

UNITED STATES DEPARTMENT OF AGRICULTURE-FOREST SERVICE  
LAKE TAHOE BASIN MANAGEMENT UNIT

Biological Assessment/Biological Evaluation  
Aquatic and Terrestrial Species

**Upper Truckee River**  
**Sunset Stables Reach Restoration Project**  
Upper Truckee River between Meyers and South Lake Tahoe, California

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## I. INTRODUCTION

The Upper Truckee River is the largest source of sediment and nutrients to Lake Tahoe. The USDA Forest Service, Lake Tahoe Basin Management Unit (LTBMU) and the California Tahoe Conservancy (Conservancy) own and manage land along the Sunset Stables Reach of the Upper Truckee River. The Sunset Stables Reach has experienced active bank failures, channel widening, and degraded aquatic, riparian and meadow habitat. As a result, the river floods its floodplain less frequently. Sediment, nutrients, and pollutants which might have been deposited on floodplain meadows are instead transported downstream and into Lake Tahoe. River widening and incision have also lowered the groundwater table, leading to meadow drying and unstable streambanks.

The purpose of this Proposed Project Action (referred to as Proposed Project for the remainder of this document) is to restore geomorphic function and floodplain connectivity to the Upper Truckee River within the Sunset Stables Reach, resulting in improved water quality and improved aquatic and terrestrial wildlife habitat in the Project Area. The Proposed Project will restore the Sunset Stables Reach channel by constructing a new, geomorphically stable channel that is hydrologically connected to the adjacent floodplain, and enhance riparian and aquatic habitat.

This **Biological Evaluation** (BE) analyzes potential effects of the Proposed Project on terrestrial and aquatic wildlife, in compliance with the National Environmental Policy Act (NEPA). The purpose of this **Biological Assessment** (BA) is to present an analysis of effects for the Proposed Project on federally listed endangered, threatened, candidate, and proposed species and their habitats. These federally listed species are managed under the authority of the Endangered Species Act (ESA) and the National Forest Management Act (NFMA; PL 94-588). The ESA requires federal agencies to ensure that all actions are not likely to jeopardize the continued existence of any federally listed species. The ESA requires that a BA be written and that the analysis conducted determine whether formal consultation or conference is required with the United States Department of Interior (USDI) Fish and Wildlife Service (FWS). This BA is prepared in compliance with the requirements of the ESA, Forest Service Manual 2670, and also provides for compliance with Code of Federal Regulations (CFR) 50-402.12.

The FWS species list is based on the January 29, 2009 (verified on May 15, 2009) list of federally threatened, endangered, proposed, and candidate species for the Lake Tahoe Basin Management Unit (LTBMU) from the U.S.D.I. Fish and Wildlife Service (USFWS; [http://sacramento.fws.gov/es/spp\\_list.htm](http://sacramento.fws.gov/es/spp_list.htm)).

On the FWS list are three threatened species:

- **Lahontan cutthroat trout** (*Oncorhynchus clarkii henshawi*)
- **Delta smelt** (*Hypomesus transpacificus*)
- **Central Valley steelhead** (*Oncorhynchus mykiss*)

Neither the Delta smelt nor the Central Valley steelhead occur on the LTBMU and are not affected by the project activities described in this BA. Therefore, these two species are considered to have a determination of “No Effect” and are not considered further in this document.

Further analysis is presented in this document to determine the effects of the two project alternatives (No Action and Preferred) for Upper Truckee River Restoration on the Lahontan cutthroat trout.

Also on the FWS list are four candidate species:

- **Yosemite toad** (*Bufo canorus*)
- **fisher** (*Martes pennanti*)
- **Sierra Nevada yellow-legged frog** (*Rana sierrae*)
- **Tahoe yellow-cress** (*Rorippa subumbellata*)

The Tahoe yellow-cress is presented in the Botanical Biological Evaluation report for this project. It was determined during the analysis for this species that it would not require technical assistance from the FWS.

The fisher and Yosemite toad do not occur on the LTBMU and will not be affected by this project thus a determination of “No Effect” was found. The Sierra Nevada yellow-legged frog occurs on the LTBMU but is not affected by this Project thus a determination of “No Effect” was found. Neither of these species required technical assistance and are not considered further in this document as federally listed or candidate species.

No critical habitat for federally-listed endangered, threatened, proposed, or candidate species has been designated on the LTBMU.

The following species will be addressed in this BE:

#### USDA Forest Service Region 5 Sensitive (Non-botanical)

##### Birds

- Bald eagle (*Haliaeetus leucocephalus leucocephalus*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Great gray owl (*Strix nebulosa*)
- Northern goshawk (*Accipiter gentilis*)
- Willow flycatcher (*Empidonax traillii*)

##### Mammals

- Townsend’s big-eared bat (*Corynorhinus townsendii*)
- California wolverine (*Gulo gulo luteus*)
- American marten (*Martes americana*)
- Sierra Nevada red fox (*Vulpes vulpes necator*)

##### Amphibians

- Sierra Nevada yellow-legged frog (*Rana sierrae*)
- Northern leopard frog (*Rana pipiens*)

## Fish

- Lahontan Lake tui chub (*Gila bicolor pectinifer*)

## Invertebrates

- Great Basin rams-horn (*Helisoma (Carnifex) newberryi*)

## II. CONSULTATION TO DATE

Of the species listed above, only the Lahontan cutthroat trout (LCT) has had consultation initiated for this project. For the other threatened and endangered species listed above it is not anticipated that consultation will be required.

