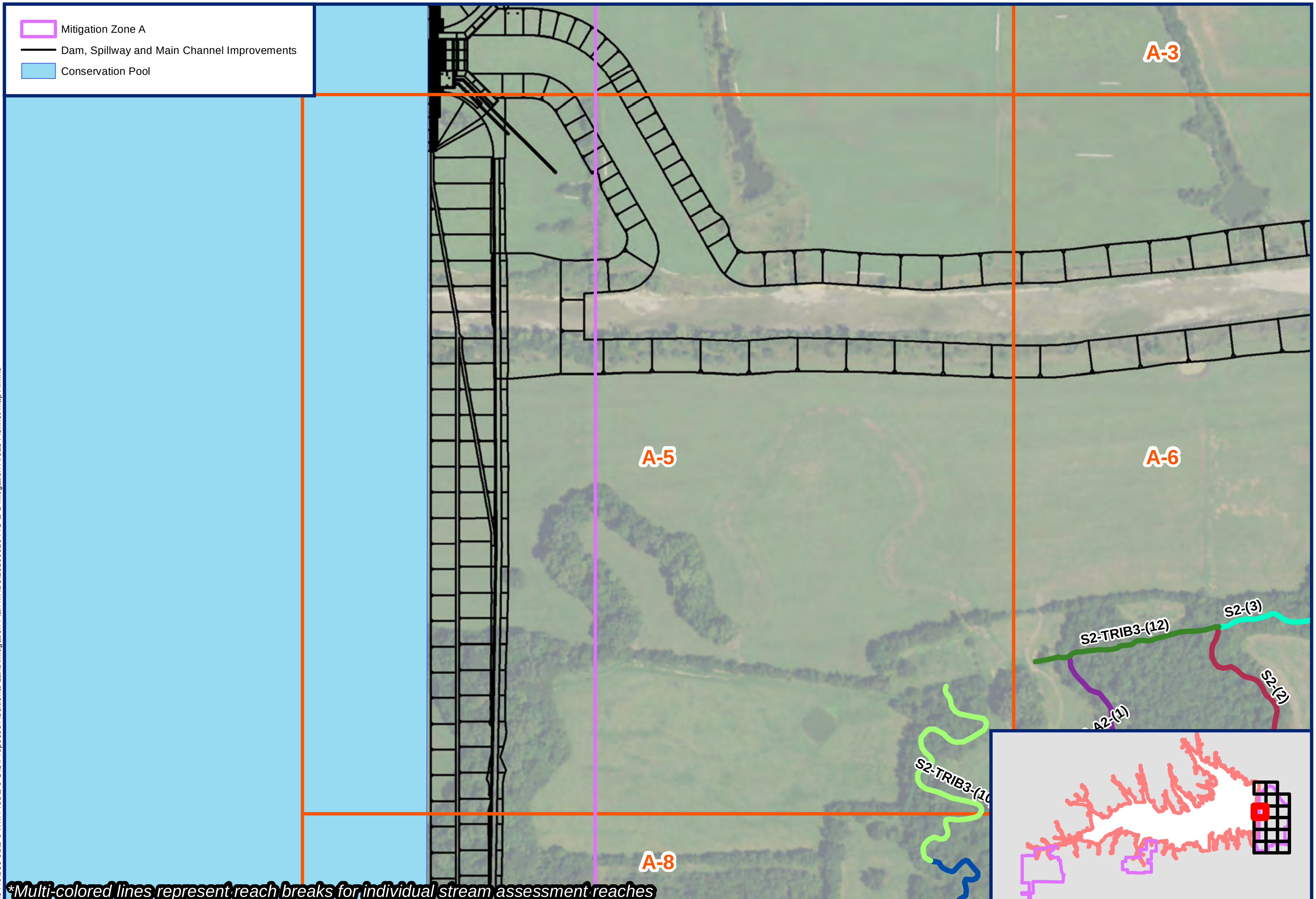

0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-5, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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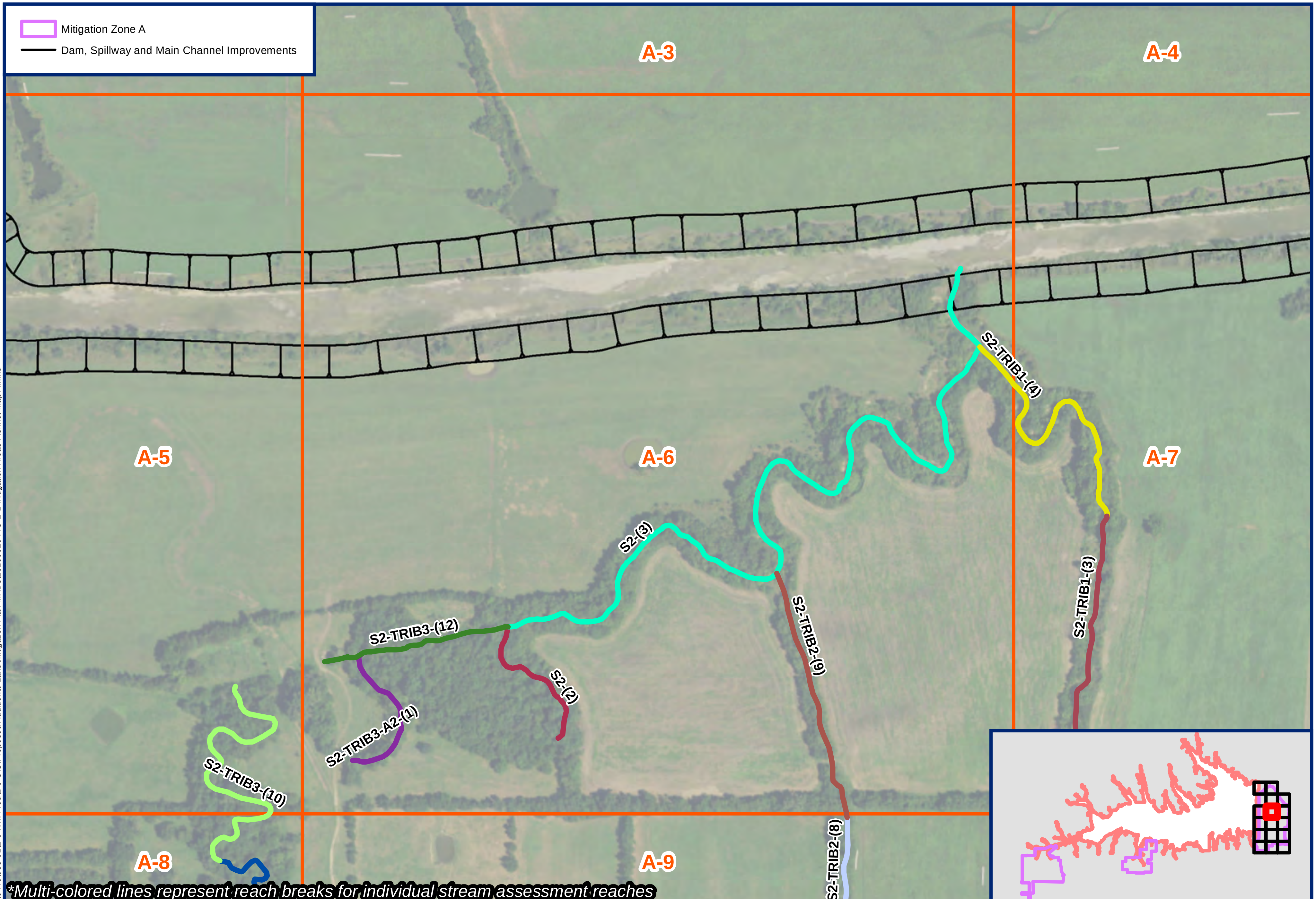

0 150 300 600
Feet

N

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FIGURE E-1: PANEL A-6, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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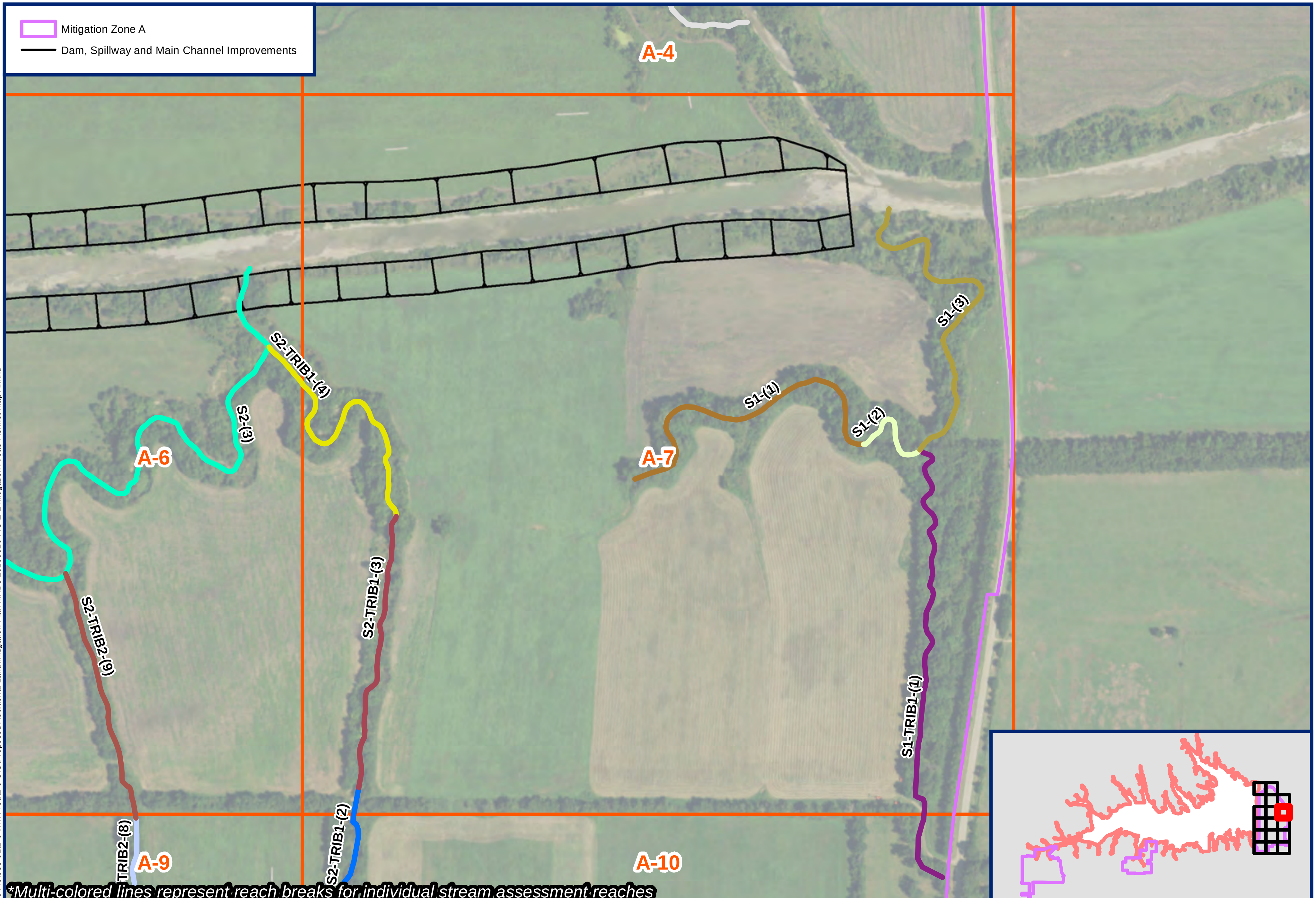

0 150 300 600 Feet

N

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FIGURE E-1: PANEL A-7, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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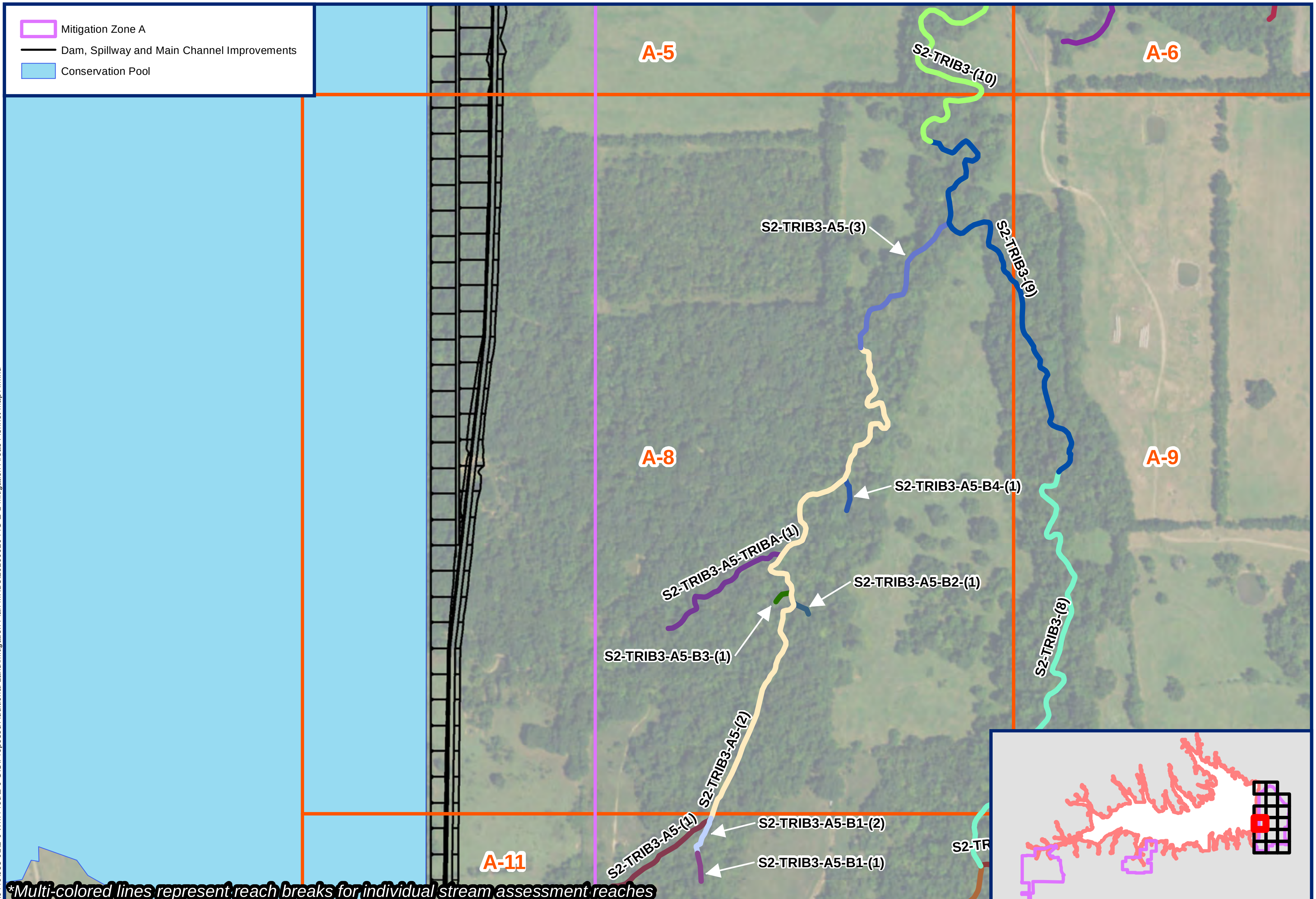

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FIGURE E-1: PANEL A-8, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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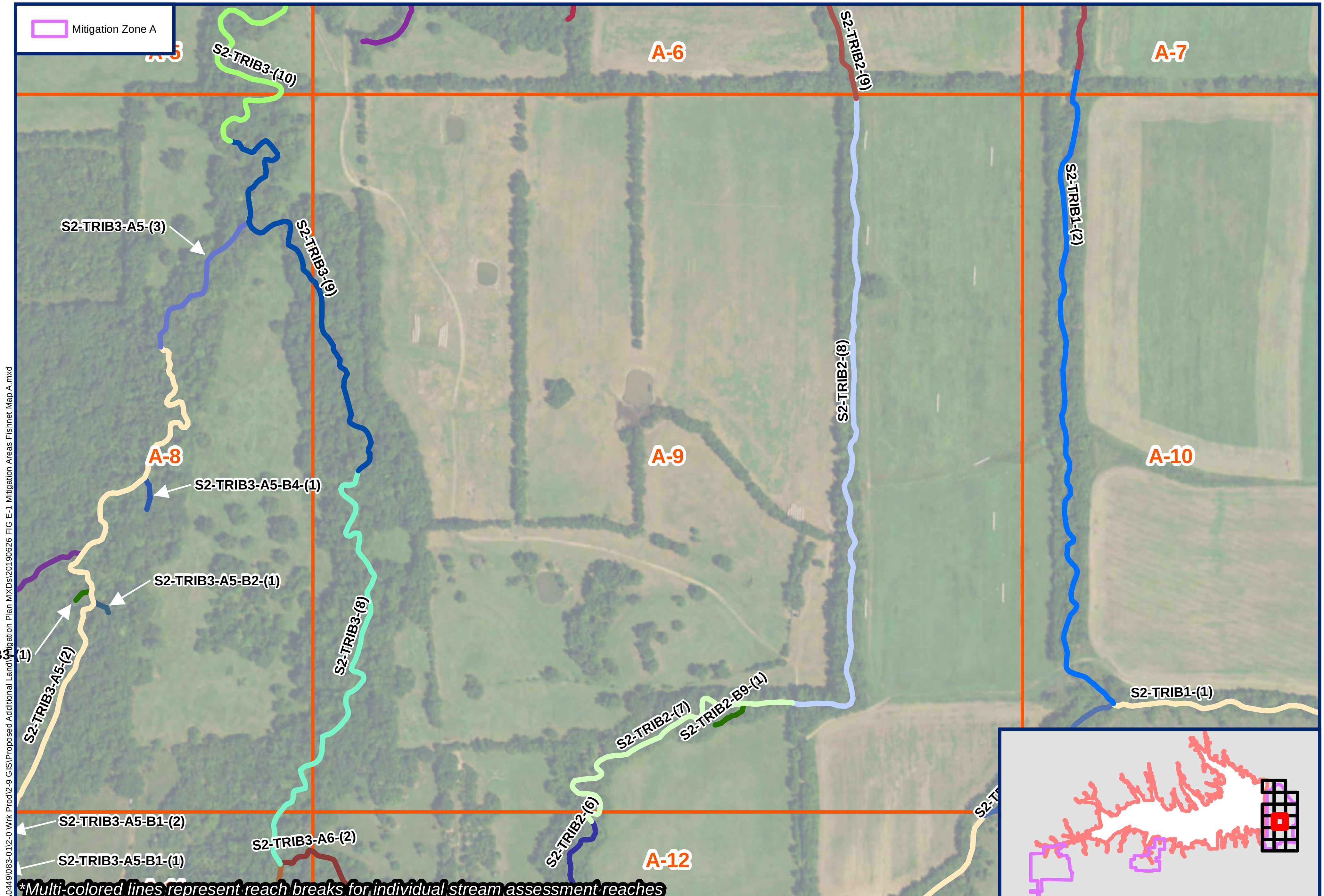

0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-9, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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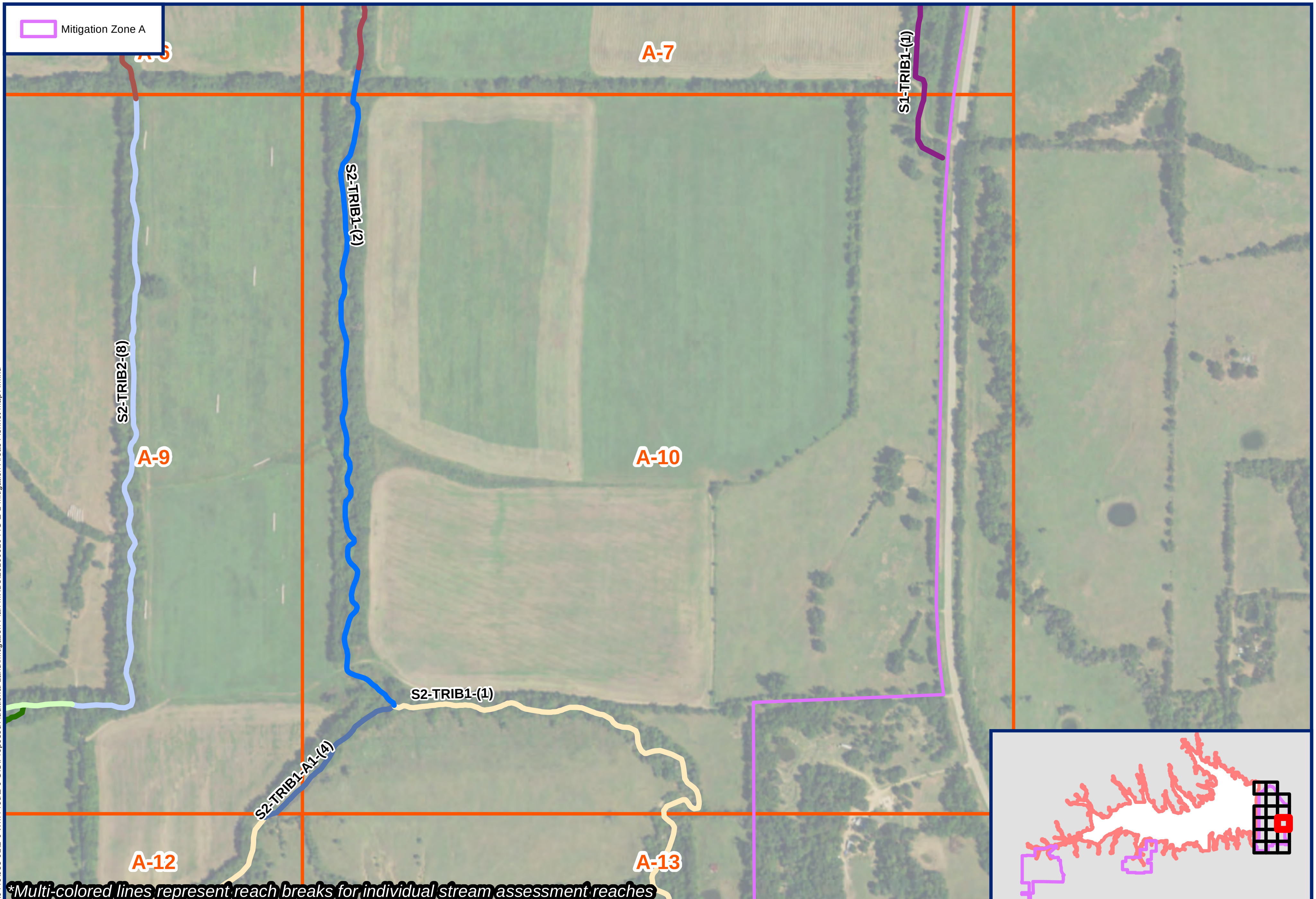

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FIGURE E-1: PANEL A-10, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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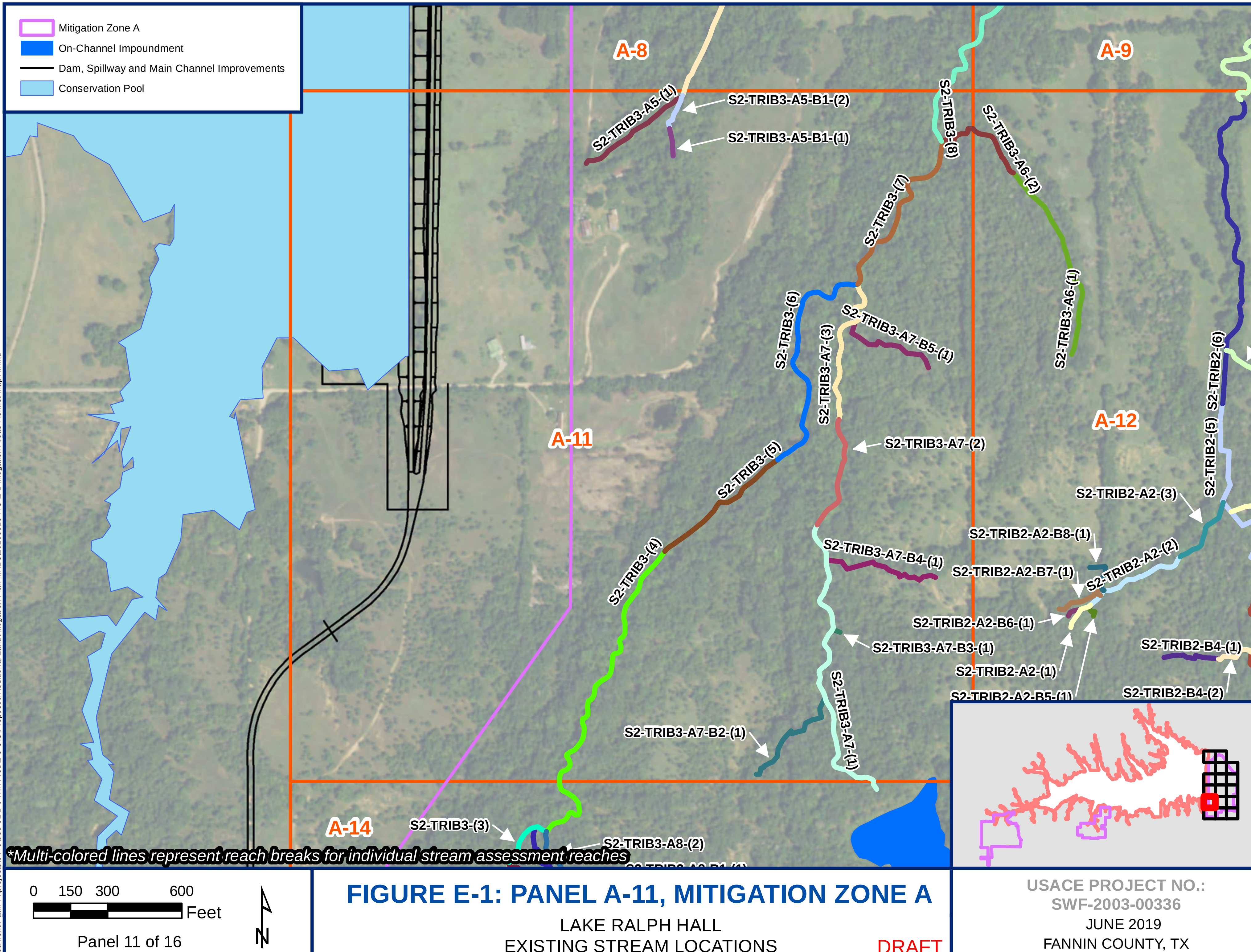

