APPENDIX X

Riparian Habitat Enhancement Opportunities

RIPARIAN HABITAT ENHANCEMENT OPPORTUNITIES ON THE SIERRA COLINA VILLAGE PROJECT SITE

This report summarizes the methods and results of an assessment of riparian habitat enhancement opportunities on the Sierra Colina Village project site. In the Draft Environmental Impact Statement (EIS) for the proposed project, mitigation measures 4.4.1-5B (Alternative 1), 4.4.2-5B (Alternative 2), 4.4.3-5B (Alternative 3), and 4.4.4-5B (Alternative 4) require the project applicant to develop and implement an enhancement plan to compensate for degradation of riparian wildlife habitat along Burke Creek as a result of proposed residential development. The amount of enhancement ranges between 0.83 (Alternative 2) and 1.13 acres (Alternatives 1, 3, and 4). The purpose of this assessment is to identify locations and enhancement prescriptions that could feasibly meet the mitigation requirement.

METHODS

On June 17, 2008, representatives from EDAW, Tahoe Regional Planning Agency (TRPA), and the project applicant surveyed the Sierra Colina Village project site to identify and map riparian habitat enhancement opportunities. The team focused on locations where riparian wildlife habitat functions were limited and could be improved through enhancement treatments (e.g., vegetation management, elimination of unauthorized trails [i.e., trails created through trespass]), as described in Table 1. Areas identified as appropriate for enhancement were mapped in the field using a Thales MobileMapper CE GPS unit; a summary of potential treatments to improve habitat function of each mapped area was recorded.

On June 24, EDAW and TRPA staff conducted a follow-up survey of the site to refine the preliminary enhancement polygons and digitally record the locations of unauthorized trails on the project site.

RESULTS

Exhibit 1 shows the locations of habitat enhancement opportunities. Table 1 summarizes the identified issues that presently limit habitat functions, habitat enhancement opportunities/treatments to address those issues, and the acreage for each polygon. Three polygons (A, B, C) where riparian habitat functions are limited and could be improved were identified and mapped on the project site. The combined size of polygons A, B, and C is 1.69 acres. Unauthorized trails outside of the polygons were also mapped and shown on Exhibit 1; decommissioning of these trails could enhance riparian habitat by discouraging pedestrian and bicycle access and facilitating natural revegetation of those locations. In the Tahoe Basin, trail decommissioning has typically been achieved through blocking and recontouring. This technique consists of: (1) installing barriers (e.g., fallen trees, rocks, or other native materials) to discourage access to existing trails; (2) breaking and loosening trail tread to facilitate natural revegetation in compacted areas, followed by recontouring where appropriate; and (3) concealing or camouflaging trail footprints and access points with fallen trees, slash, or mulch (e.g., pine needles). Signage to discourage use of decommissioned areas is sometimes installed.

Enhancement opportunities were also identified on adjacent Forest Service land east of the project site, and on land owned by Douglas County and a private land owner south of the project site. Any restoration work on either neighboring property would require the consent and cooperation of the property owner. Off-site enhancement opportunities are not shown on Exhibit 1.