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FIGURE E-1: PANEL A-11, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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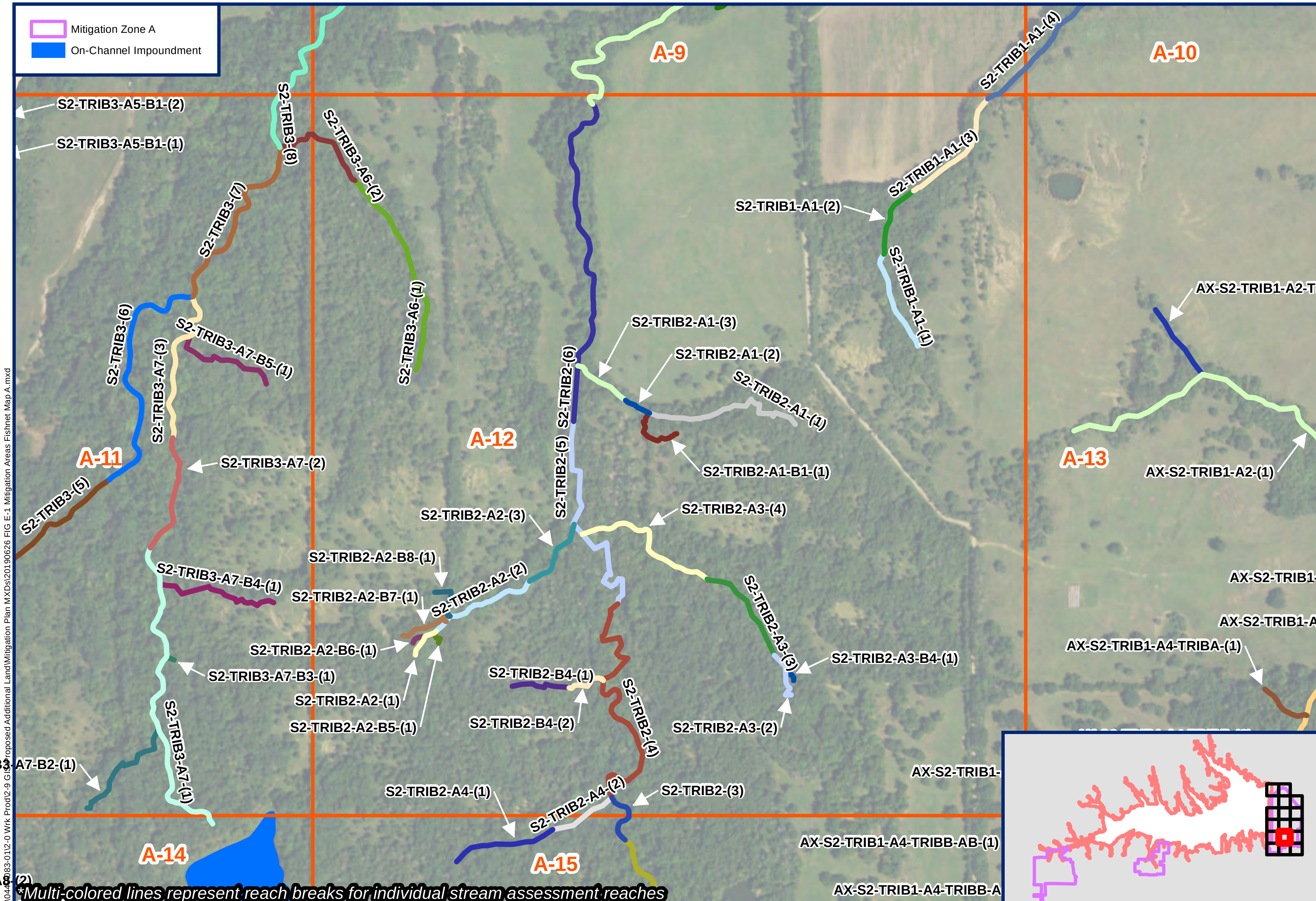
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd



0 150 300 600 Feet

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FIGURE E-1: PANEL A-12, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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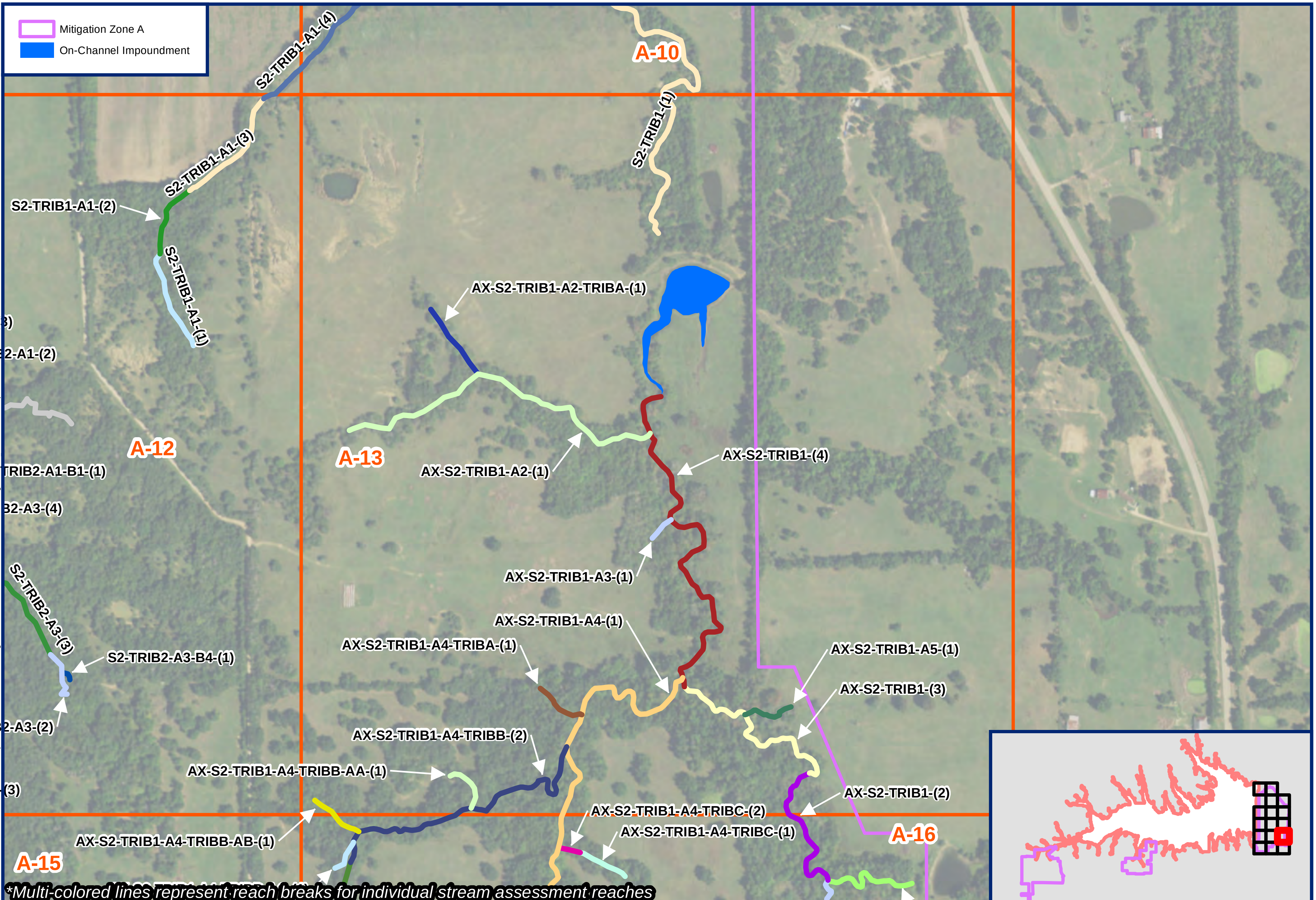

0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-13, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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Document Path: F:\projects\04490083-0112-0 Wrk Prod\GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd

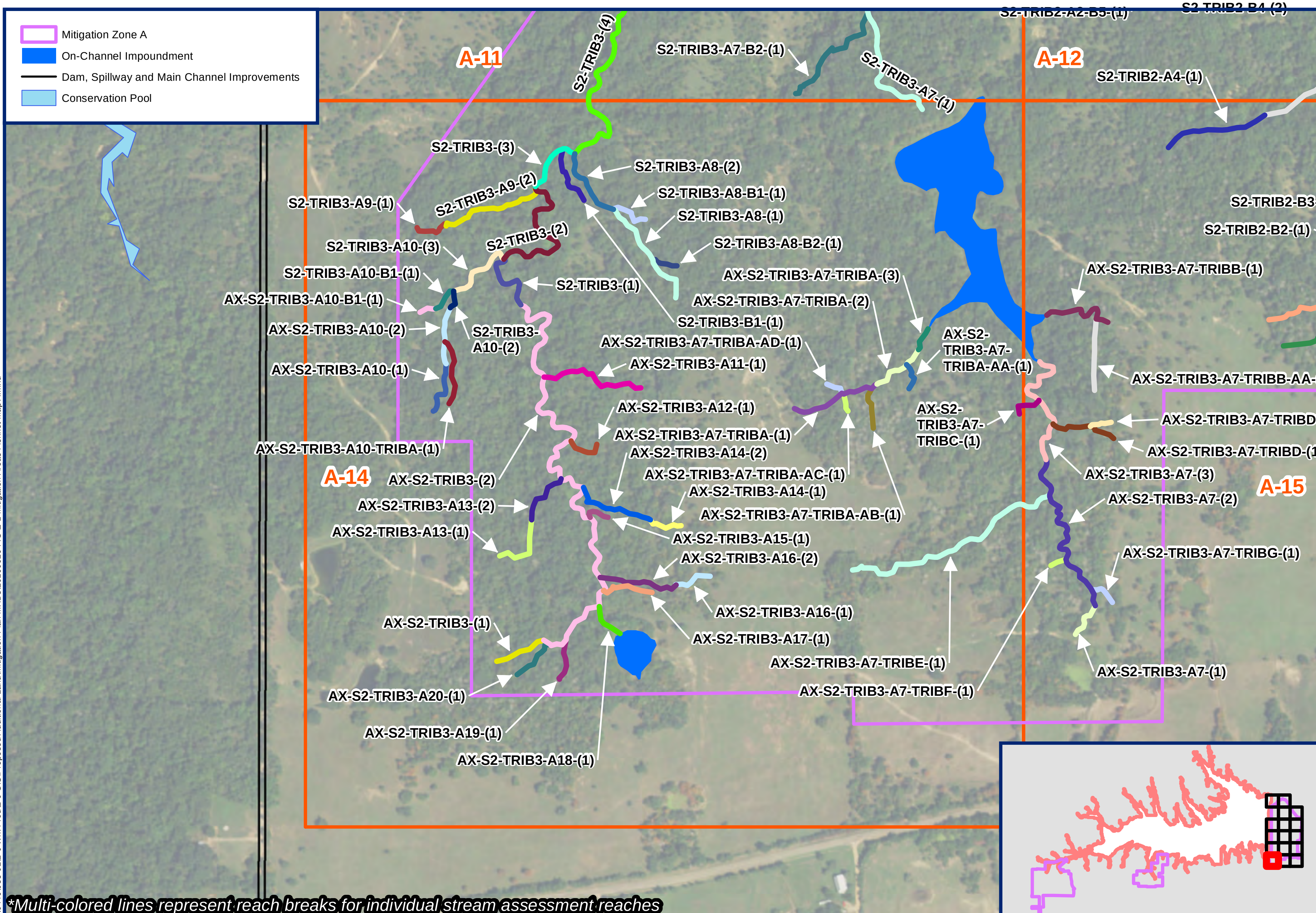

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FIGURE E-1: PANEL A-14, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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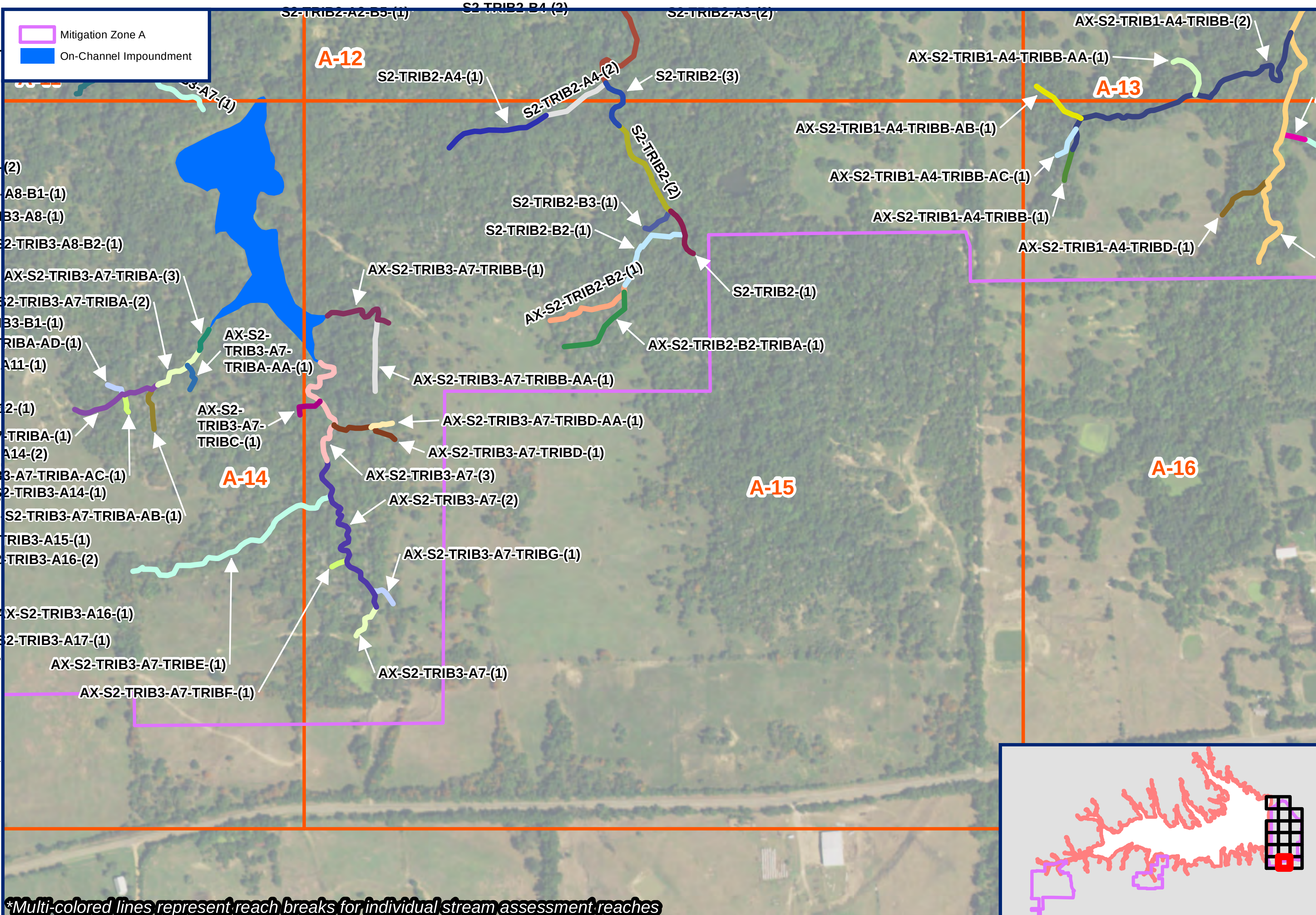
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd



0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-15, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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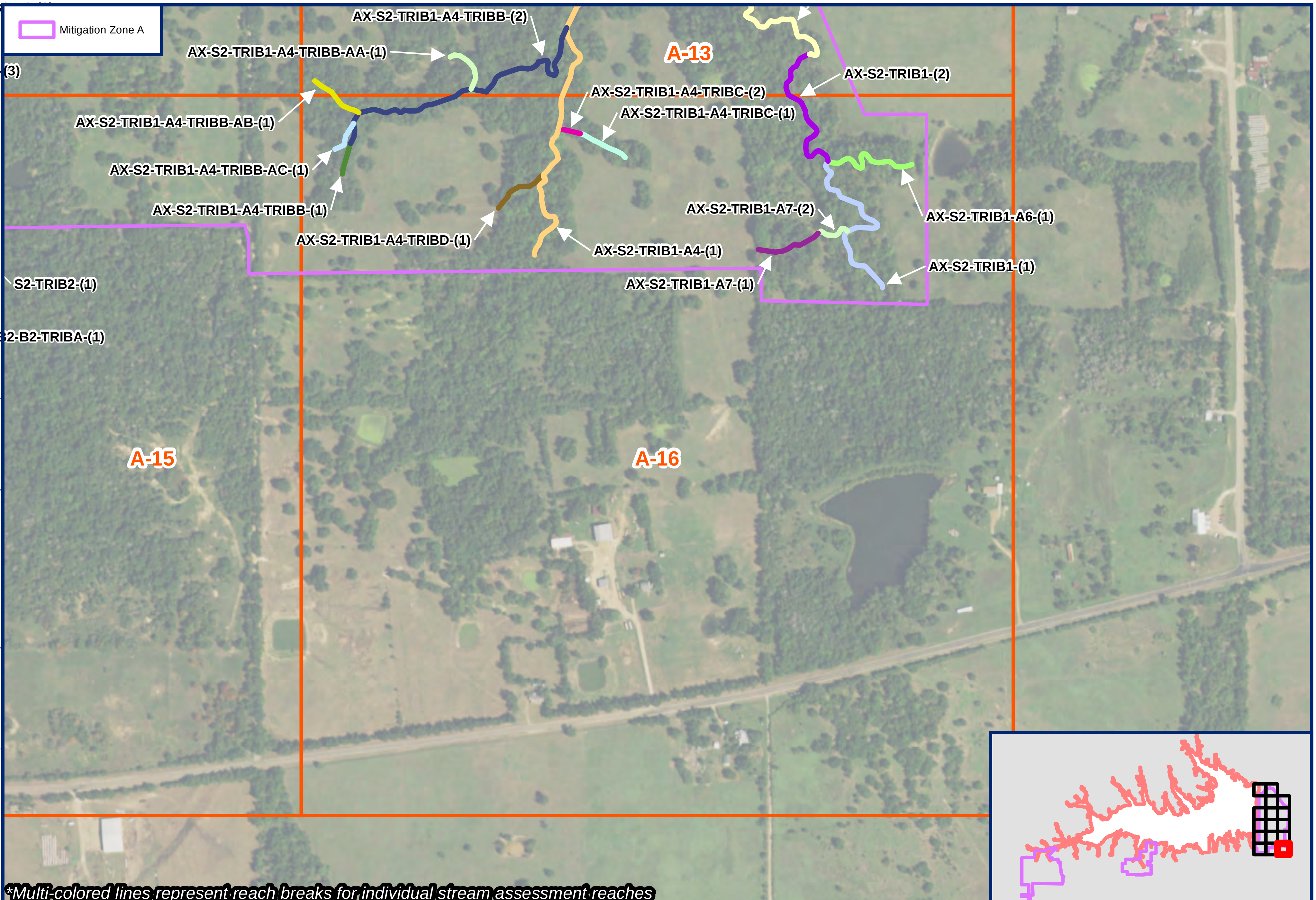

0 150 300 600 Feet

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N

FIGURE E-1: PANEL A-16, MITIGATION ZONE A

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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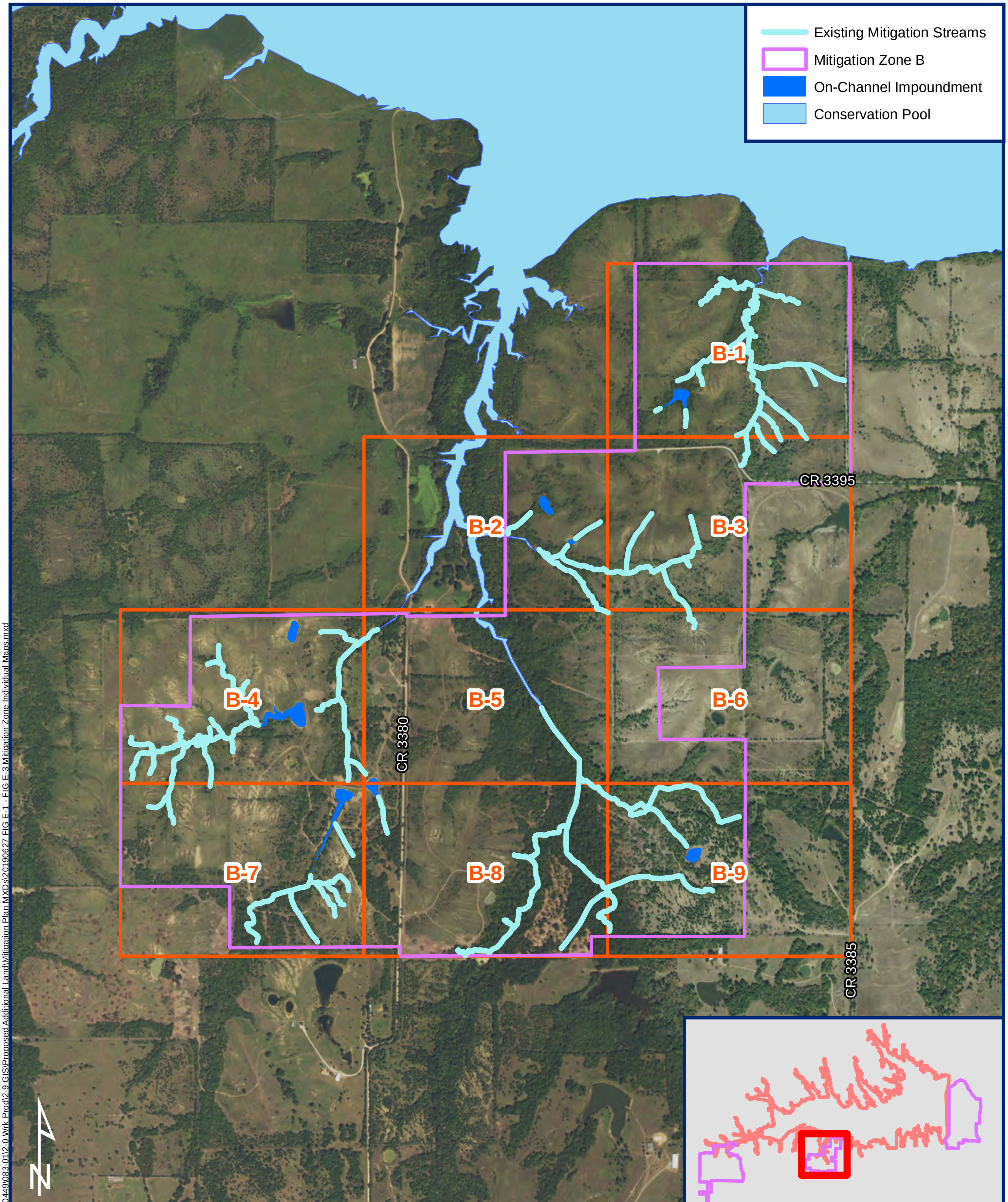
Document Path: F:\projects\04490083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-1 Mitigation Areas Fishnet Map A.mxd



0 500 1,000 2,000
Feet

FIGURE E-2: MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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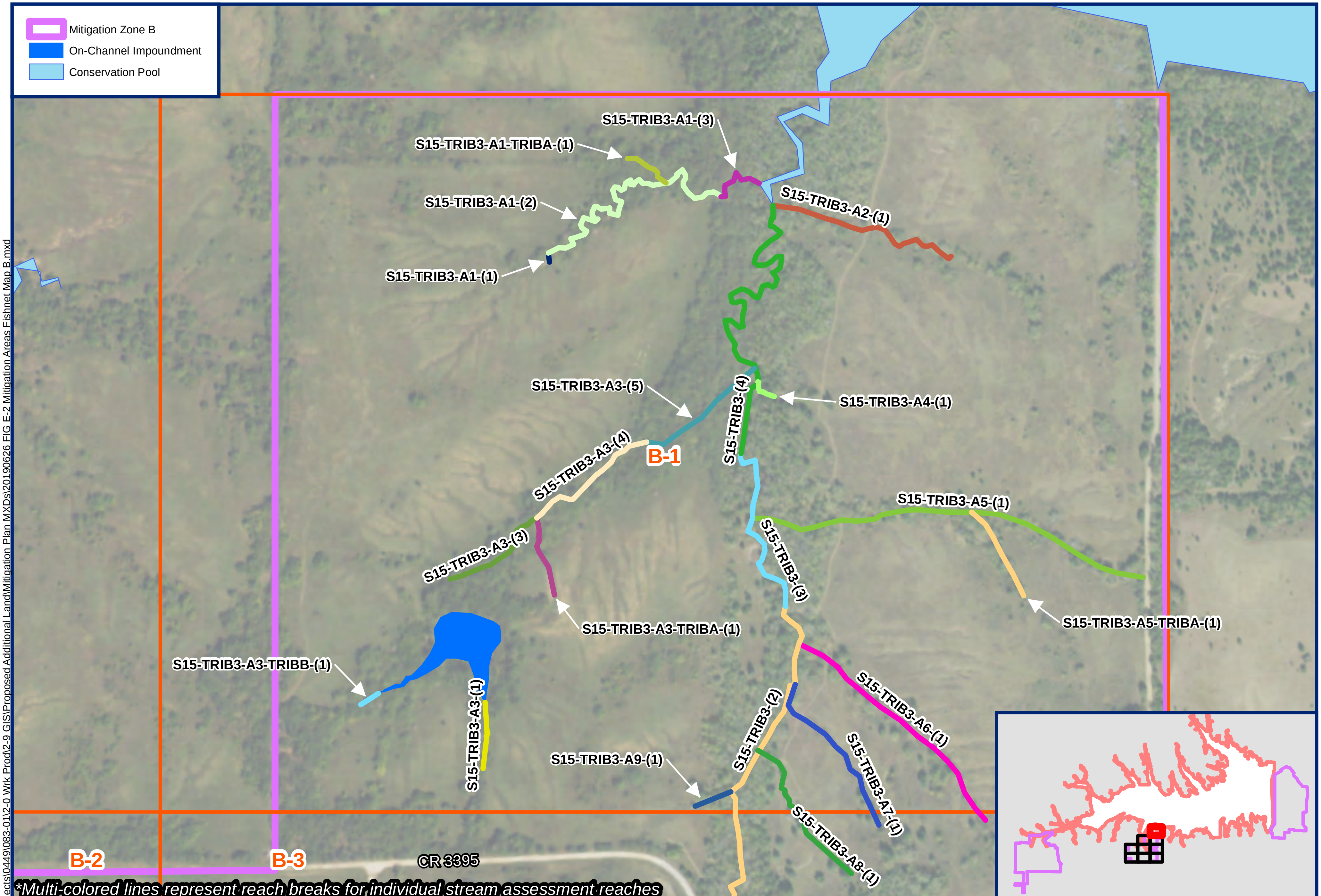

0 125 250 500 Feet

N

Panel 1 of 9

FIGURE E-2: PANEL B-1, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

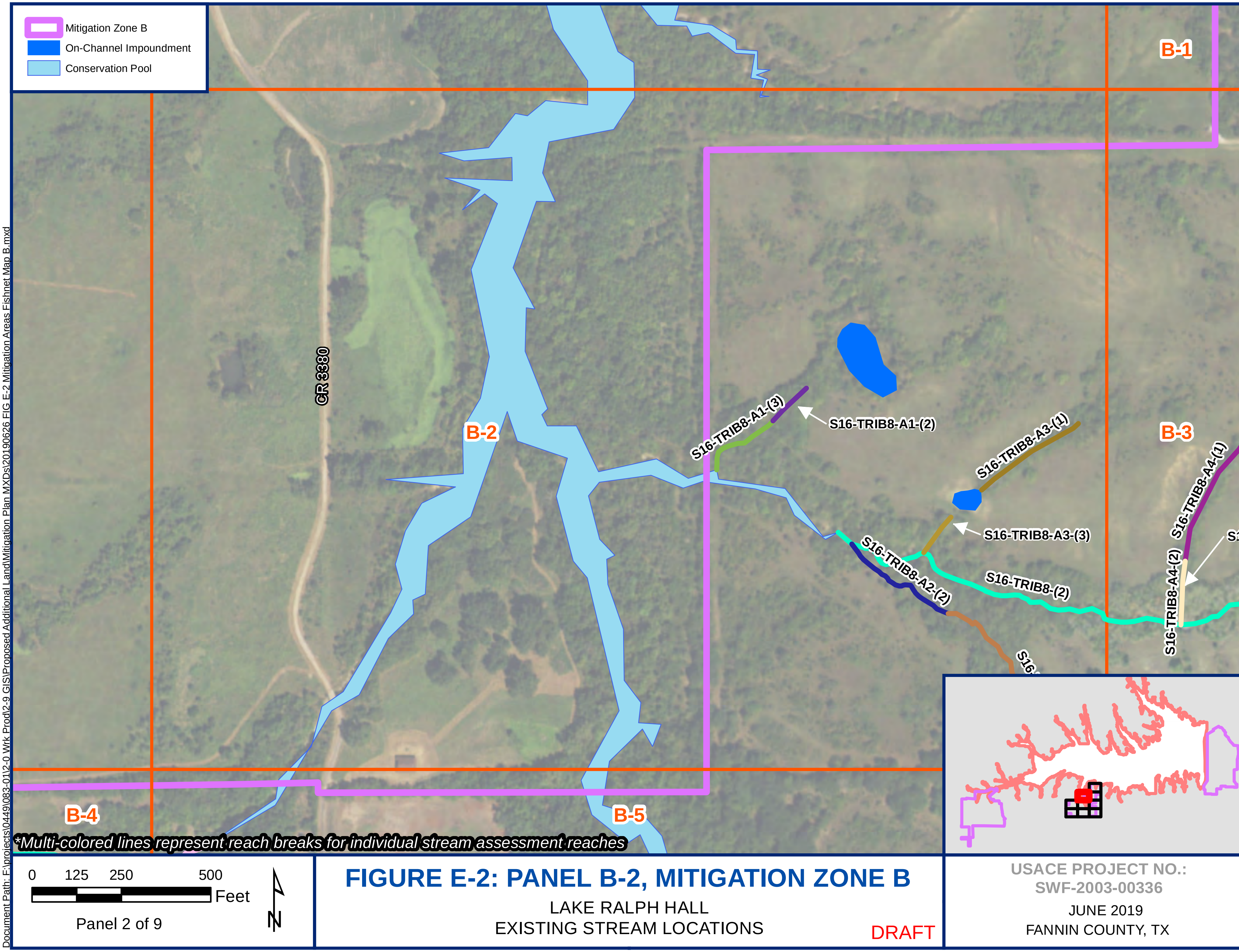

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FIGURE E-2: PANEL B-2, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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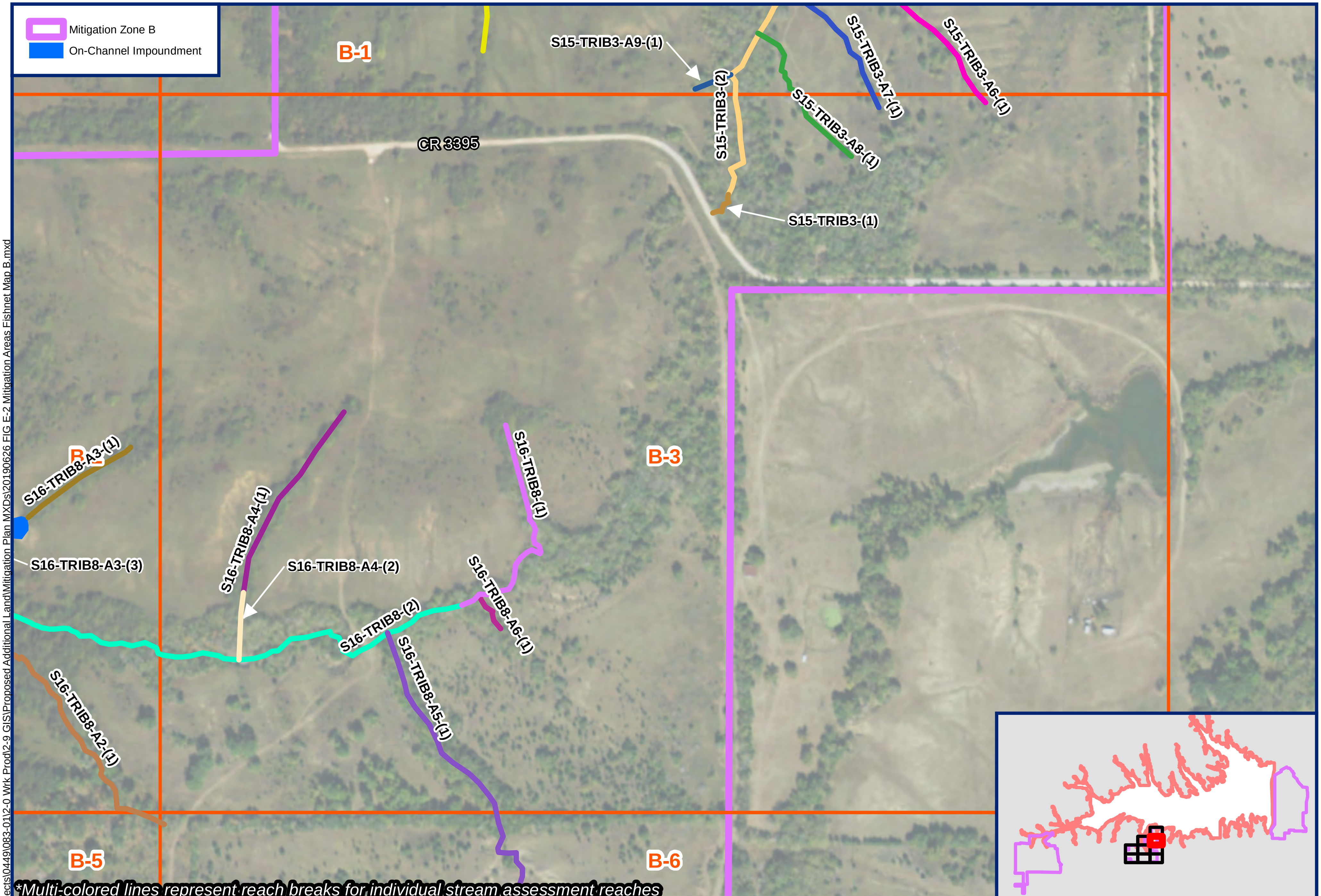
Document Path: F:\projects\0449\083-0112-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd



0 125 250 500
Feet
Panel 3 of 9

FIGURE E-2: PANEL B-3, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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USACE PROJECT NO.:
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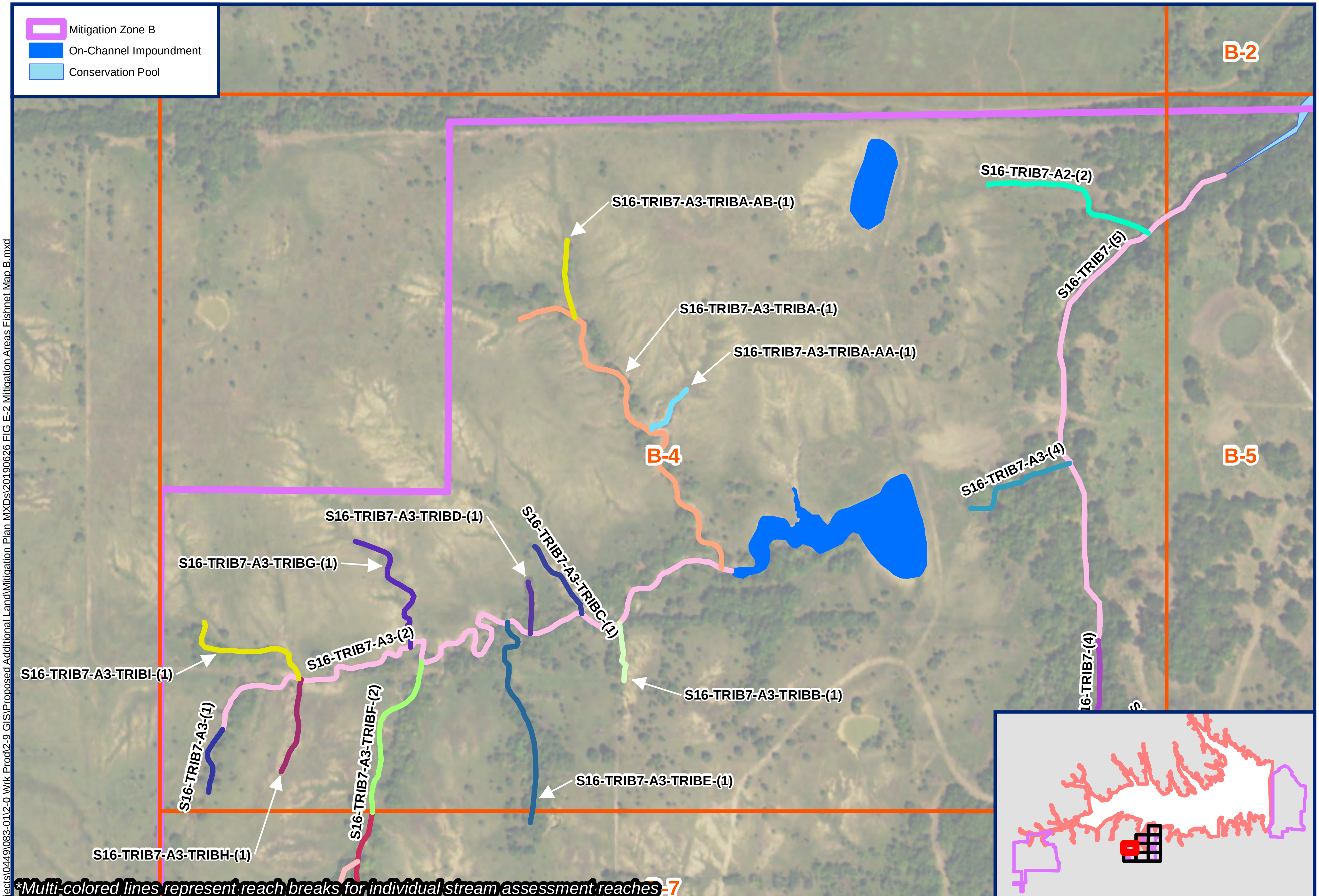
FANNIN COUNTY, TX



Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

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FIGURE E-2: PANEL B-4, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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USACE PROJECT NO.:
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FANNIN COUNTY, TX

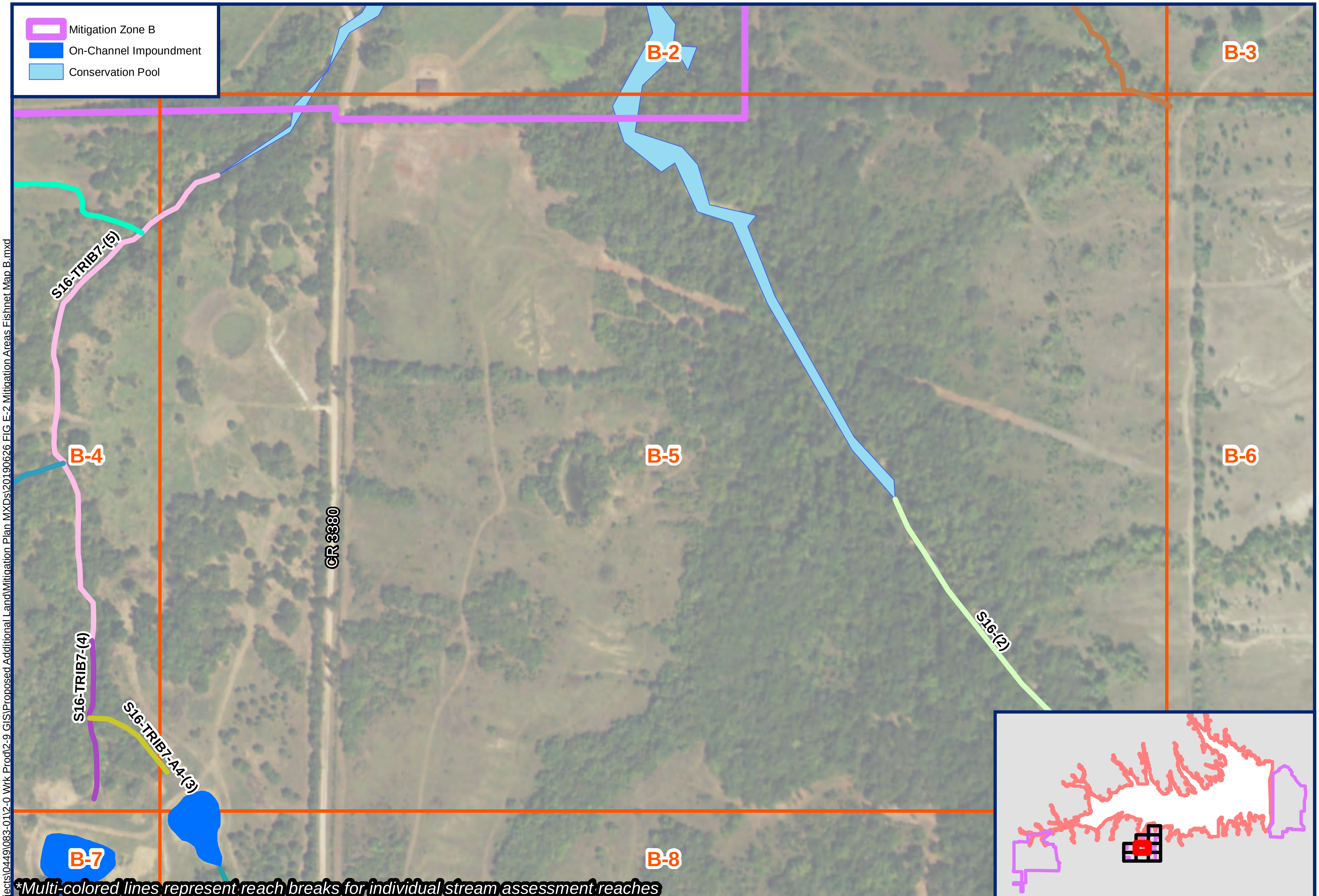

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FIGURE E-2: PANEL B-5, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

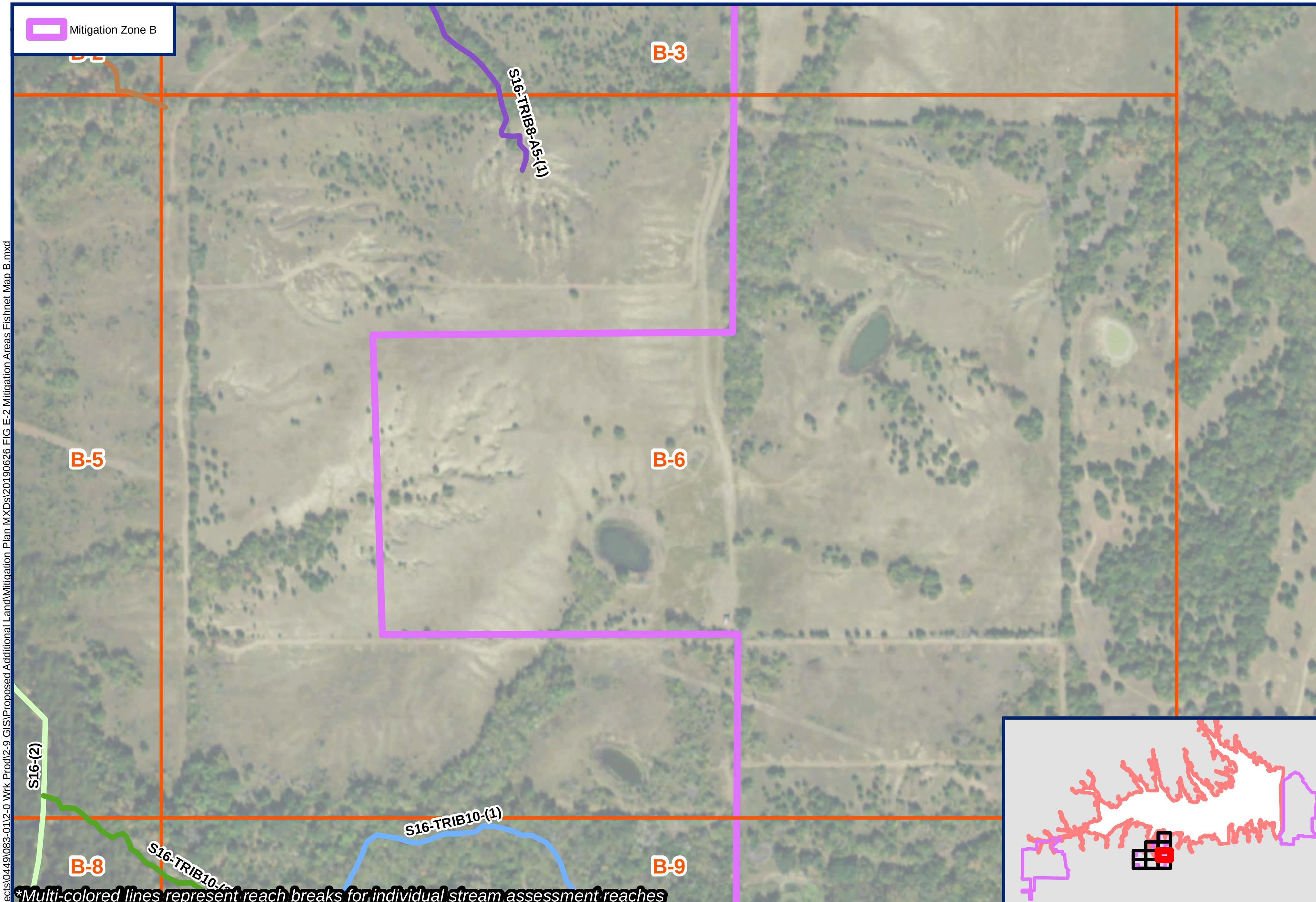

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FIGURE E-2: PANEL B-6, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

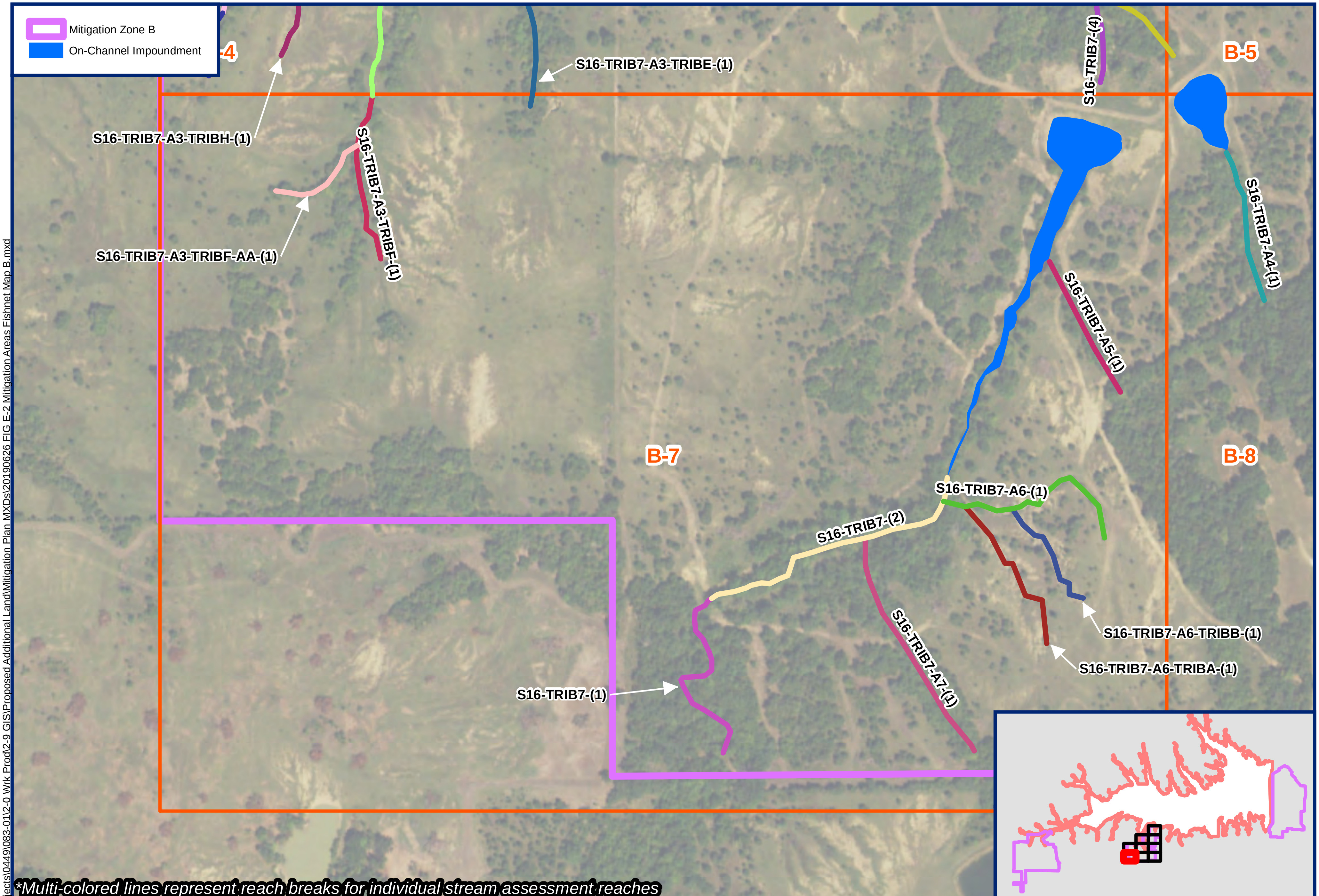

FIGURE E-2: PANEL B-7, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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USACE PROJECT NO.:
SWF-2003-00336

JUNE 2019
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Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