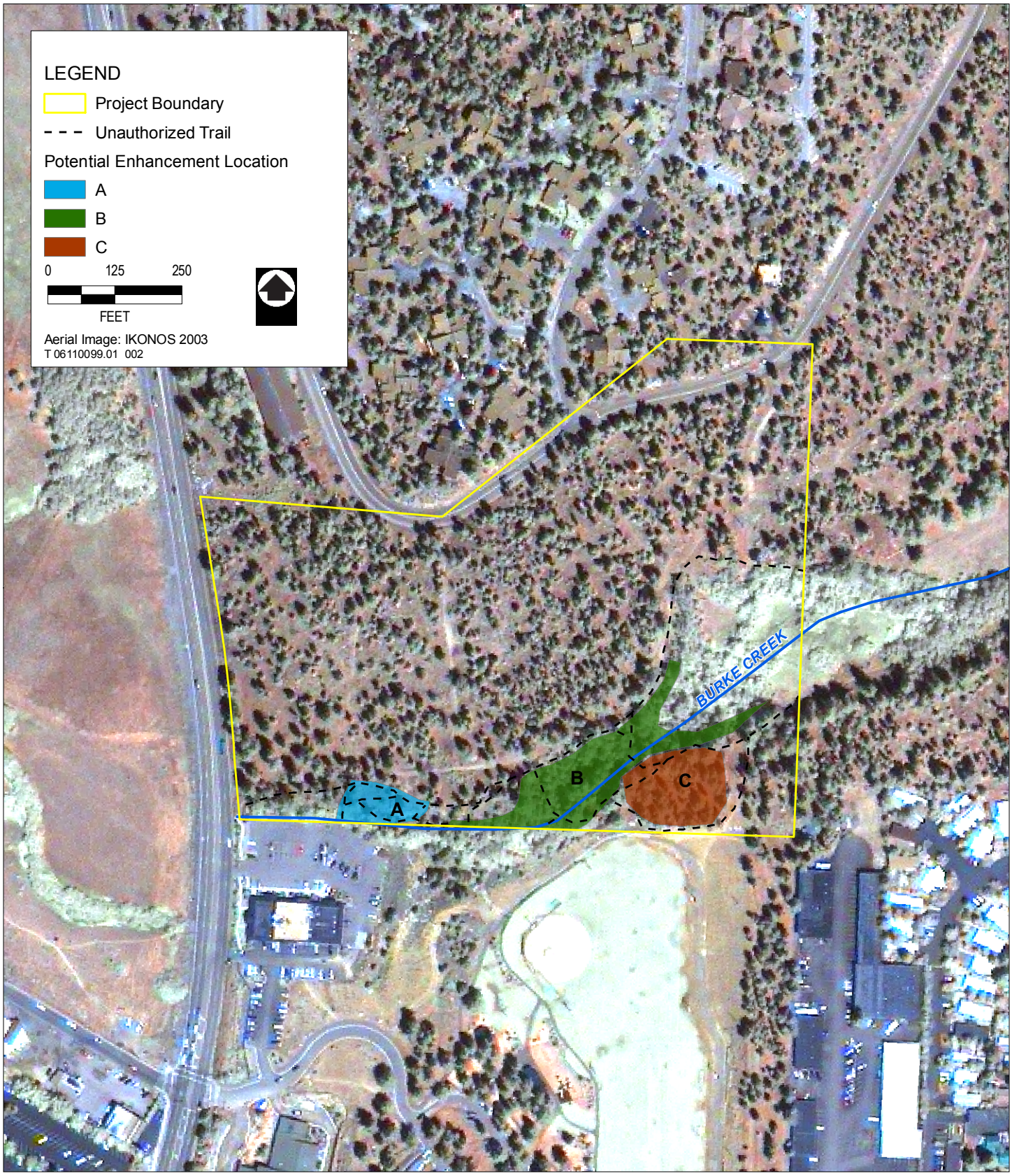
Table 1 Summary of Riparian Habitat Enhancement Opportunities				
Polygon[1]	Area (acres)	Issue Identified	Opportunity/Treatment	Potential Benefits
On Site				
A	0.24	Presence and use of unauthorized trails and disturbed stream crossings facilitates human disturbance of wildlife, increases soil compaction and prevents vegetation establishment, and degrades water quality Unauthorized foot and bicycle trail use is causing severe soil erosion Abundant debris associated with human activity is attracting bears and possibly other wildlife, and can degrade water quality	Decommission unauthorized trails and stream crossings Implement erosion control treatments including revegetation and biotechnical treatments such as willow wattles or erosion control blankets as appropriate on bare slopes in accordance with the TPRA Handbook of BMPs Remove debris within (and not embedded within or "keyed into") Burke Creek presently used as crossing structures Remove debris associated with human activity. For purposes of mitigation, this would be a one-time cleanup of large foreign items, not an ongoing maintenance activity.	Improved water quality; potential for natural revegetation of slopes Reduced access and human disturbance of wildlife within the riparian corridor
B	0.92	Conifer encroachment into aspen/montane riparian forest limits aspen and other riparian vegetation regeneration and productivity (through shading, competition for water) High volume of downed wood within riparian zone limits understory vegetation development, limits aspen regeneration, and increases fire hazard Presence and use of unauthorized trails and disturbed stream crossings facilitates human disturbance of wildlife, increases soil compaction and prevents vegetation establishment, and degrades water quality Abundant debris associated with human activity is attracting bears and possibly other wildlife, and can degrade water quality	Remove live conifers up to 20 inches diameter-at-breast height (DBH) within riparian vegetation zone Remove piles of downed wood not embedded within or "keyed into" the ground Decommission unauthorized trails within and adjacent to polygons Remove stumps and other debris within (and not embedded within or "keyed into") Burke Creek presently used as crossing structures Remove debris associated with human activity. For purposes of mitigation, this would be a one-time cleanup of large foreign items, not an ongoing maintenance activity.	Increased current and future vigor of aspen stand; reduced fire hazard Increased aspen regeneration and understory vegetation development; decreased fire risk. Reduced access and human disturbance of wildlife within the riparian corridor Improved water quality

Table 1 Summary of Riparian Habitat Enhancement Opportunities				
Polygon[1]	Area (acres)	Issue Identified	Opportunity/Treatment	Potential Benefits
C	0.53	Moderately dense fuel load (conifer trees) in upland adjacent to riparian zone contributes to fire hazard	Develop and implement fuels prescription to reduce fire hazard while maximizing retention of appropriate standing dead trees (snags) for wildlife use	Some decreased fire risk to riparian zone Note: Treating fuels in polygon C would have a less direct benefit to riparian habitat function than opportunities identified in polygons A and B, because polygon C is outside the riparian zone and conditions there do not appear to presently limit riparian habitat quality. The mitigation acreage requirement should be met by first addressing polygons A and B. However, treating fuels in polygon C would reduce fire risk to the property, including the riparian zone.
[1]The locations of labeled polygons are shown on Exhibit 1.				

CONCLUSIONS

A total of 1.69 acres of riparian habitat with enhancement potential were identified on the project site (polygons A, B, C). Appropriate measures to enhance riparian habitat include a combination of conifer tree removal, fuels reduction, erosion control treatments, trail and stream crossing decommissioning, and removal of foreign debris. Enhancement of an area to meet the mitigation acreage requirement should include as many opportunities/treatments listed in Table 1 as possible for that polygon.

Polygon B (0.92 acre) should be considered the first priority area for enhancement; the direct benefits would be greatest in this area because of its size, location (i.e., farther away from existing commercial development than other polygons), and potential for desired response to treatments. Treating upland fuels in polygon C would directly benefit riparian habitat function less than treatments identified in polygons A and B. The mitigation acreage requirement should be met by first attempting to address those polygons (A and B), then implementing treatments in polygon C, if the latter is necessary to achieve the target acreage.



Source: EDAW 2008

Potential Enhancement Locations **Exhibit 1**