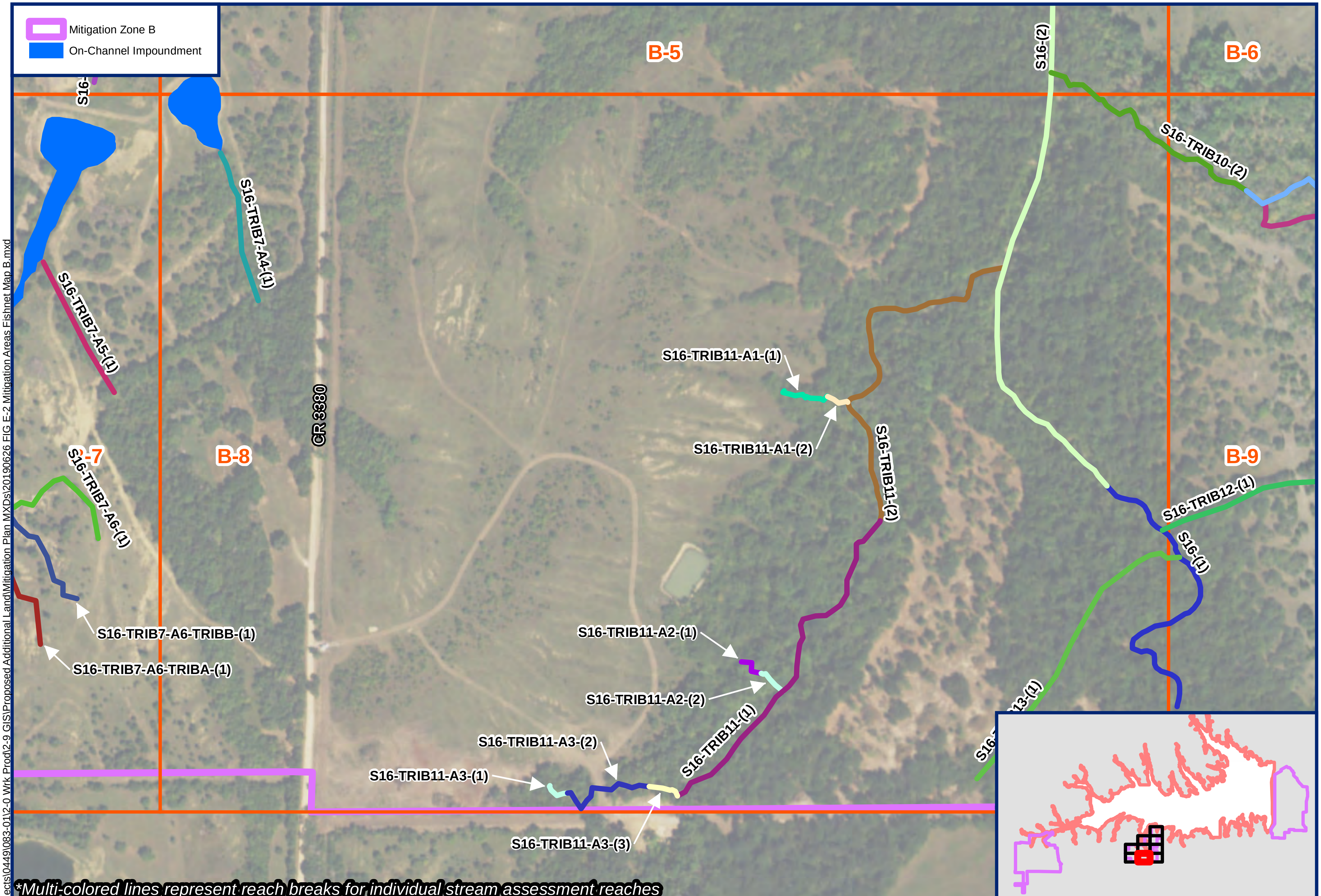

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FIGURE E-2: PANEL B-8, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
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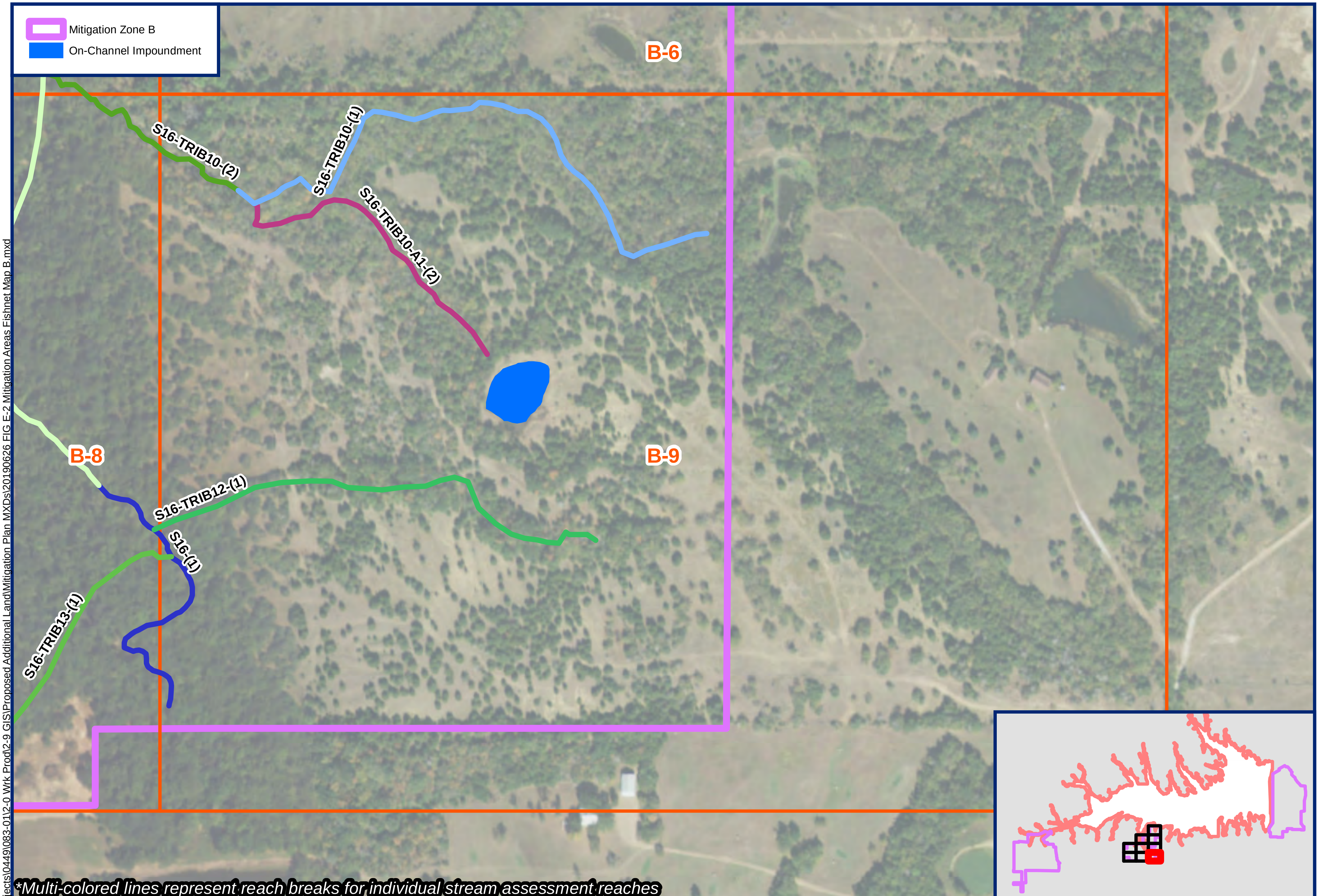
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd



Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-2 Mitigation Areas Fishnet Map B.mxd

FIGURE E-2: PANEL B-9, MITIGATION ZONE B

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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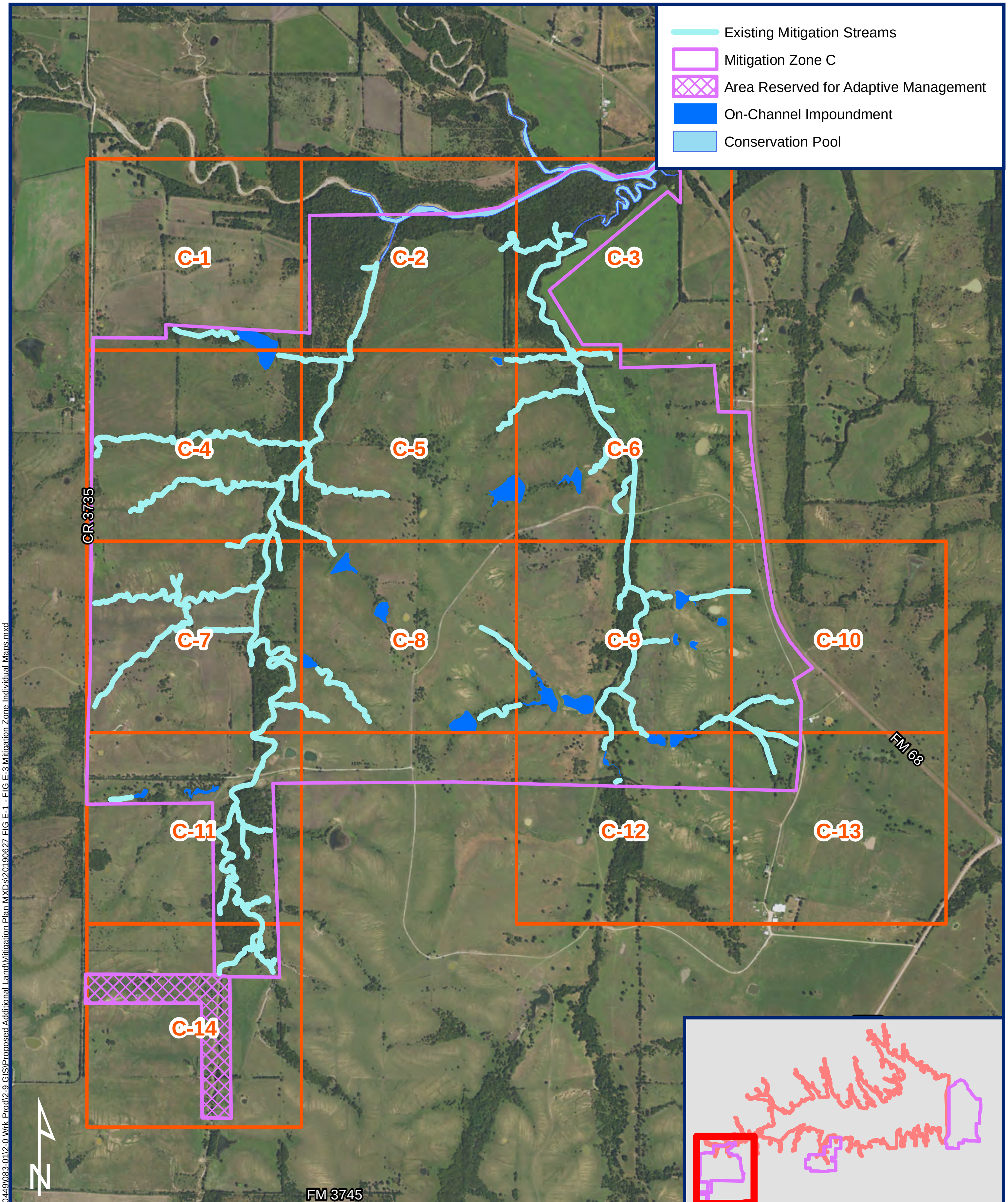

0 625 1,250 2,500
Feet

FIGURE E-3: MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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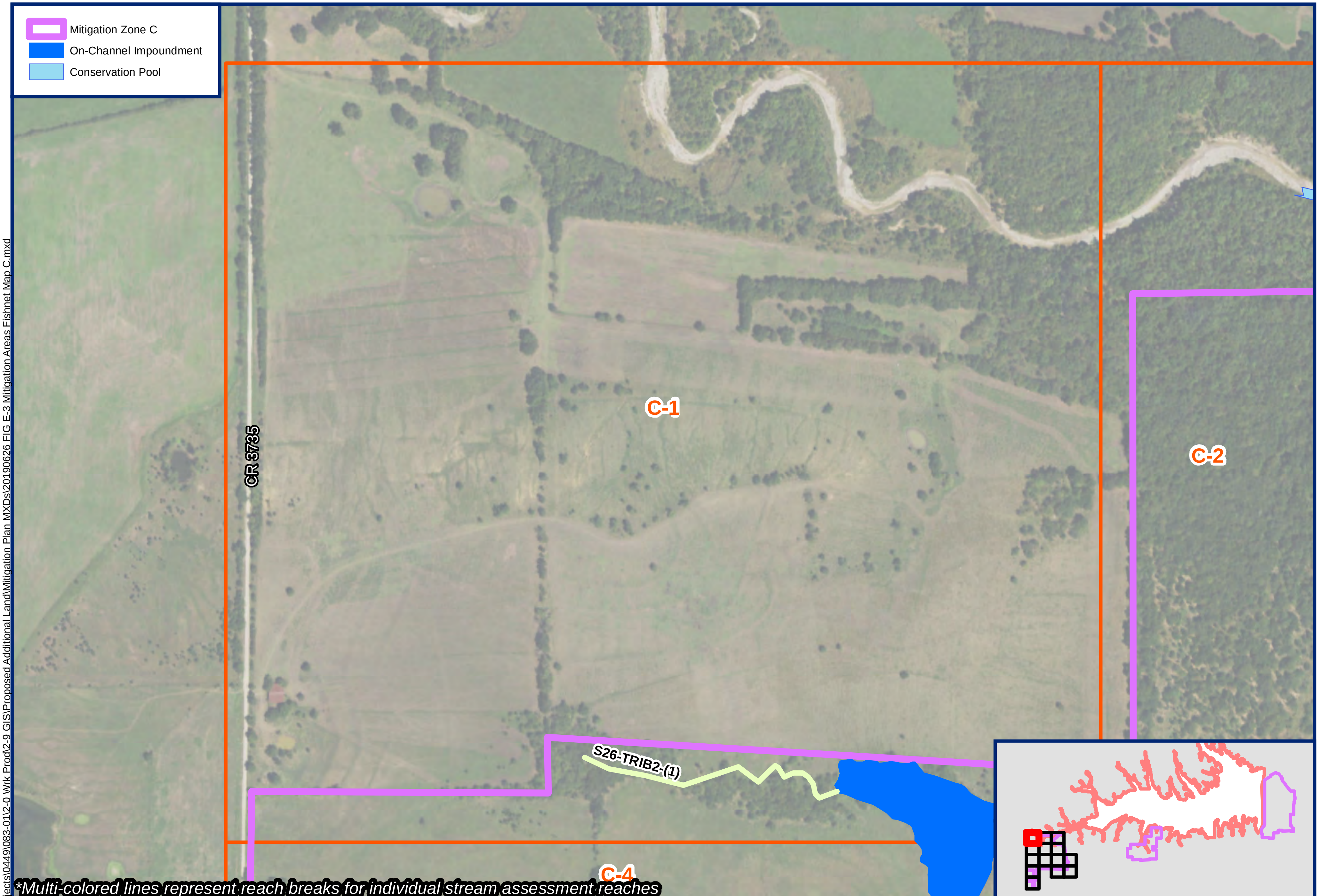
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190627 FIG E-1 - FIG E-3 Mitigation Zone Individual Maps.mxd



0 150 300 600
Feet

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N

FIGURE E-3: PANEL C-1, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd

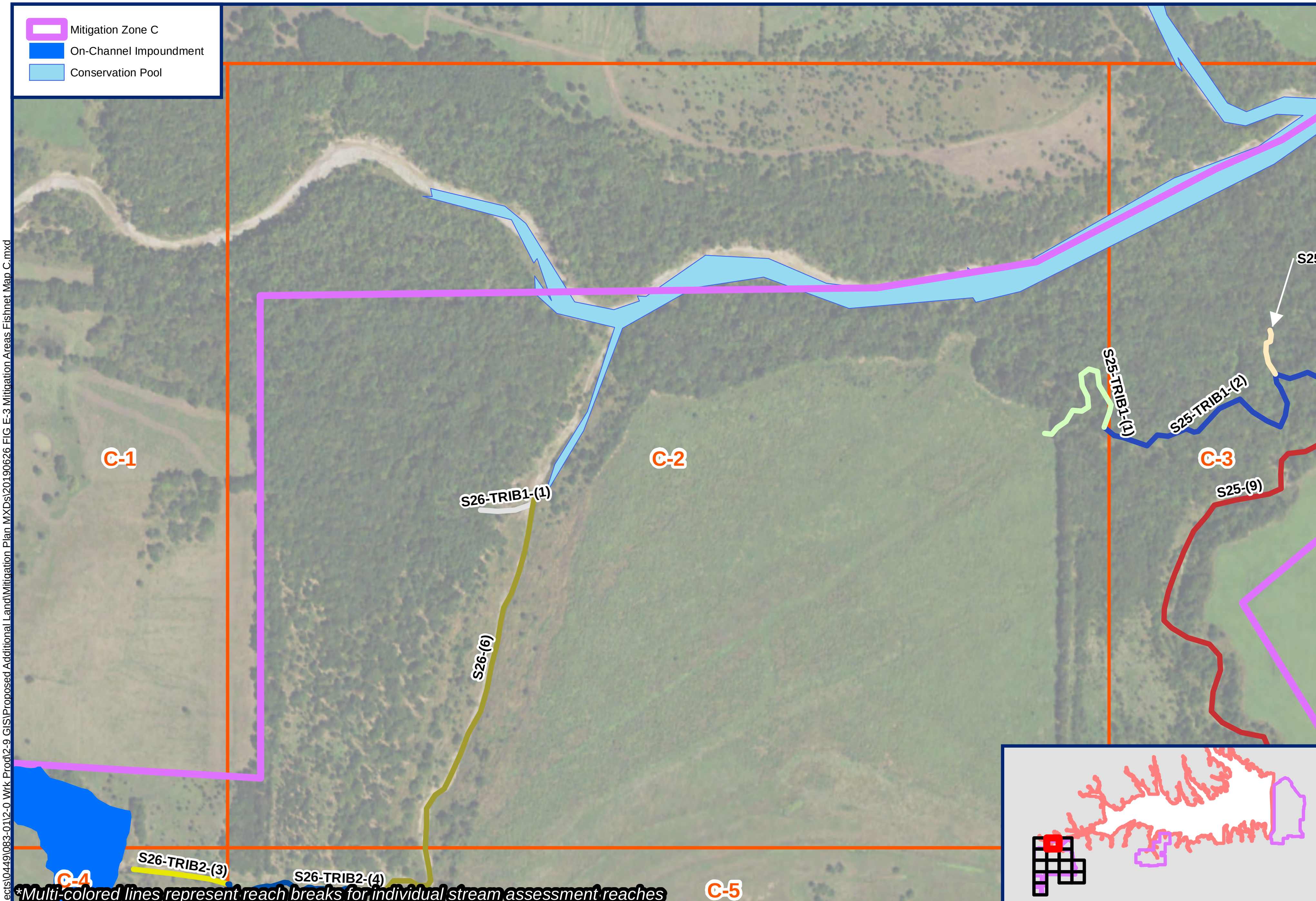

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FIGURE E-3: PANEL C-2, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

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Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd

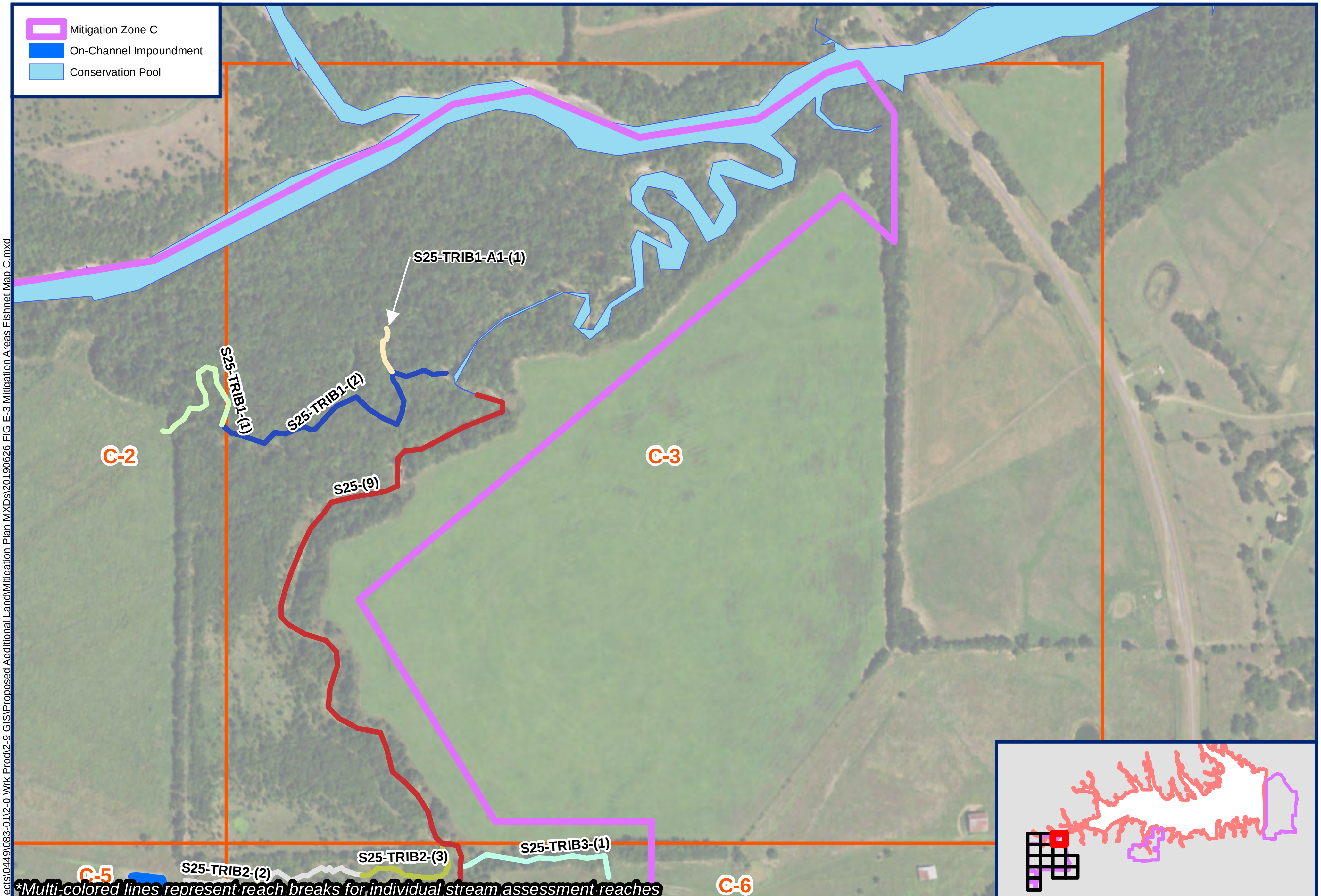

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FIGURE E-3: PANEL C-3, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd

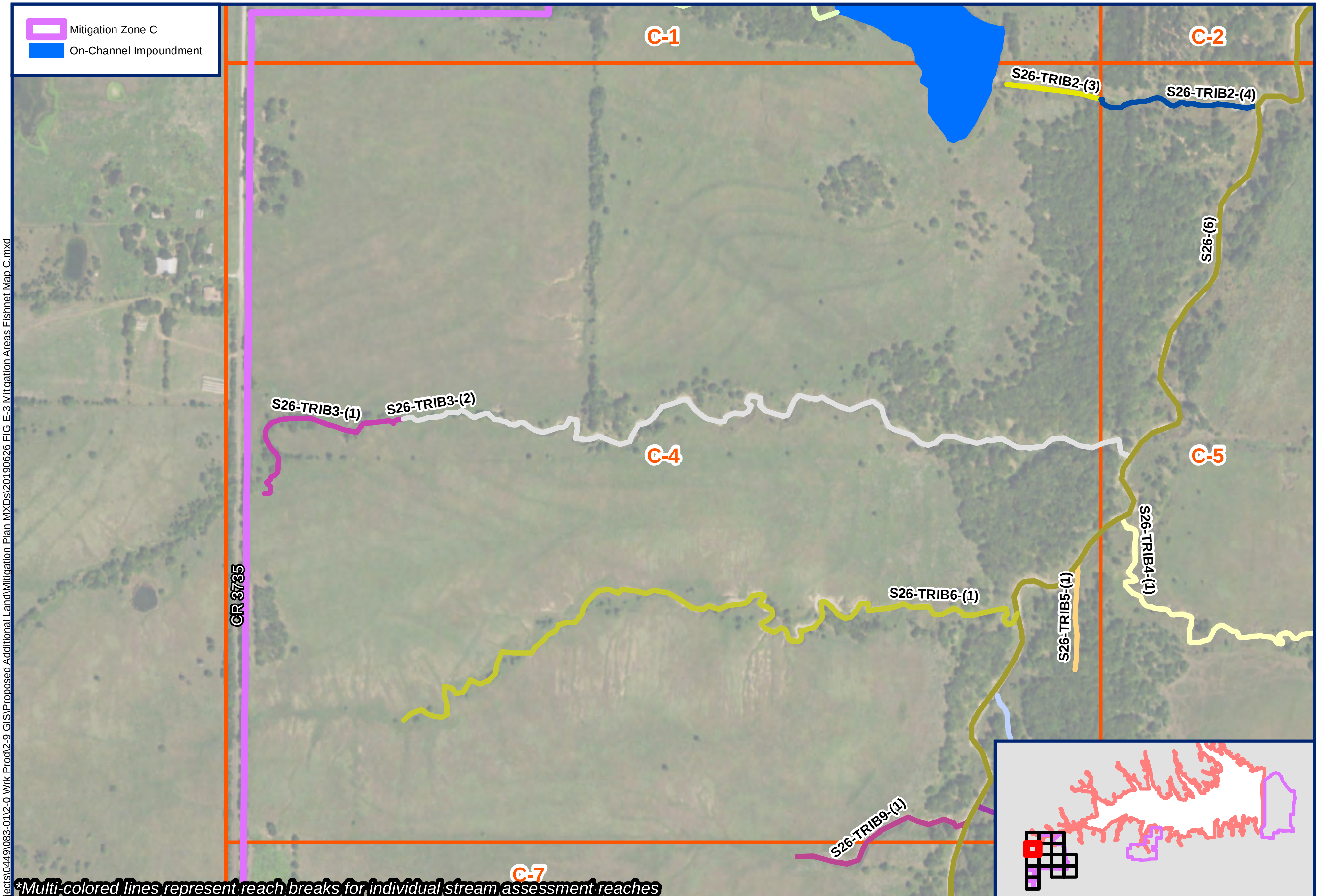

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FIGURE E-3: PANEL C-4, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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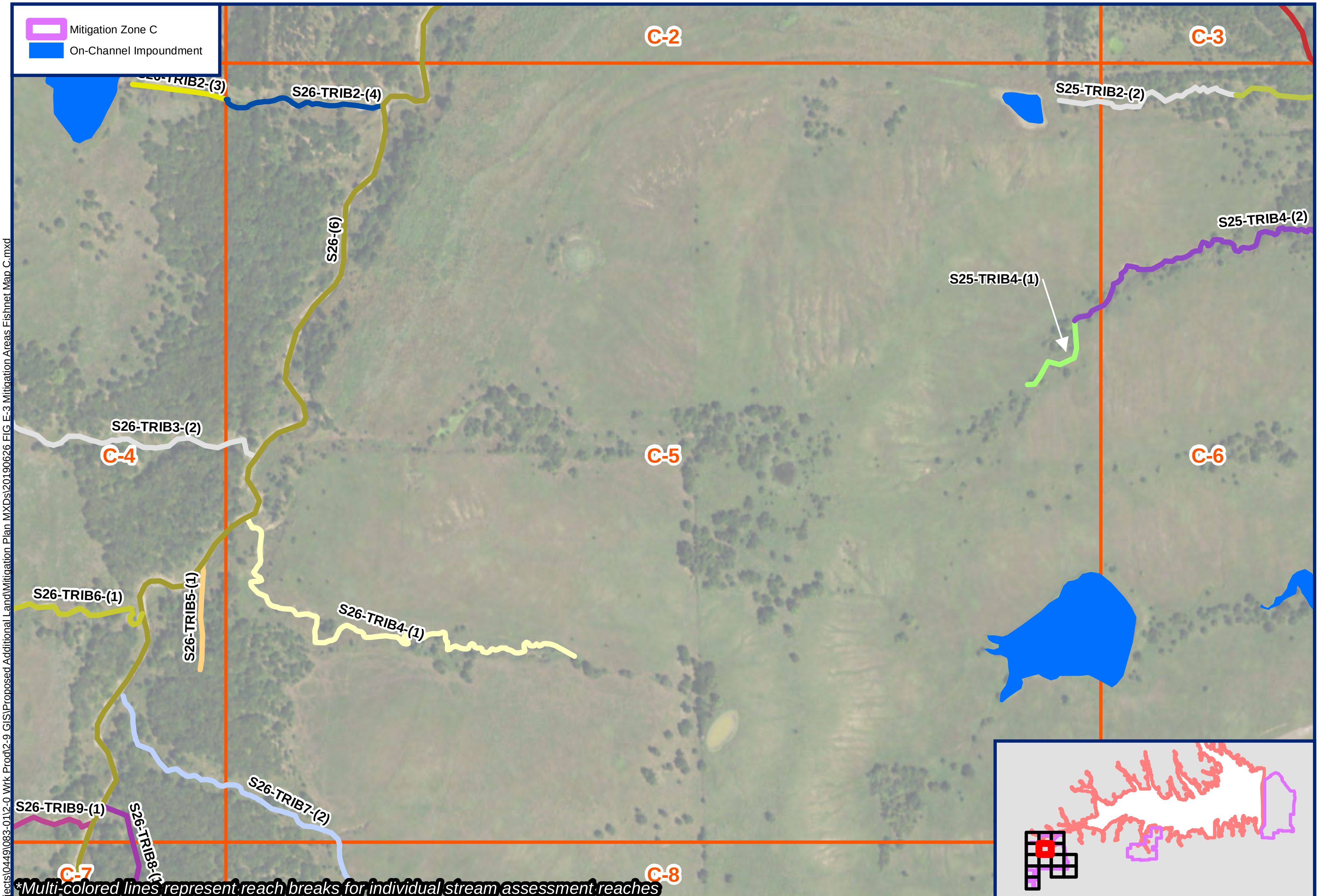
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd



Panel 5 of 14

FIGURE E-3: PANEL C-5, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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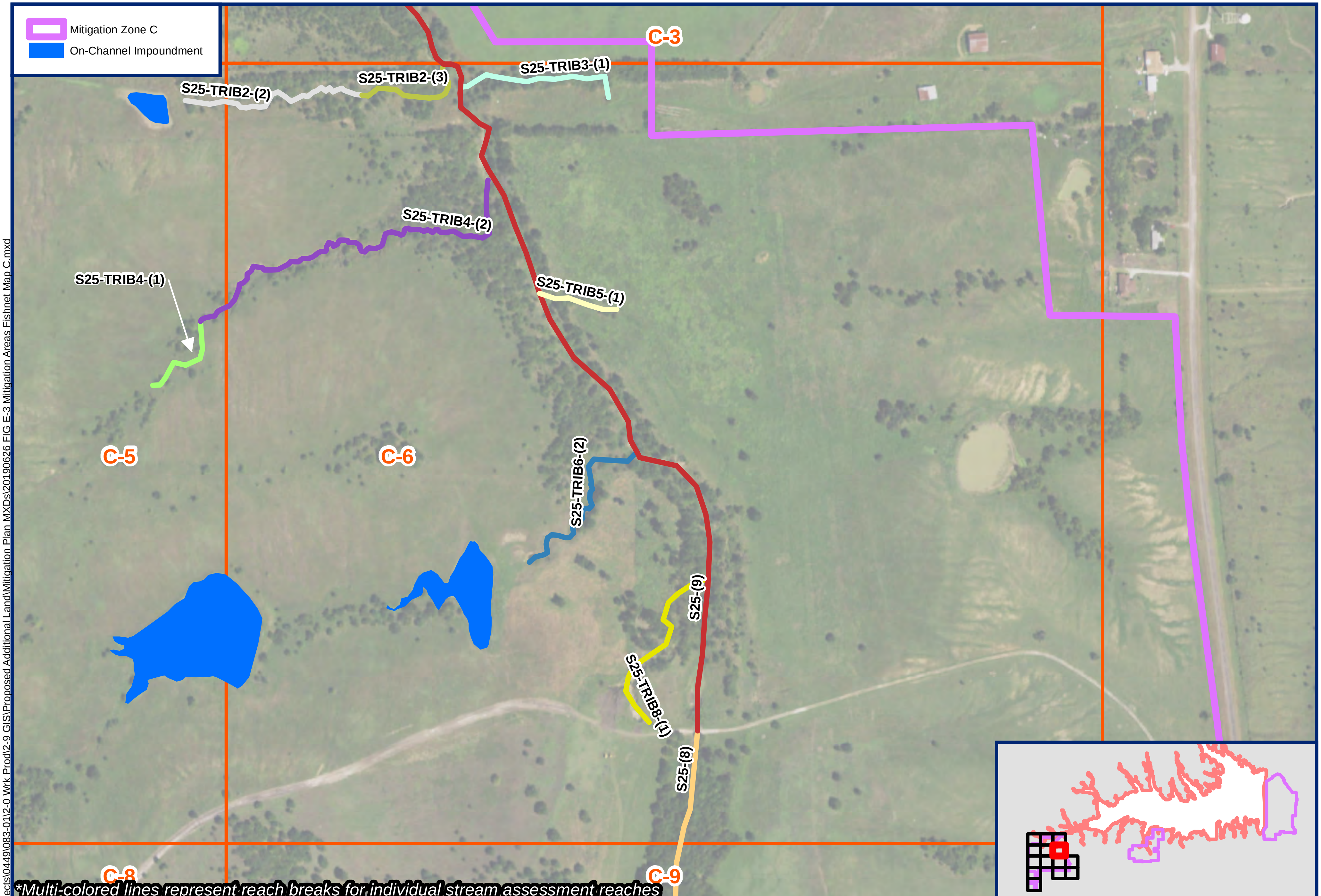
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd



0 150 300 600
Feet

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N

FIGURE E-3: PANEL C-6, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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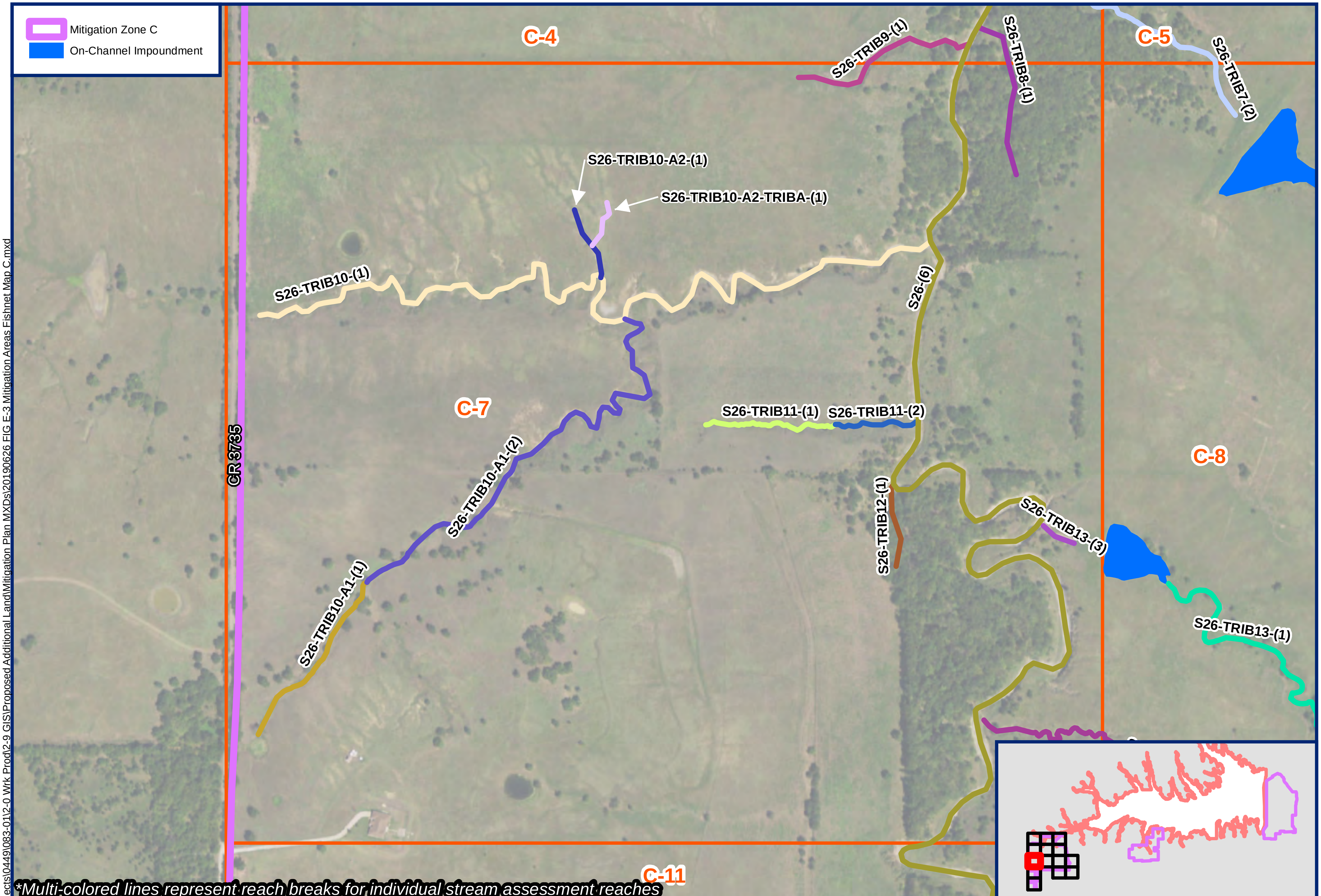
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd



0 150 300 600
Feet

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N

FIGURE E-3: PANEL C-7, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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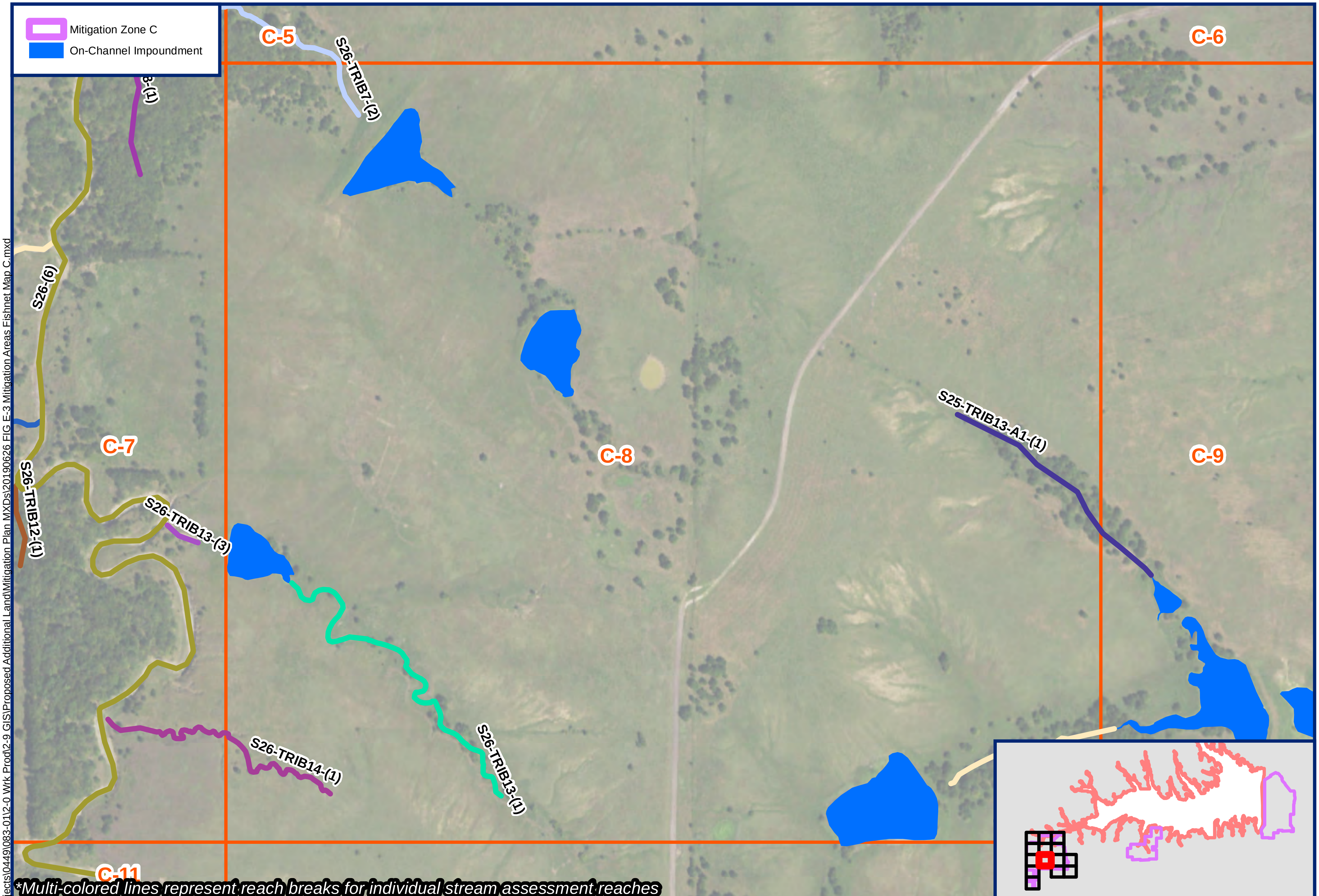

0 150 300 600 Feet

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N

FIGURE E-3: PANEL C-8, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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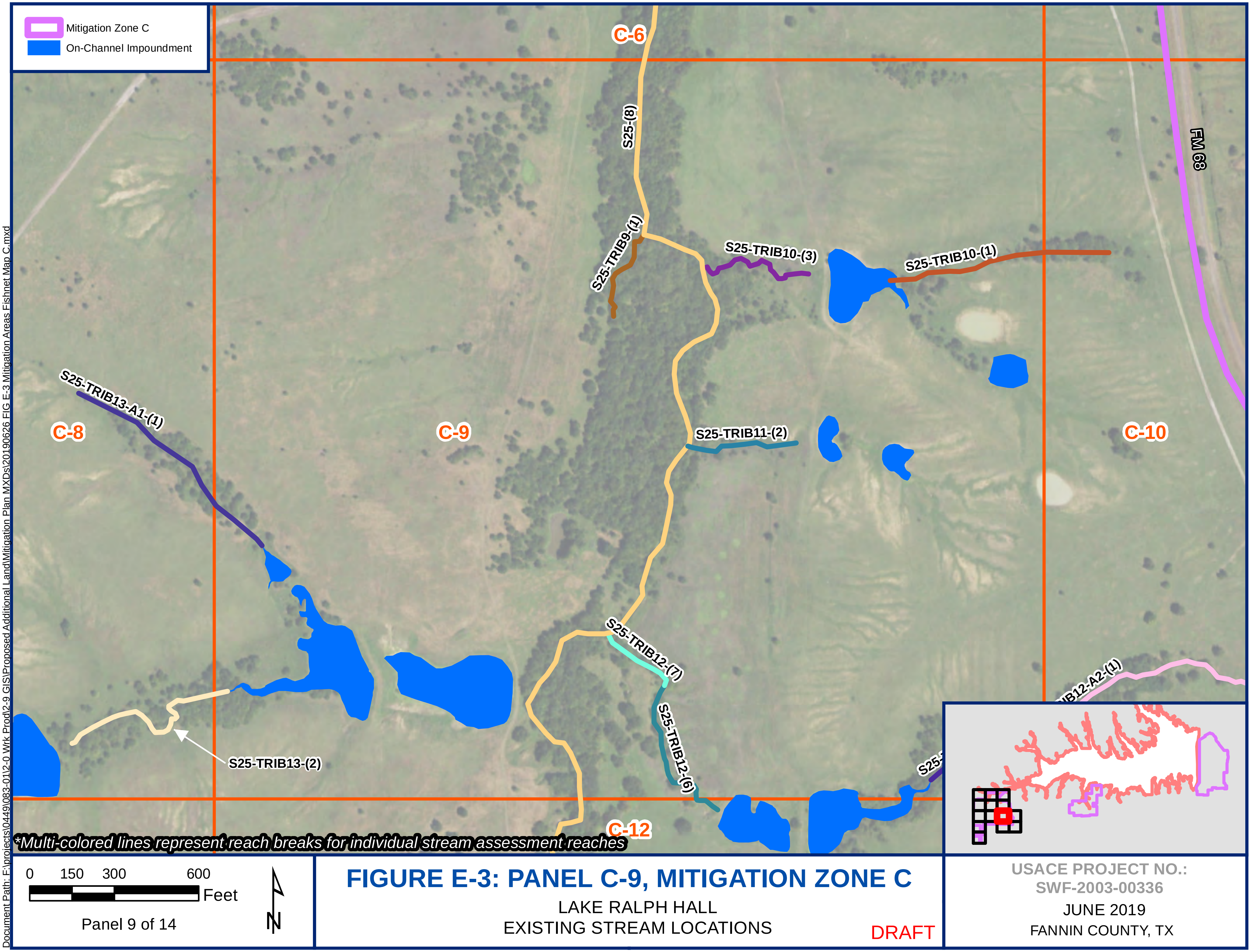

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FIGURE E-3: PANEL C-9, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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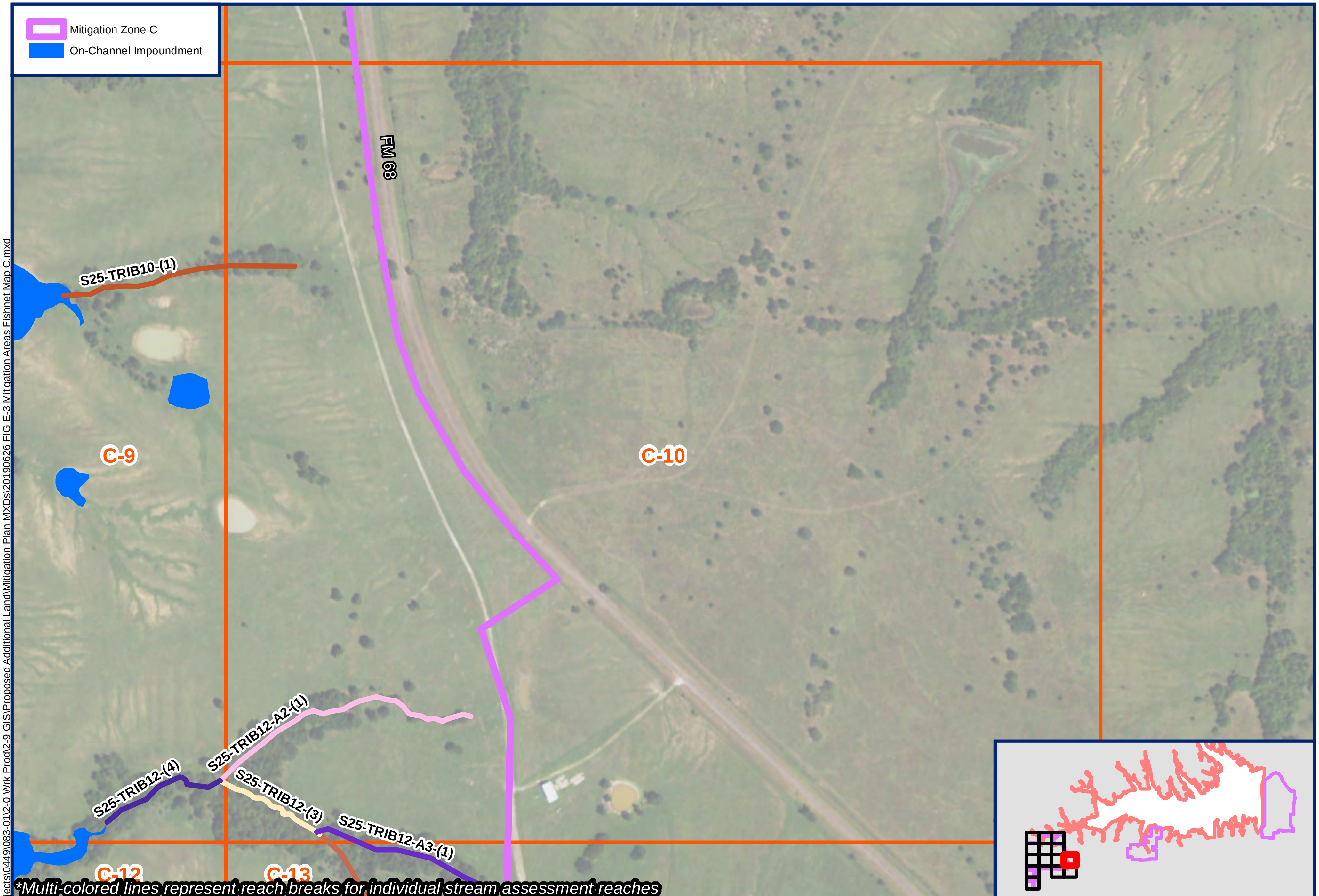

Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd

FIGURE E-3: PANEL C-10, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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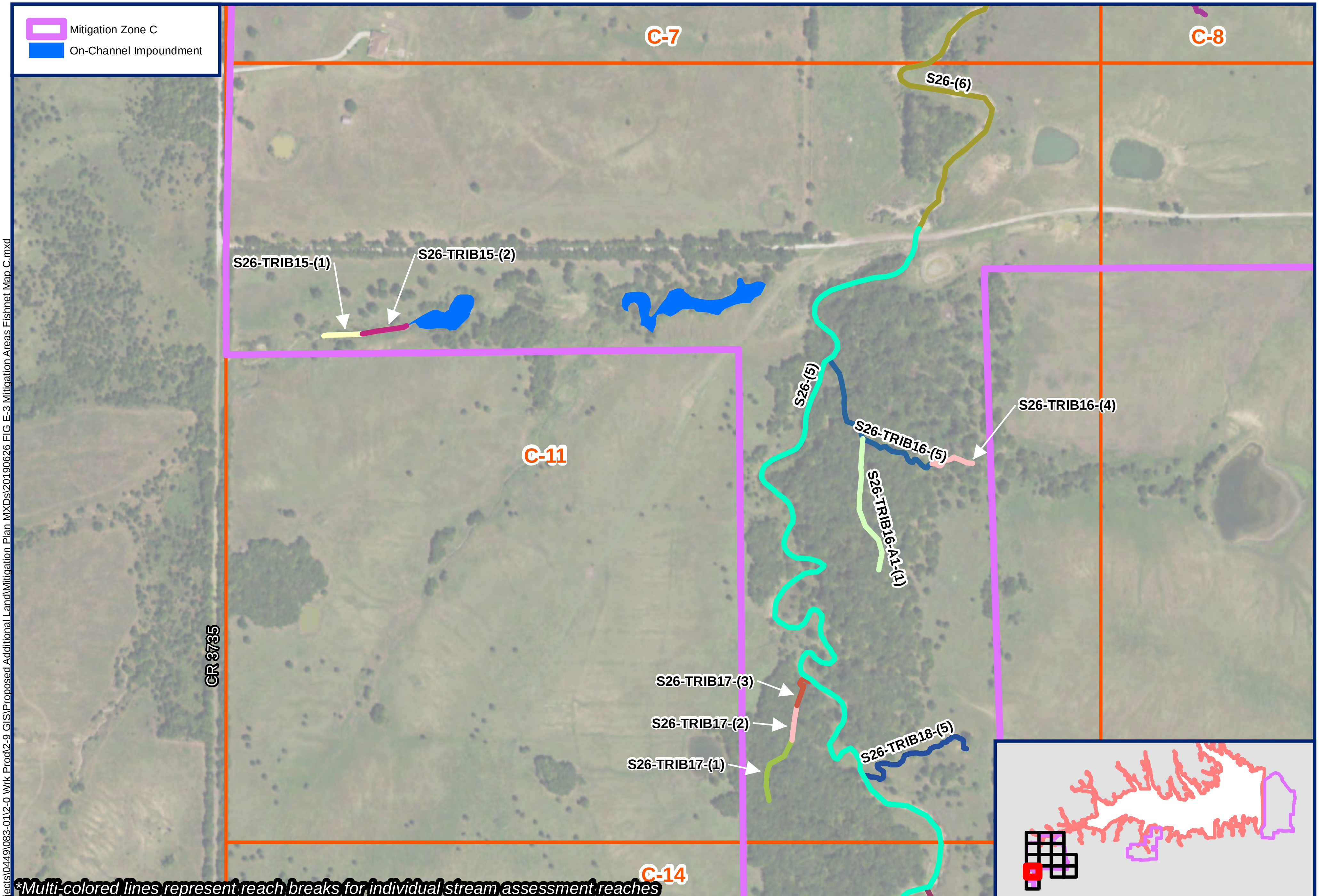

0 150 300 600 Feet

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N

FIGURE E-3: PANEL C-11, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

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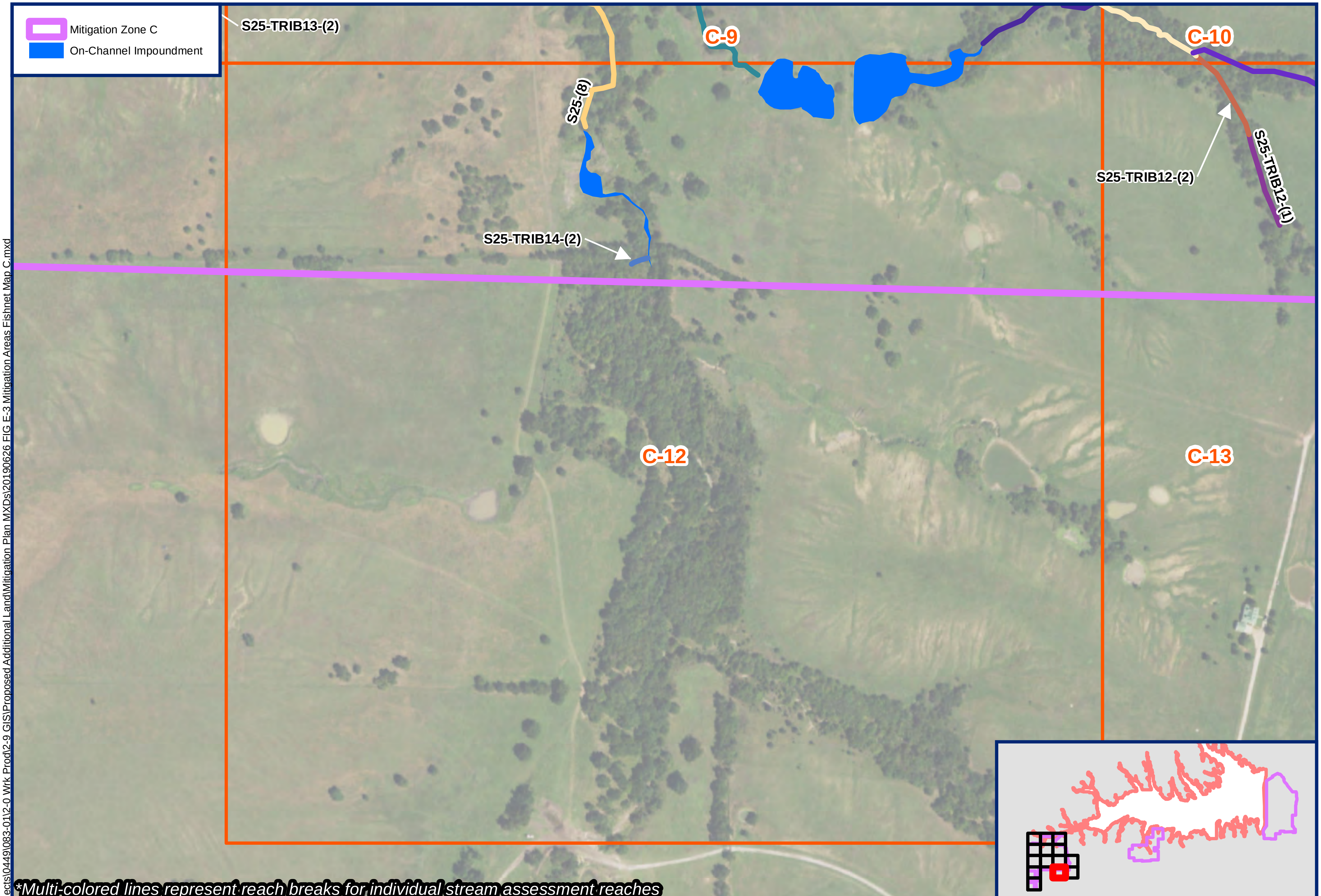
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd



0 150 300 600
Feet
Panel 12 of 14
N

FIGURE E-3: PANEL C-12, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

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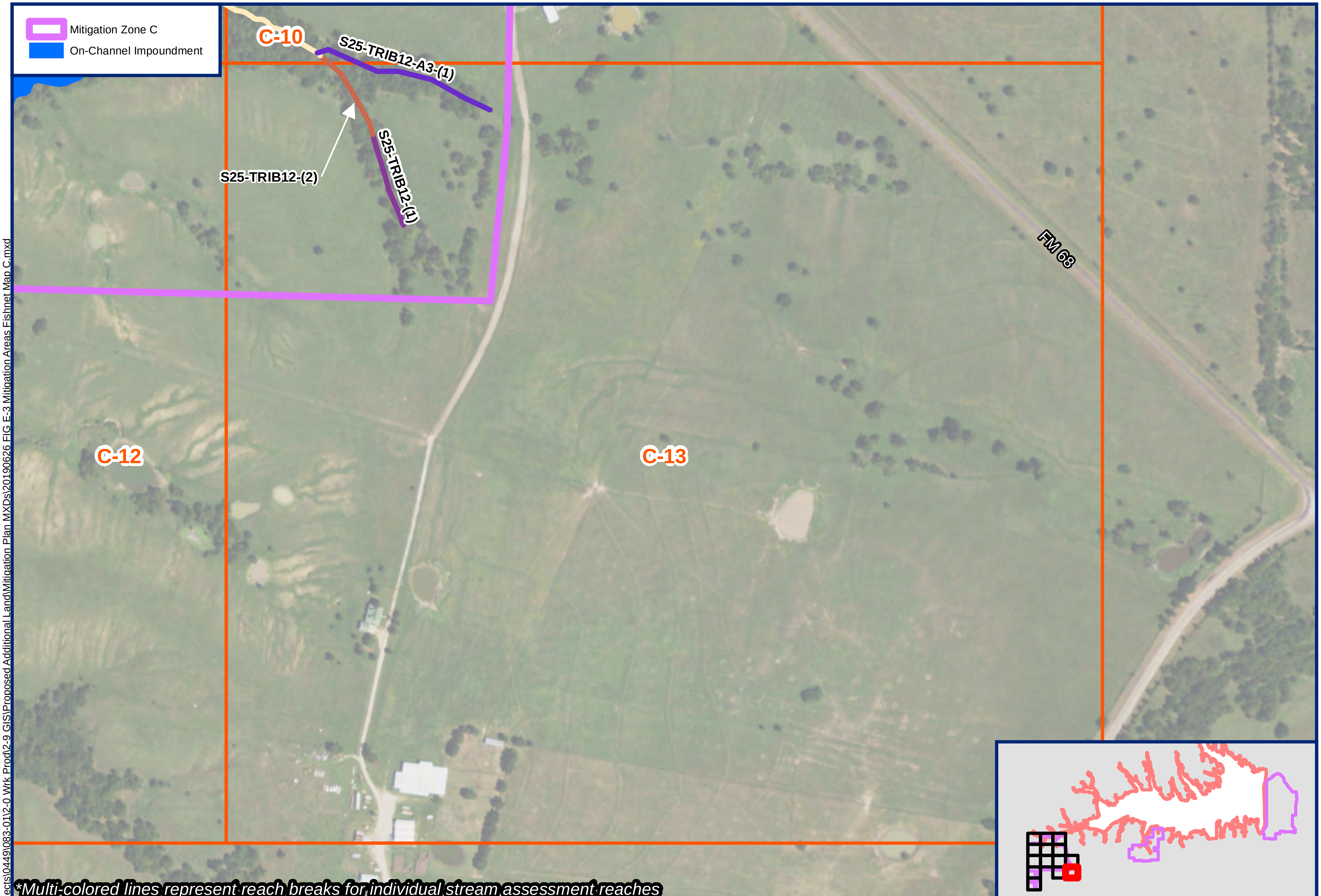
Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd



0 150 300 600
Feet

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N

FIGURE E-3: PANEL C-13, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
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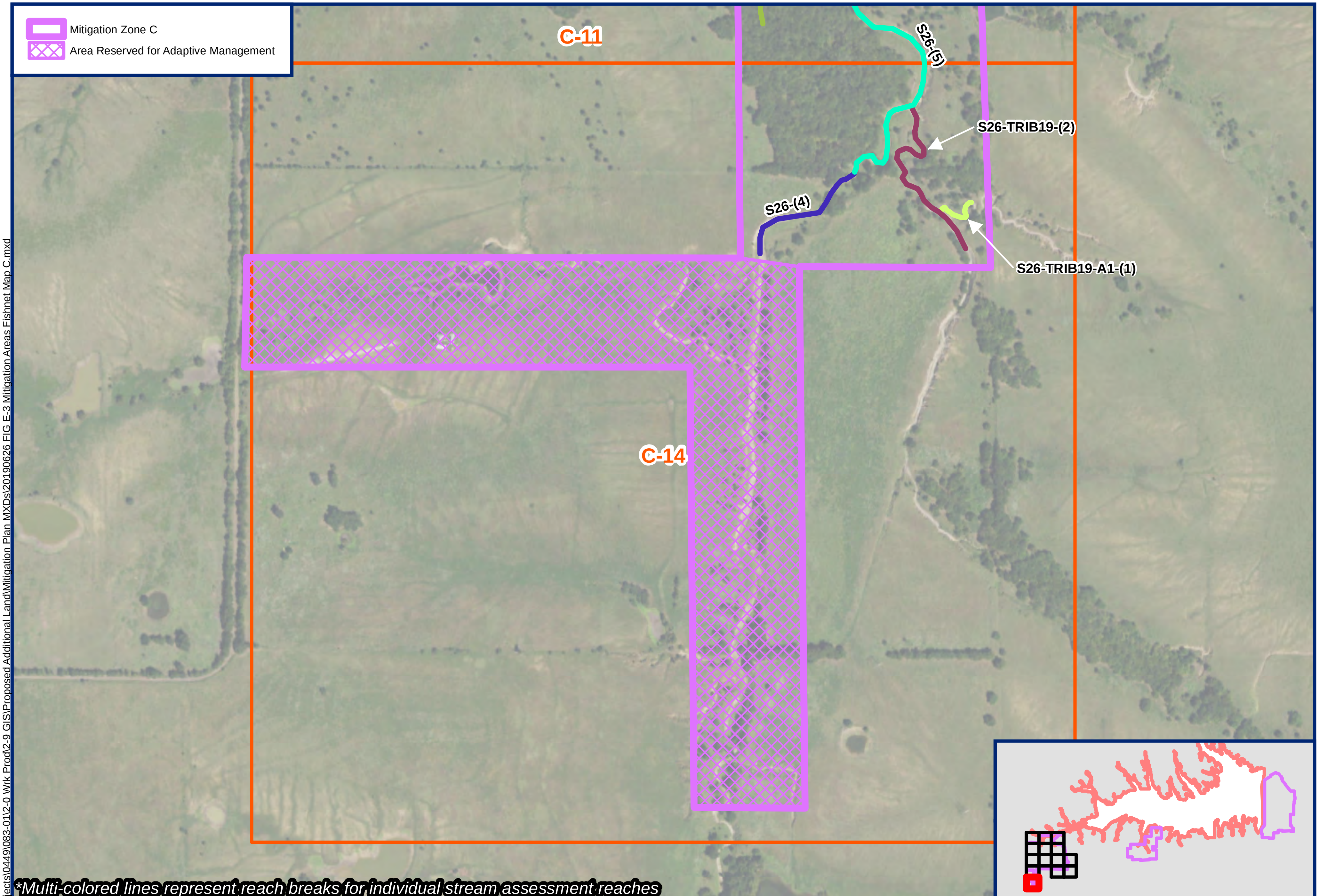
FANNIN COUNTY, TX



0 150 300 600
Feet

Panel 14 of 14

N

FIGURE E-3: PANEL C-14, MITIGATION ZONE C

LAKE RALPH HALL
EXISTING STREAM LOCATIONS

DRAFT

USACE PROJECT NO.:
SWF-2003-00336

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FANNIN COUNTY, TX

Document Path: F:\projects\0449\083-01\2-0 Wrk Prod\2-9 GIS\Proposed Additional Land\Mitigation Plan MXDs\20190626 FIG E-3 Mitigation Areas Fishnet Map C.mxd

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
S1-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
1,356	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-7	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	0
No Field Assessment	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	12
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.15**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	16
	Habitat FCI = Subtotal / 120	**0.13**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.39**
	TOTAL FCU = SAR Length (1356) X Multiplication Factor (0.00125) X Total FCI	**0.66**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 375	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-7	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: No Field Assessment	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	12
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.15**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	17
	Habitat FCI = Subtotal / 120	**0.14**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.42**
	TOTAL FCU = SAR Length (375) X Multiplication Factor (0.00125) X Total FCI	**0.20**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S1-(3)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,467	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s): A-7	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: No Field Assessment	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	12
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.15**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	19
	Habitat FCI = Subtotal / 120	**0.16**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.45**
	TOTAL FCU = SAR Length (1467) X Multiplication Factor (0.00125) X Total FCI	**0.83**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	**SWAMPIM METRICS *(a, b, c, d)***	**BASELINE SCORES**
SAR Name: S1-TRIB1-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,861	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-7	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/8/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	4
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	19
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.24**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.59**
	TOTAL FCU = SAR Length (1861) X Multiplication Factor (0.00125) X Total FCI	**1.37**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-(2)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 597	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s): A-6	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/3/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	17.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.22**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.51**
	TOTAL FCU = SAR Length (597) X Multiplication Factor (0.00125) X Total FCI	**0.38**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
S2-(3)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
3,772	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-6	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	1
5/8/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	17
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.21**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (3772) X Multiplication Factor (0.00125) X Total FCI	**2.83**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB1-(1)	H1. Flow Regime and Groundwater Interaction	1	No Photo Available See S2-TRIB2-A1-(1) for Reference
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 2,269	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	11	
	Hydrologic FCI = Subtotal / 100	**0.11**	
Reference Figure(s): A-10, A-13	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3	
Date Assessed: No Field Assessment	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	12	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.15**	
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	2	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	16	
	Habitat FCI = Subtotal / 120	**0.13**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.39**	
	TOTAL FCU = SAR Length (2269) X Multiplication Factor (0.00125) X Total FCI	**1.11**	

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 2,690	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s): A-10	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: No Field Assessment	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	13
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.16**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	16
	Habitat FCI = Subtotal / 120	**0.13**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.40**
	TOTAL FCU = SAR Length (2690) X Multiplication Factor (0.00125) X Total FCI	**1.35**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name:	H1. Flow Regime and Groundwater Interaction	1	No Photo Available
S2-TRIB1-(3)	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	1	
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1	
1,091	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	0	
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0	
0.00125	Hydrologic Subtotal	8	
	Hydrologic FCI = Subtotal / 100	**0.08**	
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1	
A-7	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed:	WQ2. Water Clarity	0	
No Field Assessment	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor:	Water Quality / Biogeochemical Subtotal	10	
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.13**	
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	2	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	14	
	Habitat FCI = Subtotal / 120	**0.12**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.33**	
	TOTAL FCU = SAR Length (1091) X Multiplication Factor (0.00125) X Total FCI	**0.45**	

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB1-(4)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,221	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-6, A-7	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: No Field Assessment	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	17
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.21**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	23
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.53**
	TOTAL FCU = SAR Length (1221) X Multiplication Factor (0.00125) X Total FCI	**0.81**

Representative Site Photograph:

No Photo Available

See S2-(3) for Reference

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB1-A1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 399	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	19
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: No Field Assessment	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	22
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.28**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.65**
	TOTAL FCU = SAR Length (399) X Multiplication Factor (0.00125) X Total FCI	**0.32**

Representative Site Photograph:

No Photo Available

See S2-TRIB2-A1-(1) for Reference

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB1-A1-(2)	H1. Flow Regime and Groundwater Interaction	0	No Photo Available See S2-TRIB2-A1-(1) for Reference
	H2a. Channel Condition / Alteration	2	
	H2b. Channel Capacity to Flow Frequency	3	
SAR Length (LF): 294	H2c. Channel Bank Stability *(e)*	5	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	4	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	17	
	Hydrologic FCI = Subtotal / 100	**0.17**	
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	5	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5	
Date Assessed: No Field Assessment	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	5	
	HB10. Vegetative Protection *(e)*	3	
	HB11. Riparian Zone *(e)*	4	
	HB12. Riparian Habitat Condition	4	
	Habitat Subtotal	21	
	Habitat FCI = Subtotal / 120	**0.18**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.64**	
	TOTAL FCU = SAR Length (294) X Multiplication Factor (0.00125) X Total FCI	**0.24**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB1-A1-(3)	H1. Flow Regime and Groundwater Interaction	1	No Photo Available See S2-TRIB2-A1-(1) for Reference
	H2a. Channel Condition / Alteration	2	
	H2b. Channel Capacity to Flow Frequency	1	
SAR Length (LF): 484	H2c. Channel Bank Stability *(e)*	3	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	3	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	13	
	Hydrologic FCI = Subtotal / 100	**0.13**	
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	3	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2	
Date Assessed: No Field Assessment	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	13	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.16**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	3	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	2	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	16	
	Habitat FCI = Subtotal / 120	**0.13**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.42**	
	TOTAL FCU = SAR Length (484) X Multiplication Factor (0.00125) X Total FCI	**0.25**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB1-A1-(4)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 686	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	8
	Hydrologic FCI = Subtotal / 100	**0.08**
Reference Figure(s): A-10	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: No Field Assessment	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	11
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.14**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	14
	Habitat FCI = Subtotal / 120	**0.12**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.34**
	TOTAL FCU = SAR Length (686) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:

No Photo Available

See S2-TRIB2-A1-(1) for Reference

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 196	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	23
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/7/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.92**
	TOTAL FCU = SAR Length (196) X Multiplication Factor (0.00125) X Total FCI	**0.23**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(2)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 399	H2c. Channel Bank Stability *(e)*	3.5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	3
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	20.5
	Hydrologic FCI = Subtotal / 100	**0.21**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	3.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3.5
Date Assessed: 5/7/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.36**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	3.5
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	39.5
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.90**
	TOTAL FCU = SAR Length (399) X Multiplication Factor (0.00125) X Total FCI	**0.45**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(3)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 235	H2c. Channel Bank Stability *(e)*	1.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	18.5
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s): A-12, A-15	WQ1a. Bank Stability *(e)*	1.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/7/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	22.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.28**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1.5
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	33.5
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.75**
	TOTAL FCU = SAR Length (235) X Multiplication Factor (0.00125) X Total FCI	**0.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(4)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,196	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	6
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	22
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/7/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	21
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.26**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.76**
	TOTAL FCU = SAR Length (1196) X Multiplication Factor (0.00125) X Total FCI	**1.14**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(5)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 984	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	4
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	2
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	21
	Hydrologic FCI = Subtotal / 100	**0.21**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 5/7/2018	WQ2. Water Clarity	3
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	21.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.27**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4.5
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	29.5
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.73**
	TOTAL FCU = SAR Length (984) X Multiplication Factor (0.00125) X Total FCI	**0.90**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(6)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,355	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/7/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	3.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.20**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2.5
	HB11. Riparian Zone *(e)*	3.5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	26
	Habitat FCI = Subtotal / 120	**0.22**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.59**
	TOTAL FCU = SAR Length (1355) X Multiplication Factor (0.00125) X Total FCI	**1.00**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-(7)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 1,329	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	5
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	26
	Hydrologic FCI = Subtotal / 100	**0.26**
Reference Figure(s): A-9	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/7/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	2.5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	30.5
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.85**
	TOTAL FCU = SAR Length (1329) X Multiplication Factor (0.00125) X Total FCI	**1.41**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB2-(8)	H1. Flow Regime and Groundwater Interaction	2	No Photo Available
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 2,647	H2c. Channel Bank Stability *(e)*	3	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	1	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	2	
	Hydrologic Subtotal	15	
	Hydrologic FCI = Subtotal / 100	**0.15**	
Reference Figure(s): A-9	WQ1a. Bank Stability *(e)*	3	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3	
Date Assessed: No Field Assessment	WQ2. Water Clarity	1	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.20**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	2	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	2	
	HB7. Channel Alteration	2	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	3	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	2	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	21	
	Habitat FCI = Subtotal / 120	**0.18**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.53**	
	TOTAL FCU = SAR Length (2647) X Multiplication Factor (0.00125) X Total FCI	**1.75**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB2-(9)	H1. Flow Regime and Groundwater Interaction	2	No Photo Available
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 1,002	H2c. Channel Bank Stability *(e)*	3	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	1	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1	
	Hydrologic Subtotal	14	
	Hydrologic FCI = Subtotal / 100	**0.14**	
Reference Figure(s): A-6	WQ1a. Bank Stability *(e)*	3	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3	
Date Assessed: No Field Assessment	WQ2. Water Clarity	1	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.20**	*Notes:*
	HB1. Flow Regime	2	*(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.*
	HB2. Epifaunal Substrate and Available Cover	1	*(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.*
Field Notes:	HB3. Stream Bottom Substrate	1	*(c) FCI = Functional Condition Index.*
	HB4. Pool Variability	1	*(d) FCU = Functional Capacity Unit.*
	HB5. Sediment Deposition and Scouring	1	*(e) Score shown is the average of the left and right bank scores.*
	HB6. Channel Flow Status	1	*(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.*
	HB7. Channel Alteration	2	*(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.*
	HB8. Channel Sinuosity	1	*(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.*
	HB9. Bank Stability *(e)*	3	*(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	2	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	20	
	Habitat FCI = Subtotal / 120	**0.17**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.51**	
	TOTAL FCU = SAR Length (1002) X Multiplication Factor (0.00125) X Total FCI	**0.64**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A1-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 668	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	5
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	24
	Hydrologic FCI = Subtotal / 100	**0.24**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	23
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.72**
	TOTAL FCU = SAR Length (668) X Multiplication Factor (0.00125) X Total FCI	**0.60**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 106	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.67**
	TOTAL FCU = SAR Length (106) X Multiplication Factor (0.00125) X Total FCI	**0.09**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A1-(3)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 235	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.51**
	TOTAL FCU = SAR Length (235) X Multiplication Factor (0.00125) X Total FCI	**0.15**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A1-B1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 239	H2c. Channel Bank Stability *(e)*	3.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	17.5
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	3.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3.5
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	4.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	3
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	19
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.24**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3.5
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	3
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (239) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 131	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	35
	Hydrologic FCI = Subtotal / 100	**0.35**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.10**
	TOTAL FCU = SAR Length (131) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 439	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	20.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.26**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	5.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	26
	Habitat FCI = Subtotal / 120	**0.22**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.64**
	TOTAL FCU = SAR Length (439) X Multiplication Factor (0.00125) X Total FCI	**0.35**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-(3)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 304	H2c. Channel Bank Stability *(e)*	1.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	22.5
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	1.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 5/8/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	21.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.27**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	5.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**
	TOTAL FCU = SAR Length (304) X Multiplication Factor (0.00125) X Total FCI	**0.28**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-B5-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 57	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.06**
	TOTAL FCU = SAR Length (57) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-B6-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 60	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.06**
	TOTAL FCU = SAR Length (60) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A2-B7-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 232	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	35
	Hydrologic FCI = Subtotal / 100	**0.35**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	42
	Habitat FCI = Subtotal / 120	**0.35**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.10**
	TOTAL FCU = SAR Length (232) X Multiplication Factor (0.00125) X Total FCI	**0.32**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing downstream
SAR Name: S2-TRIB2-A2-B8-(1)	H1. Flow Regime and Groundwater Interaction	0	
	H2a. Channel Condition / Alteration	5	
	H2b. Channel Capacity to Flow Frequency	8	
SAR Length (LF): 175	H2c. Channel Bank Stability *(e)*	5	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	4	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	27	
	Hydrologic FCI = Subtotal / 100	**0.27**	
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	5	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5	
Date Assessed: 5/8/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	6	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	6	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	5	
	HB10. Vegetative Protection *(e)*	5	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	4	
	Habitat Subtotal	40	
	Habitat FCI = Subtotal / 120	**0.33**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**	
	TOTAL FCU = SAR Length (175) X Multiplication Factor (0.00125) X Total FCI	**0.21**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A3-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 206	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.32**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.68**
	TOTAL FCU = SAR Length (206) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A3-(3)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 425	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	38
	Hydrologic FCI = Subtotal / 100	**0.38**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	39
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.49**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	4
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	8
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	49
	Habitat FCI = Subtotal / 120	**0.41**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.28**
	TOTAL FCU = SAR Length (425) X Multiplication Factor (0.00125) X Total FCI	**0.68**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A3-(4)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 612	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	21
	Hydrologic FCI = Subtotal / 100	**0.21**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	24
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.30**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	23.5
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (612) X Multiplication Factor (0.00125) X Total FCI	**0.54**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A3-B4-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 49	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	9
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	31
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.39**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.95**
	TOTAL FCU = SAR Length (49) X Multiplication Factor (0.00125) X Total FCI	**0.06**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A4-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 409	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 5/7/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.36**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	24
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (409) X Multiplication Factor (0.00125) X Total FCI	**0.36**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-A4-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 269	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
Reference Figure(s): A-12, A-15	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/7/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	23
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.52**
	TOTAL FCU = SAR Length (269) X Multiplication Factor (0.00125) X Total FCI	**0.17**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-B2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 364	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/4/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.79**
	TOTAL FCU = SAR Length (364) X Multiplication Factor (0.00125) X Total FCI	**0.36**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-B3-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 130	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	8
	Hydrologic FCI = Subtotal / 100	**0.08**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/7/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	20
	Habitat FCI = Subtotal / 120	**0.17**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.48**
	TOTAL FCU = SAR Length (130) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing upstream
SAR Name: S2-TRIB2-B4-(1)	H1. Flow Regime and Groundwater Interaction	0	
	H2a. Channel Condition / Alteration	5	
	H2b. Channel Capacity to Flow Frequency	4	
SAR Length (LF): 234	H2c. Channel Bank Stability *(e)*	5	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	5	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	5	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	26	
	Hydrologic FCI = Subtotal / 100	**0.26**	
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	5	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5	
Date Assessed: 5/7/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	22	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.28**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	5	
	HB10. Vegetative Protection *(e)*	1	
	HB11. Riparian Zone *(e)*	5	
	HB12. Riparian Habitat Condition	1	
	Habitat Subtotal	17	
	Habitat FCI = Subtotal / 120	**0.14**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.68**	
	TOTAL FCU = SAR Length (234) X Multiplication Factor (0.00125) X Total FCI	**0.20**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing downstream
SAR Name: S2-TRIB2-B4-(2)	H1. Flow Regime and Groundwater Interaction	1	
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	1	
SAR Length (LF): 159	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	2	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	9	
	Hydrologic FCI = Subtotal / 100	**0.09**	
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3	
Date Assessed: 5/7/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	1	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	17	
	Habitat FCI = Subtotal / 120	**0.14**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.46**	
	TOTAL FCU = SAR Length (159) X Multiplication Factor (0.00125) X Total FCI	**0.09**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB2-B9-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 154	H2c. Channel Bank Stability *(e)*	2.5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	12.5
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-9	WQ1a. Bank Stability *(e)*	2.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 5/8/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	17.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.22**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2.5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4.5
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.53**
	TOTAL FCU = SAR Length (154) X Multiplication Factor (0.00125) X Total FCI	**0.10**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 290	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/10/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.58**
	TOTAL FCU = SAR Length (290) X Multiplication Factor (0.00125) X Total FCI	**0.21**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(2)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 614	H2c. Channel Bank Stability *(e)*	1.5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	18.5
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2.5
Date Assessed: 5/10/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	20
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.25**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	24.5
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.64**
	TOTAL FCU = SAR Length (614) X Multiplication Factor (0.00125) X Total FCI	**0.49**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(3)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 244	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: No Field Assessment	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	20
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.25**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	24
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (244) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:

No Photo Available

See S2-TRIB3-(2) for Reference

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB3-(4)	H1. Flow Regime and Groundwater Interaction	2	No Photo Available
	H2a. Channel Condition / Alteration	5	
	H2b. Channel Capacity to Flow Frequency	3	
SAR Length (LF): 1,458	H2c. Channel Bank Stability *(e)*	4	
	H3a. Channel Sinuosity	4	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2	
	H3d. Channel Incision	1	
	H4a. Pools	1	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1	
	Hydrologic Subtotal	24	
	Hydrologic FCI = Subtotal / 100	**0.24**	
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	4	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5	
Date Assessed: No Field Assessment	WQ2. Water Clarity	1	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	2	
	HB2. Epifaunal Substrate and Available Cover	2	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	1	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	4	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	27	
	Habitat FCI = Subtotal / 120	**0.23**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.78**	
	TOTAL FCU = SAR Length (1458) X Multiplication Factor (0.00125) X Total FCI	**1.42**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB3-(5)	H1. Flow Regime and Groundwater Interaction	2	No Photo Available
	H2a. Channel Condition / Alteration	5	
	H2b. Channel Capacity to Flow Frequency	3	
SAR Length (LF): 604	H2c. Channel Bank Stability *(e)*	3	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2	
	H3d. Channel Incision	1	
	H4a. Pools	1	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1	
	Hydrologic Subtotal	20	
	Hydrologic FCI = Subtotal / 100	**0.20**	
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	3	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3	
Date Assessed: No Field Assessment	WQ2. Water Clarity	1	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	2	
	HB2. Epifaunal Substrate and Available Cover	2	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	1	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	3	
	HB10. Vegetative Protection *(e)*	6	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	5	
	Habitat Subtotal	30	
	Habitat FCI = Subtotal / 120	**0.25**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**	
	TOTAL FCU = SAR Length (604) X Multiplication Factor (0.00125) X Total FCI	**0.56**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(6)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,018	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/1/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	24
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.30**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	31
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**
	TOTAL FCU = SAR Length (1018) X Multiplication Factor (0.00125) X Total FCI	**0.94**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
S2-TRIB3-(7)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	3
774	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* :	H4b. Channel Flow Status	2
0.00125	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	3
A-11	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed:	WQ2. Water Clarity	1
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	2.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	32.5
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.81**
	TOTAL FCU = SAR Length (774) X Multiplication Factor (0.00125) X Total FCI	**0.78**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(8)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	7
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 1,943	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	2
	H4a. Pools	2
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	28
	Hydrologic FCI = Subtotal / 100	**0.28**
Reference Figure(s): A-9, A-11	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 5/2/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.00**
	TOTAL FCU = SAR Length (1943) X Multiplication Factor (0.00125) X Total FCI	**2.43**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-(9)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 1,904	H2c. Channel Bank Stability *(e)*	5.5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	24.5
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s): A-8, A-9	WQ1a. Bank Stability *(e)*	5.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5.5
Date Assessed: 5/2/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	0
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5.5
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	33.5
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.87**
	TOTAL FCU = SAR Length (1904) X Multiplication Factor (0.00125) X Total FCI	**2.07**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
S2-TRIB3-(10)	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	8
1,461	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	4
	H3d. Channel Incision	8
	H4a. Pools	3
Multiplication Factor *(i)* :	H4b. Channel Flow Status	6
0.00125	Hydrologic Subtotal	57
	Hydrologic FCI = Subtotal / 100	**0.57**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	8
A-5, A8	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed:	WQ2. Water Clarity	4
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	4
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	44
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.55**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	4
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	6
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	5
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	58
	Habitat FCI = Subtotal / 120	**0.48**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.60**
	TOTAL FCU = SAR Length (1461) X Multiplication Factor (0.00125) X Total FCI	**2.92**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
S2-TRIB3-(12)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
737	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-6	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	1
5/3/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	25
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.31**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	7.5
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	31.5
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (737) X Multiplication Factor (0.00125) X Total FCI	**0.65**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A2-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 616	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s): A-6	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/3/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	4
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	3
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	14
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.18**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	3
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	19
	Habitat FCI = Subtotal / 120	**0.16**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.48**
	TOTAL FCU = SAR Length (616) X Multiplication Factor (0.00125) X Total FCI	**0.37**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 482	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 5/3/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	24
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.30**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.63**
	TOTAL FCU = SAR Length (482) X Multiplication Factor (0.00125) X Total FCI	**0.38**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 2,407	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-8	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	24
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.30**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (2407) X Multiplication Factor (0.00125) X Total FCI	**2.14**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S2-TRIB3-A5-(3)	H1. Flow Regime and Groundwater Interaction	2	No Photo Available
	H2a. Channel Condition / Alteration	3	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 661	H2c. Channel Bank Stability *(e)*	5	
	H3a. Channel Sinuosity	2	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	17	
	Hydrologic FCI = Subtotal / 100	**0.17**	
Reference Figure(s): A-8	WQ1a. Bank Stability *(e)*	5	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: No Field Assessment	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	5	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	2	
	HB2. Epifaunal Substrate and Available Cover	5	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	0	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	3	
	HB8. Channel Sinuosity	2	
	HB9. Bank Stability *(e)*	5	
	HB10. Vegetative Protection *(e)*	6	
	HB11. Riparian Zone *(e)*	7	
	HB12. Riparian Habitat Condition	5	
	Habitat Subtotal	36	
	Habitat FCI = Subtotal / 120	**0.30**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.85**	
	TOTAL FCU = SAR Length (661) X Multiplication Factor (0.00125) X Total FCI	**0.70**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-B1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	8
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 111	H2c. Channel Bank Stability *(e)*	8
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	35
	Hydrologic FCI = Subtotal / 100	**0.35**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	8
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	7
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	8
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.08**
	TOTAL FCU = SAR Length (111) X Multiplication Factor (0.00125) X Total FCI	**0.15**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-B1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 154	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	22
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.28**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	26
	Habitat FCI = Subtotal / 120	**0.22**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.66**
	TOTAL FCU = SAR Length (154) X Multiplication Factor (0.00125) X Total FCI	**0.13**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-B2-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 79	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	22
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): A-8	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.82**
	TOTAL FCU = SAR Length (79) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-B3-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 74	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	21
	Hydrologic FCI = Subtotal / 100	**0.21**
Reference Figure(s): A-8	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.78**
	TOTAL FCU = SAR Length (74) X Multiplication Factor (0.00125) X Total FCI	**0.07**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A5-B4-(1)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
132	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
A-8	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
5/3/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (132) X Multiplication Factor (0.00125) X Total FCI	**0.12**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A5-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 588	H2c. Channel Bank Stability *(e)*	3.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	14.5
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-8	WQ1a. Bank Stability *(e)*	3.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2.5
Date Assessed: 5/3/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3.5
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	28.5
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.68**
	TOTAL FCU = SAR Length (588) X Multiplication Factor (0.00125) X Total FCI	**0.50**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A6-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 831	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	21
	Hydrologic FCI = Subtotal / 100	**0.21**
Reference Figure(s): A-12	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 5/2/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	4.5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	31.5
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.80**
	TOTAL FCU = SAR Length (831) X Multiplication Factor (0.00125) X Total FCI	**0.83**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A6-(2)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
413	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-12	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	0
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	18.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.57**
	TOTAL FCU = SAR Length (413) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A7-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,301	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 5/1/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.92**
	TOTAL FCU = SAR Length (1301) X Multiplication Factor (0.00125) X Total FCI	**1.50**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A7-(2)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	6
476	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	6
A-11	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed:	WQ2. Water Clarity	0
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	29.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.37**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.86**
	TOTAL FCU = SAR Length (476) X Multiplication Factor (0.00125) X Total FCI	**0.51**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
S2-TRIB3-A7-(3)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
660	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	3
Multiplication Factor *(i)* :	H4b. Channel Flow Status	3
0.00125	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
A-11	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed:	WQ2. Water Clarity	4
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	37
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.46**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	41.5
	Habitat FCI = Subtotal / 120	**0.35**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.06**
	TOTAL FCU = SAR Length (660) X Multiplication Factor (0.00125) X Total FCI	**0.87**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A7-B2-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 487	H2c. Channel Bank Stability *(e)*	6.5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	22.5
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	6.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6.5
Date Assessed: 5/1/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	31
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.39**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6.5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	32.5
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.89**
	TOTAL FCU = SAR Length (487) X Multiplication Factor (0.00125) X Total FCI	**0.54**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing upstream
SAR Name: S2-TRIB3-A7-B3-(1)	H1. Flow Regime and Groundwater Interaction	0	
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	1	
SAR Length (LF): 31	H2c. Channel Bank Stability *(e)*	4	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	11	
	Hydrologic FCI = Subtotal / 100	**0.11**	
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	4	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2	
Date Assessed: 5/1/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	1	
	HB4. Pool Variability	0	
	HB5. Sediment Deposition and Scouring	0	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	4	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	19	
	Habitat FCI = Subtotal / 120	**0.16**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.56**	
	TOTAL FCU = SAR Length (31) X Multiplication Factor (0.00125) X Total FCI	**0.02**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A7-B4-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 505	H2c. Channel Bank Stability *(e)*	6.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	8
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	31.5
	Hydrologic FCI = Subtotal / 100	**0.32**
Reference Figure(s): A-11	WQ1a. Bank Stability *(e)*	6.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6.5
Date Assessed: 5/2/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	2
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	38.5
	Habitat FCI = Subtotal / 120	**0.32**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.07**
	TOTAL FCU = SAR Length (505) X Multiplication Factor (0.00125) X Total FCI	**0.68**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A7-B5-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5.5
431	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	15.5
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5.5
A-11	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
5/2/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	32.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30.5
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.82**
	TOTAL FCU = SAR Length (431) X Multiplication Factor (0.00125) X Total FCI	**0.44**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A8-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
451	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed:	WQ2. Water Clarity	0
5/1/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor:	Water Quality / Biogeochemical Subtotal	33
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	6
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	8
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	50
	Habitat FCI = Subtotal / 120	**0.42**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.01**
	TOTAL FCU = SAR Length (451) X Multiplication Factor (0.00125) X Total FCI	**0.57**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing upstream
SAR Name: S2-TRIB3-A8-(2)	H1. Flow Regime and Groundwater Interaction	1	
	H2a. Channel Condition / Alteration	6	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 295	H2c. Channel Bank Stability *(e)*	6.5	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	22.5	
	Hydrologic FCI = Subtotal / 100	**0.23**	
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	6.5	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6.5	
Date Assessed: 5/1/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	2	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	3	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	4	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	6.5	
	HB10. Vegetative Protection *(e)*	2	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	5	
	Habitat Subtotal	35.5	
	Habitat FCI = Subtotal / 120	**0.30**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**	
	TOTAL FCU = SAR Length (295) X Multiplication Factor (0.00125) X Total FCI	**0.35**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A8-B1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 157	H2c. Channel Bank Stability *(e)*	6.5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	21.5
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	6.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/1/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.37**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	31.5
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.85**
	TOTAL FCU = SAR Length (157) X Multiplication Factor (0.00125) X Total FCI	**0.17**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A8-B2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 100	H2c. Channel Bank Stability *(e)*	6.5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	19.5
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	6.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 5/1/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6.5
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30.5
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.83**
	TOTAL FCU = SAR Length (100) X Multiplication Factor (0.00125) X Total FCI	**0.10**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A9-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 141	H2c. Channel Bank Stability *(e)*	7
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	34
	Hydrologic FCI = Subtotal / 100	**0.34**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	7
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 5/10/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.92**
	TOTAL FCU = SAR Length (141) X Multiplication Factor (0.00125) X Total FCI	**0.16**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-A9-(2)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
416	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)*:	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	0
5/10/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	17.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.22**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.54**
	TOTAL FCU = SAR Length (416) X Multiplication Factor (0.00125) X Total FCI	**0.28**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A10-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 74	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/10/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	2.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	25.5
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.61**
	TOTAL FCU = SAR Length (74) X Multiplication Factor (0.00125) X Total FCI	**0.06**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A10-(3)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 284	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/10/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.21**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	20
	Habitat FCI = Subtotal / 120	**0.17**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.51**
	TOTAL FCU = SAR Length (284) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S2-TRIB3-A10-B1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 105	H2c. Channel Bank Stability *(e)*	2.5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	12.5
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2.5
Date Assessed: 5/10/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2.5
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	18.5
	Habitat FCI = Subtotal / 120	**0.15**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.51**
	TOTAL FCU = SAR Length (105) X Multiplication Factor (0.00125) X Total FCI	**0.07**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S2-TRIB3-B1-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
240	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed:	WQ2. Water Clarity	0
5/10/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1.5
Assessor:	Water Quality / Biogeochemical Subtotal	21
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.26**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	1.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22.5
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (240) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
T1-BAKER-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
888	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)*:	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-4	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	1
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	3.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor:	Water Quality / Biogeochemical Subtotal	14.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.18**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	3.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	16.5
	Habitat FCI = Subtotal / 120	**0.14**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.42**
	TOTAL FCU = SAR Length (888) X Multiplication Factor (0.00125) X Total FCI	**0.47**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
T2-BAKER-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	6
1,403	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	29
	Hydrologic FCI = Subtotal / 100	**0.29**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	6
A-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	1
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor:	Water Quality / Biogeochemical Subtotal	30
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.38**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.95**
	TOTAL FCU = SAR Length (1403) X Multiplication Factor (0.00125) X Total FCI	**1.67**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T2-BAKER-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,095	H2c. Channel Bank Stability *(e)*	1.5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	13.5
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	1.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/9/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	22.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.28**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1.5
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	27.5
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.65**
	TOTAL FCU = SAR Length (1095) X Multiplication Factor (0.00125) X Total FCI	**0.89**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T2-BAKER-(3)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 568	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 5/9/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	16
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.20**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	19
	Habitat FCI = Subtotal / 120	**0.16**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.46**
	TOTAL FCU = SAR Length (568) X Multiplication Factor (0.00125) X Total FCI	**0.33**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
T2-BAKER-TRIB1-(1)	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
303	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed:	WQ2. Water Clarity	0
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor:	Water Quality / Biogeochemical Subtotal	25
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.31**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**
	TOTAL FCU = SAR Length (303) X Multiplication Factor (0.00125) X Total FCI	**0.28**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T2-BAKER-TRIB1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 611	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 5/9/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	19.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.24**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3.5
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22.5
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.58**
	TOTAL FCU = SAR Length (611) X Multiplication Factor (0.00125) X Total FCI	**0.44**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	2
T3-BAKER-(7)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
388	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed:	WQ2. Water Clarity	1
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor:	Water Quality / Biogeochemical Subtotal	21
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.26**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	22
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.59**
	TOTAL FCU = SAR Length (388) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T3-BAKER-TRIB1-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 138	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	10
	Hydrologic FCI = Subtotal / 100	**0.10**
Reference Figure(s): A-1	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 5/9/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	18
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.23**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	18
	Habitat FCI = Subtotal / 120	**0.15**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.48**
	TOTAL FCU = SAR Length (138) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T3-BAKER-TRIB1-(2)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 182	H2c. Channel Bank Stability *(e)*	5.5
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	29.5
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	5.5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5.5
Date Assessed: 5/9/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5.5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.36**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5.5
	HB10. Vegetative Protection *(e)*	5.5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	38
	Habitat FCI = Subtotal / 120	**0.32**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.98**
	TOTAL FCU = SAR Length (182) X Multiplication Factor (0.00125) X Total FCI	**0.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
T3-BAKER-TRIB1-(3)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	3
1,034	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	3
A-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed:	WQ2. Water Clarity	1
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor:	Water Quality / Biogeochemical Subtotal	20.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.26**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	5.5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	23.5
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (1034) X Multiplication Factor (0.00125) X Total FCI	**0.78**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
T3-BAKER-TRIB1-B1-(1)	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	6
315	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	31
	Hydrologic FCI = Subtotal / 100	**0.31**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	6
A-2	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed:	WQ2. Water Clarity	0
5/9/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	27.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	4.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	34.5
	Habitat FCI = Subtotal / 120	**0.29**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (315) X Multiplication Factor (0.00125) X Total FCI	**0.37**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T3-BAKER-TRIB1-B2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 167	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 5/9/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	31
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.39**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.05**
	TOTAL FCU = SAR Length (167) X Multiplication Factor (0.00125) X Total FCI	**0.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: T3-BAKER-TRIB1-B2-(2)	H1. Flow Regime and Groundwater Interaction	1	No Photo Available
	H2a. Channel Condition / Alteration	8	
	H2b. Channel Capacity to Flow Frequency	6	
SAR Length (LF): 150	H2c. Channel Bank Stability *(e)*	8	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	7	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	33	
	Hydrologic FCI = Subtotal / 100	**0.33**	
Reference Figure(s): A-2	WQ1a. Bank Stability *(e)*	8	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7	
Date Assessed: No Field Assessment	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	1	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**	*Notes:*
	HB1. Flow Regime	1	*(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.*
	HB2. Epifaunal Substrate and Available Cover	1	*(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.*
Field Notes:	HB3. Stream Bottom Substrate	1	*(c) FCI = Functional Condition Index.*
	HB4. Pool Variability	1	*(d) FCU = Functional Capacity Unit.*
	HB5. Sediment Deposition and Scouring	5	*(e) Score shown is the average of the left and right bank scores.*
	HB6. Channel Flow Status	0	*(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.*
	HB7. Channel Alteration	5	*(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.*
	HB8. Channel Sinuosity	1	*(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.*
	HB9. Bank Stability *(e)*	8	*(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB10. Vegetative Protection *(e)*	6	
	HB11. Riparian Zone *(e)*	8	
	HB12. Riparian Habitat Condition	3	
	Habitat Subtotal	40	
	Habitat FCI = Subtotal / 120	**0.33**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.07**	
	TOTAL FCU = SAR Length (150) X Multiplication Factor (0.00125) X Total FCI	**0.20**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: T6-BAKER-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,979	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	9
	Hydrologic FCI = Subtotal / 100	**0.09**
Reference Figure(s): A-3	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: No Field Assessment	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	1
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	3.5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	3.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	1
Assessor: APAI	Water Quality / Biogeochemical Subtotal	11
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.14**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	1
	HB11. Riparian Zone *(e)*	3.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	15.5
	Habitat FCI = Subtotal / 120	**0.13**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.36**
	TOTAL FCU = SAR Length (1979) X Multiplication Factor (0.00125) X Total FCI	**0.89**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 805	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	7
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	23
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s): A-16	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/7/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.99**
	TOTAL FCU = SAR Length (805) X Multiplication Factor (0.00125) X Total FCI	**1.00**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 618	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-13, A-16	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	31
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.76**
	TOTAL FCU = SAR Length (618) X Multiplication Factor (0.00125) X Total FCI	**0.59**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB1-(3)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
820	H3a. Channel Sinuosity	6
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-13	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	1
1/7/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	28
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	32
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.78**
	TOTAL FCU = SAR Length (820) X Multiplication Factor (0.00125) X Total FCI	**0.80**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: AX-S2-TRIB1-(4)	H1. Flow Regime and Groundwater Interaction	0	No Photo Available
	H2a. Channel Condition / Alteration	1	See AX-S2-TRIB1-A4-TRIBA-(1) for Reference
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 1,577	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	6	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	14	
	Hydrologic FCI = Subtotal / 100	**0.14**	
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: 1/8/2019	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25.5	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.32**	
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	3	
	HB11. Riparian Zone *(e)*	7.5	
	HB12. Riparian Habitat Condition	2	
	Habitat Subtotal	23.5	
	Habitat FCI = Subtotal / 120	**0.20**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.66**	
	TOTAL FCU = SAR Length (1577) X Multiplication Factor (0.00125) X Total FCI	**1.30**	

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: AX-S2-TRIB1-A2-(1)	H1. Flow Regime and Groundwater Interaction	0	No Photo Available See AX-S2-TRIB1-A4-TRIBA-(1) for Reference
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 1,380	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	11	
	Hydrologic FCI = Subtotal / 100	**0.11**	
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: 1/8/2019	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	3	
	HB11. Riparian Zone *(e)*	7	
	HB12. Riparian Habitat Condition	2	
	Habitat Subtotal	23	
	Habitat FCI = Subtotal / 120	**0.19**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.61**	
	TOTAL FCU = SAR Length (1380) X Multiplication Factor (0.00125) X Total FCI	**1.05**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: AX-S2-TRIB1-A2-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	0	No Photo Available See AX-S2-TRIB1-A4-TRIBA-(1) for Reference
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 312	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	9	
	Hydrologic FCI = Subtotal / 100	**0.09**	
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: 1/8/2019	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	23	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.29**	*Notes:*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	3	
	HB11. Riparian Zone *(e)*	5	
	HB12. Riparian Habitat Condition	2	
	Habitat Subtotal	19	
	Habitat FCI = Subtotal / 120	**0.16**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.54**	
	TOTAL FCU = SAR Length (312) X Multiplication Factor (0.00125) X Total FCI	**0.21**	

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: AX-S2-TRIB1-A3-(1)	H1. Flow Regime and Groundwater Interaction	0	No Photo Available See AX-S2-TRIB1-A4-TRIBA-(1) for Reference
	H2a. Channel Condition / Alteration	1	
	H2b. Channel Capacity to Flow Frequency	2	
SAR Length (LF): 104	H2c. Channel Bank Stability *(e)*	1	
	H3a. Channel Sinuosity	1	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	2	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	9	
	Hydrologic FCI = Subtotal / 100	**0.09**	
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: 1/8/2019	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**	
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	1	
	HB8. Channel Sinuosity	1	
	HB9. Bank Stability *(e)*	1	
	HB10. Vegetative Protection *(e)*	3	
	HB11. Riparian Zone *(e)*	8	
	HB12. Riparian Habitat Condition	2	
	Habitat Subtotal	22	
	Habitat FCI = Subtotal / 120	**0.18**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**	
	TOTAL FCU = SAR Length (104) X Multiplication Factor (0.00125) X Total FCI	**0.08**	

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A4-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,814	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-13, A-16	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.93**
	TOTAL FCU = SAR Length (1814) X Multiplication Factor (0.00125) X Total FCI	**2.11**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A4-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 207	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	2
	Habitat Subtotal	24
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.64**
	TOTAL FCU = SAR Length (207) X Multiplication Factor (0.00125) X Total FCI	**0.17**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB1-A4-TRIBB-(1)	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	7
122	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	26
	Hydrologic FCI = Subtotal / 100	**0.26**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	7
A-16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	41
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.51**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	43
	Habitat FCI = Subtotal / 120	**0.36**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.13**
	TOTAL FCU = SAR Length (122) X Multiplication Factor (0.00125) X Total FCI	**0.17**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A4-TRIBB-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 1,220	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-13, A-16	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	37
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.46**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (1220) X Multiplication Factor (0.00125) X Total FCI	**1.43**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB1-A4-TRIBB-AA-(1)	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	7
198	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	0
	H3d. Channel Incision	5
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	29
	Hydrologic FCI = Subtotal / 100	**0.29**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	7
A-13	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	43
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.54**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	48
	Habitat FCI = Subtotal / 120	**0.40**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.23**
	TOTAL FCU = SAR Length (198) X Multiplication Factor (0.00125) X Total FCI	**0.30**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A4-TRIBB-AB-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 215	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	35
	Hydrologic FCI = Subtotal / 100	**0.35**
Reference Figure(s): A-13, A-16	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	44
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.55**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	48
	Habitat FCI = Subtotal / 120	**0.40**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.30**
	TOTAL FCU = SAR Length (215) X Multiplication Factor (0.00125) X Total FCI	**0.35**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB1-A4-TRIBB-AC-(1)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	7
132	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	0
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	7
A-16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	8
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	43
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.54**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	7
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	48
	Habitat FCI = Subtotal / 120	**0.40**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.24**
	TOTAL FCU = SAR Length (132) X Multiplication Factor (0.00125) X Total FCI	**0.20**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A4-TRIBC-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	8
SAR Length (LF): 198	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	8
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	36
	Hydrologic FCI = Subtotal / 100	**0.36**
Reference Figure(s): A-16	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	37
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.46**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	35
	Habitat FCI = Subtotal / 120	**0.29**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.11**
	TOTAL FCU = SAR Length (198) X Multiplication Factor (0.00125) X Total FCI	**0.27**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB1-A4-TRIBC-(2)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
87	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	27
	Hydrologic FCI = Subtotal / 100	**0.27**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
A-16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	33
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	32
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.95**
	TOTAL FCU = SAR Length (87) X Multiplication Factor (0.00125) X Total FCI	**0.10**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
AX-S2-TRIB1-A4-TRIBD-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
230	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	26
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.33**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.67**
	TOTAL FCU = SAR Length (230) X Multiplication Factor (0.00125) X Total FCI	**0.19**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A5-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 208	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	0
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
Reference Figure(s): A-13	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.37**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	1
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	7.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	27.5
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.72**
	TOTAL FCU = SAR Length (208) X Multiplication Factor (0.00125) X Total FCI	**0.19**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A6-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 423	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s): A-16	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 1/7/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	43
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.5400**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	47
	Habitat FCI = Subtotal / 120	**0.39000**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.23000**
	TOTAL FCU = SAR Length (423) X Multiplication Factor (0.00125) X Total FCI	**0.650000**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
AX-S2-TRIB1-A7-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
254	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	8
	Hydrologic FCI = Subtotal / 100	**0.08**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-16	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	0
1/7/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.65**
	TOTAL FCU = SAR Length (254) X Multiplication Factor (0.00125) X Total FCI	**0.21**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB1-A7-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 139	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-16	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.37**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	5
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	7.5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	33.5
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.80**
	TOTAL FCU = SAR Length (139) X Multiplication Factor (0.00125) X Total FCI	**0.14**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB2-B2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 355	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	28
	Hydrologic FCI = Subtotal / 100	**0.28**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/7/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.06**
	TOTAL FCU = SAR Length (355) X Multiplication Factor (0.00125) X Total FCI	**0.47**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB2-B2-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 360	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	37
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.46**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.95**
	TOTAL FCU = SAR Length (360) X Multiplication Factor (0.00125) X Total FCI	**0.43**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 202	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.98**
	TOTAL FCU = SAR Length (202) X Multiplication Factor (0.00125) X Total FCI	**0.25**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 2,088	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	7
	H3b. Bottom Substrate Composition	4
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	3
	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	3
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	4
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	8
	Habitat Subtotal	43
	Habitat FCI = Subtotal / 120	**0.36**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.06**
	TOTAL FCU = SAR Length (2088) X Multiplication Factor (0.00125) X Total FCI	**2.77**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF): 150	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	4
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	4
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	45
	Habitat FCI = Subtotal / 120	**0.38**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.11**
	TOTAL FCU = SAR Length (150) X Multiplication Factor (0.00125) X Total FCI	**0.21**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A7-(2)	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	3
741	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	3
	H3d. Channel Incision	1
	H4a. Pools	3
Multiplication Factor *(i)* :	H4b. Channel Flow Status	3
0.00125	Hydrologic Subtotal	26
	Hydrologic FCI = Subtotal / 100	**0.26**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	3
A-15	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed:	WQ2. Water Clarity	3
1/7/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	3
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	36
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	43
	Habitat FCI = Subtotal / 120	**0.36**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.07**
	TOTAL FCU = SAR Length (741) X Multiplication Factor (0.00125) X Total FCI	**0.99**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-(3)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 567	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	7
	H3b. Bottom Substrate Composition	4
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	4
	H3d. Channel Incision	4
	H4a. Pools	4
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	3
	Hydrologic Subtotal	44
	Hydrologic FCI = Subtotal / 100	**0.44**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	39
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.49**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	4
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	4
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	6
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	8
	Habitat Subtotal	61
	Habitat FCI = Subtotal / 120	**0.51**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.44**
	TOTAL FCU = SAR Length (567) X Multiplication Factor (0.00125) X Total FCI	**1.02**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 357	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	17
	Hydrologic FCI = Subtotal / 100	**0.17**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	37
	Habitat FCI = Subtotal / 120	**0.31**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.86**
	TOTAL FCU = SAR Length (357) X Multiplication Factor (0.00125) X Total FCI	**0.38**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBA-(2)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	7
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 227	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	4
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	4
	H3d. Channel Incision	6
	H4a. Pools	2
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	4
	Hydrologic Subtotal	44
	Hydrologic FCI = Subtotal / 100	**0.44**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	7
Date Assessed: 1/8/2019	WQ2. Water Clarity	4
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	4
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	6
Assessor: APAI	Water Quality / Biogeochemical Subtotal	48
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.60**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	7
	HB6. Channel Flow Status	4
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	6
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	7
	Habitat Subtotal	53
	Habitat FCI = Subtotal / 120	**0.44**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.48**
	TOTAL FCU = SAR Length (227) X Multiplication Factor (0.00125) X Total FCI	**0.42**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A7-TRIBA-(3)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
91	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	2
Multiplication Factor *(i)* :	H4b. Channel Flow Status	2
0.00125	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed:	WQ2. Water Clarity	3
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	3
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	37
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.46**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	42
	Habitat FCI = Subtotal / 120	**0.35**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.97**
	TOTAL FCU = SAR Length (91) X Multiplication Factor (0.00125) X Total FCI	**0.11**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph: Facing upstream
SAR Name: AX-S2-TRIB3-A7-TRIBA-AA-(1)	H1. Flow Regime and Groundwater Interaction	0	
	H2a. Channel Condition / Alteration	2	
	H2b. Channel Capacity to Flow Frequency	1	
SAR Length (LF): 111	H2c. Channel Bank Stability *(e)*	2	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	2	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	1	
	H4a. Pools	0	
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	12	
	Hydrologic FCI = Subtotal / 100	**0.12**	
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1	
Date Assessed: 1/8/2019	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5	
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	0	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	1	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	2	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	2	
	HB10. Vegetative Protection *(e)*	4	
	HB11. Riparian Zone *(e)*	8	
	HB12. Riparian Habitat Condition	6	
	Habitat Subtotal	31	
	Habitat FCI = Subtotal / 120	**0.26**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.73**	
	TOTAL FCU = SAR Length (111) X Multiplication Factor (0.00125) X Total FCI	**0.10**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBA-AB-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 162	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	31
	Hydrologic FCI = Subtotal / 100	**0.31**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	35
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.44**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.08**
	TOTAL FCU = SAR Length (162) X Multiplication Factor (0.00125) X Total FCI	**0.22**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBA-AC-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 68	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	31
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.39**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.82**
	TOTAL FCU = SAR Length (68) X Multiplication Factor (0.00125) X Total FCI	**0.07**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBA-AD-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 74	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (74) X Multiplication Factor (0.00125) X Total FCI	**0.07**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
AX-S2-TRIB3-A7-TRIBB-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
320	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-15	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.72**
	TOTAL FCU = SAR Length (320) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	0
AX-S2-TRIB3-A7-TRIBB-AA-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
274	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-15	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.68**
	TOTAL FCU = SAR Length (274) X Multiplication Factor (0.00125) X Total FCI	**0.23**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A7-TRIBC-(1)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
119	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	19
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
A-15	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	1
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	27
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	28
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.76**
	TOTAL FCU = SAR Length (119) X Multiplication Factor (0.00125) X Total FCI	**0.11**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBD-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 265	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	13
	Hydrologic FCI = Subtotal / 100	**0.13**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.69**
	TOTAL FCU = SAR Length (265) X Multiplication Factor (0.00125) X Total FCI	**0.23**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBD-AA-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 86	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	8
	Hydrologic FCI = Subtotal / 100	**0.08**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (86) X Multiplication Factor (0.00125) X Total FCI	**0.06**

Representative Site Photograph:
Facing upstream

Notes:
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(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBE-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 916	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning’s n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	2
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	27
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.34**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**
	TOTAL FCU = SAR Length (916) X Multiplication Factor (0.00125) X Total FCI	**0.85**

Representative Site Photograph:
Facing upstream

Notes:
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(b) “H” = Hydrologic Functions; “WQ” = Water Quality / Biogeochemical Functions; “HB” = Habitat Functions.
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(d) FCU = Functional Capacity Unit.
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(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A7-TRIBF-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 63	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s): A-15	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 1/7/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	25
	Habitat FCI = Subtotal / 120	**0.21**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.63**
	TOTAL FCU = SAR Length (63) X Multiplication Factor (0.00125) X Total FCI	**0.05**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A7-TRIBG-(1)	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
107	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	2
Multiplication Factor *(i)* :	H4b. Channel Flow Status	2
0.00125	Hydrologic Subtotal	23
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-15	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed:	WQ2. Water Clarity	2
1/7/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	4
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor:	Water Quality / Biogeochemical Subtotal	35
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.44**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.00**
	TOTAL FCU = SAR Length (107) X Multiplication Factor (0.00125) X Total FCI	**0.13**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A10-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 219	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	4
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	27
	Hydrologic FCI = Subtotal / 100	**0.27**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	35
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.44**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.05**
	TOTAL FCU = SAR Length (219) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A10-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 221	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	12
	Hydrologic FCI = Subtotal / 100	**0.12**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	29
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.36**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	31
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.74**
	TOTAL FCU = SAR Length (221) X Multiplication Factor (0.00125) X Total FCI	**0.20**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A10-B1-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 65	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.77**
	TOTAL FCU = SAR Length (65) X Multiplication Factor (0.00125) X Total FCI	**0.06**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A10-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 259	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	42
	Habitat FCI = Subtotal / 120	**0.35**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.09**
	TOTAL FCU = SAR Length (259) X Multiplication Factor (0.00125) X Total FCI	**0.35**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A11-(1)	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
426	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	4
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	27
	Hydrologic FCI = Subtotal / 100	**0.27**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	35
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.44**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.04**
	TOTAL FCU = SAR Length (426) X Multiplication Factor (0.00125) X Total FCI	**0.55**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A12-(1)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
143	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	23
	Hydrologic FCI = Subtotal / 100	**0.23**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	34
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.99**
	TOTAL FCU = SAR Length (143) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A13-(1)	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	4
256	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	5
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	26
	Hydrologic FCI = Subtotal / 100	**0.26**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	4
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed:	WQ2. Water Clarity	0
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	33
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.00**
	TOTAL FCU = SAR Length (256) X Multiplication Factor (0.00125) X Total FCI	**0.32**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A13-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 223	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (223) X Multiplication Factor (0.00125) X Total FCI	**0.26**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A14-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 134	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	28
	Hydrologic FCI = Subtotal / 100	**0.28**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.04**
	TOTAL FCU = SAR Length (134) X Multiplication Factor (0.00125) X Total FCI	**0.17**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A14-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 321	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	19
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	35
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.44**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.96**
	TOTAL FCU = SAR Length (321) X Multiplication Factor (0.00125) X Total FCI	**0.39**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A15-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 98	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 1/8/2019	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	41
	Habitat FCI = Subtotal / 120	**0.34**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.07**
	TOTAL FCU = SAR Length (98) X Multiplication Factor (0.00125) X Total FCI	**0.13**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A16-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 149	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	22
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	36
	Habitat FCI = Subtotal / 120	**0.30**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.95**
	TOTAL FCU = SAR Length (149) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A16-(2)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 313	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	33
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.83**
	TOTAL FCU = SAR Length (313) X Multiplication Factor (0.00125) X Total FCI	**0.32**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
AX-S2-TRIB3-A17-(1)	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	2
206	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	1
	H4a. Pools	1
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	15
	Hydrologic FCI = Subtotal / 100	**0.15**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	2
A-14	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed:	WQ2. Water Clarity	1
1/8/2019	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor:	Water Quality / Biogeochemical Subtotal	28
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.75**
	TOTAL FCU = SAR Length (206) X Multiplication Factor (0.00125) X Total FCI	**0.19**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A18-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 142	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.42**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	7.5
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	35.5
	Habitat FCI = Subtotal / 120	**0.30**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.90**
	TOTAL FCU = SAR Length (142) X Multiplication Factor (0.00125) X Total FCI	**0.16**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A19-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 165	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	39
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (165) X Multiplication Factor (0.00125) X Total FCI	**0.19**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: AX-S2-TRIB3-A20-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 185	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	2
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	20
	Hydrologic FCI = Subtotal / 100	**0.20**
Reference Figure(s): A-14	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 1/8/2019	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone A	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	6
	Habitat Subtotal	37
	Habitat FCI = Subtotal / 120	**0.31**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.91**
	TOTAL FCU = SAR Length (185) X Multiplication Factor (0.00125) X Total FCI	**0.21**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 82	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	8
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	34
	Hydrologic FCI = Subtotal / 100	**0.34**
Reference Figure(s): B-3	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 11/26/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	6
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	33.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.42**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	4
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	6.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	41.5
	Habitat FCI = Subtotal / 120	**0.35**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.11**
	TOTAL FCU = SAR Length (82) X Multiplication Factor (0.00125) X Total FCI	**0.11**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-(2)	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
923	H3a. Channel Sinuosity	5
	H3b. Bottom Substrate Composition	3
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	7
	H4a. Pools	2
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	31
	Hydrologic FCI = Subtotal / 100	**0.31**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
B-1, B-3	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	2
11/26/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	37.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.47**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	2
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	7.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	39.5
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.11**
	TOTAL FCU = SAR Length (923) X Multiplication Factor (0.00125) X Total FCI	**1.28**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-(3)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
522	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	3
	H3d. Channel Incision	2
	H4a. Pools	3
Multiplication Factor *(i)* :	H4b. Channel Flow Status	3
0.00125	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
B-1	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	3
11/27/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	3
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor:	Water Quality / Biogeochemical Subtotal	33
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.41**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	38
	Habitat FCI = Subtotal / 120	**0.32**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.98**
	TOTAL FCU = SAR Length (522) X Multiplication Factor (0.00125) X Total FCI	**0.64**

Representative Site Photograph:
Facing dpwnstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-(4)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 1,112	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	3
	H3d. Channel Incision	4
	H4a. Pools	3
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	3
	Hydrologic Subtotal	37
	Hydrologic FCI = Subtotal / 100	**0.37**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 11/27/2018	WQ2. Water Clarity	3
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	4
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	40
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.50**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	3
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	3
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	5
	Habitat Subtotal	43
	Habitat FCI = Subtotal / 120	**0.36**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.23**
	TOTAL FCU = SAR Length (1112) X Multiplication Factor (0.00125) X Total FCI	**1.71**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A1-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 24	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	19
	Hydrologic FCI = Subtotal / 100	**0.19**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 11/27/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	23
	Habitat FCI = Subtotal / 120	**0.19**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.71**
	TOTAL FCU = SAR Length (24) X Multiplication Factor (0.00125) X Total FCI	**0.02**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A1-(2)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF): 854	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	8
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	8
	H4a. Pools	2
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	40
	Hydrologic FCI = Subtotal / 100	**0.40**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 11/27/2018	WQ2. Water Clarity	4
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	2
	WQ4. Composition of Organic Matter	6
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	4
Assessor: APAI	Water Quality / Biogeochemical Subtotal	37.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.47**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	4
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	4
	HB11. Riparian Zone *(e)*	5.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	38.5
	Habitat FCI = Subtotal / 120	**0.32**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.19**
	TOTAL FCU = SAR Length (854) X Multiplication Factor (0.00125) X Total FCI	**1.27**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-A1-(3)	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	1
165	H3a. Channel Sinuosity	7
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	1
	H4a. Pools	2
Multiplication Factor *(i)* :	H4b. Channel Flow Status	1
0.00125	Hydrologic Subtotal	18
	Hydrologic FCI = Subtotal / 100	**0.18**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	1
B-1	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed:	WQ2. Water Clarity	2
11/27/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	6
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	28
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	3
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	30
	Habitat FCI = Subtotal / 120	**0.25**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.78**
	TOTAL FCU = SAR Length (165) X Multiplication Factor (0.00125) X Total FCI	**0.16**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-A1-TRIBA-(1)	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	6
132	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	32
	Hydrologic FCI = Subtotal / 100	**0.32**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	6
B-1	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed:	WQ2. Water Clarity	0
11/27/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor:	Water Quality / Biogeochemical Subtotal	36
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	40
	Habitat FCI = Subtotal / 120	**0.33**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.10**
	TOTAL FCU = SAR Length (132) X Multiplication Factor (0.00125) X Total FCI	**0.18**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A2-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	3
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 532	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	28
	Hydrologic FCI = Subtotal / 100	**0.28**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 11/27/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.36**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	2
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	1.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	24.5
	Habitat FCI = Subtotal / 120	**0.20**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.84**
	TOTAL FCU = SAR Length (532) X Multiplication Factor (0.00125) X Total FCI	**0.56**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-A3-(1)	H2a. Channel Condition / Alteration	5
	H2b. Channel Capacity to Flow Frequency	7
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
175	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	29
	Hydrologic FCI = Subtotal / 100	**0.29**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
B-1	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
11/27/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor:	Water Quality / Biogeochemical Subtotal	27.5
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.34**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	2.5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	31.5
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.89**
	TOTAL FCU = SAR Length (175) X Multiplication Factor (0.00125) X Total FCI	**0.19**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A3-(3)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 299	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	8
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	28
	Hydrologic FCI = Subtotal / 100	**0.28**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 11/27/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	5.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	5.5
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	34.5
	Habitat FCI = Subtotal / 120	**0.29**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.02**
	TOTAL FCU = SAR Length (299) X Multiplication Factor (0.00125) X Total FCI	**0.38**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES	Representative Site Photograph:
SAR Name: S15-TRIB3-A3-(4)	H1. Flow Regime and Groundwater Interaction	1	No Photo Available See S15-TRIB3-A3-(3) for Reference
	H2a. Channel Condition / Alteration	4	
	H2b. Channel Capacity to Flow Frequency	6	
SAR Length (LF): 375	H2c. Channel Bank Stability *(e)*	6	
	H3a. Channel Sinuosity	3	
	H3b. Bottom Substrate Composition	1	
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1	
	H3d. Channel Incision	8	
	H4a. Pools	0	
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0	
	Hydrologic Subtotal	30	
	Hydrologic FCI = Subtotal / 100	**0.30**	
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	6	
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6	
Date Assessed: 11/27/2018	WQ2. Water Clarity	0	
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0	
	WQ4. Composition of Organic Matter	8	
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5.5	
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6	
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5	
Assessor: APAI	Water Quality / Biogeochemical Subtotal	36.5	
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.46**	*Notes:* *(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.* *(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.* *(c) FCI = Functional Condition Index.* *(d) FCU = Functional Capacity Unit.* *(e) Score shown is the average of the left and right bank scores.* *(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.* *(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.* *(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.* *(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.*
	HB1. Flow Regime	1	
	HB2. Epifaunal Substrate and Available Cover	1	
Field Notes:	HB3. Stream Bottom Substrate	3	
	HB4. Pool Variability	1	
	HB5. Sediment Deposition and Scouring	4	
	HB6. Channel Flow Status	0	
	HB7. Channel Alteration	3	
	HB8. Channel Sinuosity	3	
	HB9. Bank Stability *(e)*	6	
	HB10. Vegetative Protection *(e)*	5	
	HB11. Riparian Zone *(e)*	6	
	HB12. Riparian Habitat Condition	4	
	Habitat Subtotal	37	
	Habitat FCI = Subtotal / 120	**0.31**	
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.07**	
	TOTAL FCU = SAR Length (375) X Multiplication Factor (0.00125) X Total FCI	**0.50**	

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A3-(5)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	1
SAR Length (LF): 360	H2c. Channel Bank Stability *(e)*	1
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	2
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	2
	Hydrologic Subtotal	14
	Hydrologic FCI = Subtotal / 100	**0.14**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	1
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	1
Date Assessed: 11/27/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	7
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	8
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	28
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.35**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	2
	HB7. Channel Alteration	1
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	1
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	8
	HB12. Riparian Habitat Condition	4
	Habitat Subtotal	27
	Habitat FCI = Subtotal / 120	**0.23**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.72**
	TOTAL FCU = SAR Length (360) X Multiplication Factor (0.00125) X Total FCI	**0.32**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A3-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 216	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	2
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	3
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	4
	Hydrologic Subtotal	33
	Hydrologic FCI = Subtotal / 100	**0.33**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 11/27/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	5
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	35.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.44**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	4
	HB7. Channel Alteration	5
	HB8. Channel Sinuosity	2
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	1.5
	HB12. Riparian Habitat Condition	1
	Habitat Subtotal	38.5
	Habitat FCI = Subtotal / 120	**0.32**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**1.09**
	TOTAL FCU = SAR Length (216) X Multiplication Factor (0.00125) X Total FCI	**0.29**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name:	H1. Flow Regime and Groundwater Interaction	1
S15-TRIB3-A3-TRIBB-(1)	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	3
SAR Length (LF):	H2c. Channel Bank Stability *(e)*	5
55	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	7
	H4a. Pools	0
Multiplication Factor *(i)* :	H4b. Channel Flow Status	0
0.00125	Hydrologic Subtotal	24
	Hydrologic FCI = Subtotal / 100	**0.24**
Reference Figure(s):	WQ1a. Bank Stability *(e)*	5
B-1	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed:	WQ2. Water Clarity	0
11/27/2018	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	7
Assessor:	Water Quality / Biogeochemical Subtotal	36
APAI	**Water Quality / Biogeochemical FCI = Subtotal /80**	**0.45**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	7
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	32
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.96**
	TOTAL FCU = SAR Length (55) X Multiplication Factor (0.00125) X Total FCI	**0.07**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A4-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	4
SAR Length (LF): 69	H2c. Channel Bank Stability *(e)*	5
	H3a. Channel Sinuosity	4
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	2
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	22
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	5
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	5
Date Assessed: 11/27/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	6
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	7
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	3
Assessor: APAI	Water Quality / Biogeochemical Subtotal	34
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.43**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	5
	HB10. Vegetative Protection *(e)*	3
	HB11. Riparian Zone *(e)*	7
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	35
	Habitat FCI = Subtotal / 120	**0.29**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (69) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A5-(1)	H1. Flow Regime and Groundwater Interaction	2
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 1,088	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	6
	H4a. Pools	1
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 11/26/2018	WQ2. Water Clarity	1
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.41**
	HB1. Flow Regime	2
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	2.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	33.5
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.94**
	TOTAL FCU = SAR Length (1088) X Multiplication Factor (0.00125) X Total FCI	**1.28**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A5-TRIBA-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 264	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	22
	Hydrologic FCI = Subtotal / 100	**0.22**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 11/26/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	7
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2.5
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	5
Assessor: APAI	Water Quality / Biogeochemical Subtotal	30.5
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.38**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	5
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	5
	HB11. Riparian Zone *(e)*	2.5
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	31.5
	Habitat FCI = Subtotal / 120	**0.26**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.86**
	TOTAL FCU = SAR Length (264) X Multiplication Factor (0.00125) X Total FCI	**0.28**

Representative Site Photograph:

No Photo Available

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A6-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	4
	H2b. Channel Capacity to Flow Frequency	5
SAR Length (LF): 693	H2c. Channel Bank Stability *(e)*	4
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	6
	H4a. Pools	1
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	1
	Hydrologic Subtotal	25
	Hydrologic FCI = Subtotal / 100	**0.25**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	4
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	4
Date Assessed: 11/26/2018	WQ2. Water Clarity	2
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	1
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	2
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	4
	HB6. Channel Flow Status	1
	HB7. Channel Alteration	4
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	4
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	2
	HB12. Riparian Habitat Condition	2
	Habitat Subtotal	32
	Habitat FCI = Subtotal / 120	**0.27**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.92**
	TOTAL FCU = SAR Length (693) X Multiplication Factor (0.00125) X Total FCI	**0.80**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A7-(1)	H1. Flow Regime and Groundwater Interaction	1
	H2a. Channel Condition / Alteration	6
	H2b. Channel Capacity to Flow Frequency	6
SAR Length (LF): 472	H2c. Channel Bank Stability *(e)*	6
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	2
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	6
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	30
	Hydrologic FCI = Subtotal / 100	**0.30**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	6
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	6
Date Assessed: 11/26/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	32
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.40**
	HB1. Flow Regime	1
	HB2. Epifaunal Substrate and Available Cover	1
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	6
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	6
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	34
	Habitat FCI = Subtotal / 120	**0.28**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.98**
	TOTAL FCU = SAR Length (472) X Multiplication Factor (0.00125) X Total FCI	**0.58**

Representative Site Photograph:
Facing downstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A8-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	2
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 441	H2c. Channel Bank Stability *(e)*	3
	H3a. Channel Sinuosity	3
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	2
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)* : 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	16
	Hydrologic FCI = Subtotal / 100	**0.16**
Reference Figure(s): B-1, B-3	WQ1a. Bank Stability *(e)*	3
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	3
Date Assessed: 11/26/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	3
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	8
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	1
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	8
Assessor: APAI	Water Quality / Biogeochemical Subtotal	26
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.33**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	3
	HB4. Pool Variability	1
	HB5. Sediment Deposition and Scouring	3
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	3
	HB8. Channel Sinuosity	3
	HB9. Bank Stability *(e)*	3
	HB10. Vegetative Protection *(e)*	8
	HB11. Riparian Zone *(e)*	1
	HB12. Riparian Habitat Condition	2
	Habitat Subtotal	29
	Habitat FCI = Subtotal / 120	**0.24**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.73**
	TOTAL FCU = SAR Length (441) X Multiplication Factor (0.00125) X Total FCI	**0.40**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.

STREAM ASSESSMENT REACH (SAR) INFORMATION	SWAMPIM METRICS *(a, b, c, d)*	BASELINE SCORES
SAR Name: S15-TRIB3-A9-(1)	H1. Flow Regime and Groundwater Interaction	0
	H2a. Channel Condition / Alteration	1
	H2b. Channel Capacity to Flow Frequency	2
SAR Length (LF): 102	H2c. Channel Bank Stability *(e)*	2
	H3a. Channel Sinuosity	1
	H3b. Bottom Substrate Composition	1
Stream Classification: Ephemeral	H3c. Instream Bottom Topography OR Manning's n *(f)*	1
	H3d. Channel Incision	3
	H4a. Pools	0
Multiplication Factor *(i)*: 0.00125	H4b. Channel Flow Status	0
	Hydrologic Subtotal	11
	Hydrologic FCI = Subtotal / 100	**0.11**
Reference Figure(s): B-1	WQ1a. Bank Stability *(e)*	2
	WQ1b. Channel Bottom Bank Stability OR Channel Sediments or Substrate Composition *(e, g)*	2
Date Assessed: 11/26/2018	WQ2. Water Clarity	0
	WQ3. Nutrient Enrichment OR Presence of Aquatic Vegetation *(h)*	0
	WQ4. Composition of Organic Matter	8
	WQ5. Land Use Pattern Beyond Immediate Riparian Zone *(e)*	5
Assessment Zone: Mitigation Zone B	WQ6a. Riparian Zone Width (from stream edge to field) *(e)*	6
	WQ6b. Riparian Zone Vegetation Protection/Completeness *(e)*	2
Assessor: APAI	Water Quality / Biogeochemical Subtotal	25
	Water Quality / Biogeochemical FCI = Subtotal /80	**0.31**
	HB1. Flow Regime	0
	HB2. Epifaunal Substrate and Available Cover	2
Field Notes:	HB3. Stream Bottom Substrate	2
	HB4. Pool Variability	0
	HB5. Sediment Deposition and Scouring	1
	HB6. Channel Flow Status	0
	HB7. Channel Alteration	2
	HB8. Channel Sinuosity	1
	HB9. Bank Stability *(e)*	2
	HB10. Vegetative Protection *(e)*	2
	HB11. Riparian Zone *(e)*	6
	HB12. Riparian Habitat Condition	3
	Habitat Subtotal	21
	Habitat FCI = Subtotal / 120	**0.18**
	TOTAL FCI = Hydrologic FCI + Water Quality / Biogeochemical FCI + Habitat FCI	**0.60**
	TOTAL FCU = SAR Length (102) X Multiplication Factor (0.00125) X Total FCI	**0.08**

Representative Site Photograph:
Facing upstream

Notes:
(a) Refer to SWAMPIM Assessment Protocol Documentation (included in Appendix C of Mitigation Plan) for scoring methodology.
(b) "H" = Hydrologic Functions; "WQ" = Water Quality / Biogeochemical Functions; "HB" = Habitat Functions.
(c) FCI = Functional Condition Index.
(d) FCU = Functional Capacity Unit.
(e) Score shown is the average of the left and right bank scores.
(f) Instream bottom topography was globally used in lieu of Manning's N as it allows for a visual assessment of the stream reach.
(g) Channel Bottom Bank Stability was used globally instead of Channel Sediment/Substrate Composition because it more accurately represents the channel condition within the Lake Ralph Hall project watershed.
(h) Nutrient Enrichment was used globally for scoring because Aquatic Vegetation does not provide an accurate representation of ephemeral stream channel condition within the Lake Ralph Hall project watershed.
(i) The Multiplication Factor is determined by the stream's flow regime; the multiplication factors for Perennial, Intermittent with Perennial Pools, Intermittent, and Ephemeral Streams are 0.0038, 0.00315, 0.0025, and 0.00125, respectively.