On October 20, 2009 a meeting occurred between Richard Vacirca – LTBMU Forest Fish Biologist, Sarah Muskopf – LTBMU Fish Biologist, Theresa Loupe – LTBMU Hydrologist, Project Leader, and Chad Mellison - FWS Consultation Biologist. The purpose of the meeting was to review the Upper Truckee River Restoration project with the FWS, overview project objectives, and discuss project level effects for Lahontan cutthroat trout (LCT). Since 2006 LCT have been documented moving downstream from the Meiss Meadow complex and currently occupy habitat in the Upper Truckee River approximately 2 miles above the top of Christmas Valley. It was determined that although current fish surveys in the Upper Truckee River did not observe LCT residing in the project area, there is potential for the species to occupy these habitats in the future when stream restoration activities commence.

A discussion also took place concerning whether technical assistance should be requested for the Candidate species mountain yellow-legged frog (Sierra Nevada Yellow-Legged Frog - SNYLF). Both FWS & LTBMU agreed that although SNYLF physical habitat may exist within the project area but the biological habitat does not exist due to the presence of non-native salmonids. Recent amphibian surveys support that the species does not occur within the project area; therefore technical assistance would not be required.

## III. CURRENT MANAGEMENT DIRECTION

Current management direction on desired future conditions for Threatened, Endangered, Sensitive and Management Indicator Species on the LTBMU can be found in the following documents, filed at the Supervisor's Office:

- Forest Service Manual and Handbooks (FSM/H 2670)
- National Forest Management Act (NFMA)
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Lake Tahoe Basin Management Unit Land and Resource Management Plan (LRMP)
- Species specific Recovery Plans which establish population goals for recovery of those species
- Sensitive species list, accounts, and life history (LTBMU Wildlife Department Files)
- Species management plans

- Species management guides or Conservation Strategies
- Regional Forester policy and management direction
- Sierra Nevada Forest Plan Amendment (2004)
- TRPA Code of Ordinances

**IV. DESCRIPTION OF ACTION AREA AND PROPOSED ACTIONS**

This description of the Proposed Project location, existing environment and proposed action is summarized from more detailed descriptions in the Sunset Stables Restoration and Resource Management Plan (RRMP) (CTC 2008a), supporting technical studies prepared for the RRMP, and the Draft Environmental Assessment/Mitigated Negative Declaration being prepared for the Proposed Project, from which this document is tiered.

**A. Project Location**

The Proposed Project Area is located along the Upper Truckee River, about 3 miles south of Lake Tahoe near the community of South Lake Tahoe, El Dorado County, California in the SW ¼ of section 12, T12N, R18E of the USGS South Lake Tahoe Quadrangle map (Figure 1). Elevation is approximately 6260 feet. The Proposed Project Area is bounded by the Lake Tahoe Airport and Highway 50 to the west, and private property in the Tahoe Paradise residential neighborhood to the east and south (Table 1, Figure 2). The proposed work will be implemented on the Conservancy’s Sunset Stables property (a 189 acre parcel) and the LTBMU property (69 acres), which together comprise the largest undeveloped areas in the MPA (Figure 3).

The Sunset Stables Reach (Sunset Reach) of the Upper Truckee River extends approximately 2.6 miles from the Hwy 50 river crossing near Elks Club Drive northward to approximately mid-way through the South Lake Tahoe Airport runway. The Sunset Stables Reach includes two separate channel reaches of the Upper Truckee River (Reaches 5 and 6), distinct from one another because of differences in physical channel and floodplain characteristics.

<b>Table 1 Ownership in Proposed Project Area</b>	
<b>Landowner</b>	<b>Acreage</b>
California Tahoe Conservancy	222.07
U.S. Forest Service LTBMU	68.71
City of South Lake Tahoe	2.40
Other public ownership	1.27
Private	1.90

**B. Existing Terrestrial Environment**

The Proposed Project Area encompasses a diverse array of habitats that support a variety of resident and migratory wildlife species, both native and non-native (CTC 2004). Eighty-seven common species and 32 special-status species are known to occur or

potentially occur at the site. Surveys have documented 56 terrestrial species, including 44 birds, nine mammals, two reptiles, and one amphibian (Borgmann et al. 2008, TRCD 2003, CTC 2004). Significant habitat features of the Proposed Project Area include approximately 2.6 miles of river channel, 98.3 acres of wet montane meadow habitat, and 144.4 acres of coniferous forest. A description of the habitat types in the Proposed Project Area is presented in Table 2 (CTC 2005b&c). Figure 4 maps the vegetation communities and Figure 5 depicts terrestrial habitat features.

Montane Riparian Scrub (Holland code # 63500). The montane riparian scrub in the Proposed Project Area is dominated by various species of willow and contains several species of sedges (*Carex* spp.) Montane riparian scrub occurs adjacent to the stream channel and, in a few cases, on slopes where soil moisture is adequate.

Aspen Forest (Holland code # 61520). Small aspen stands occur on the eastern side of the Proposed Project Area as linear patches within Jeffrey pine, Jeffrey pine/fir, and lodgepole pine forest along meadow edges and seeps where moist soil conditions exist. The herb layer includes such species as western columbine (*Aquilegia formosa*), Fendler’s meadow rue (*Thalictrum fendleri*), California corn lily (*Veratrum californicum* var. *californicum*), sedges, Richard’s geranium (*Geranium richardsonii*), and rein bog orchid (*Platanthera leucostachys*). Conifer encroachment is a concern for the aspen stands and meadows (CTC 2005c).

Cover Type	Acreage	Percent of Total (%)
Aspen Forest	0.8	0.27%
Big Sagebrush Scrub	8.2	2.79%
Developed	4.1	1.39%
Jeffrey Pine Forest	65.8	22.34%
Jeffrey Pine/Fir Forest	23.3	7.91%
Jeffrey Pine Forest associated with Urban Development	0.1	0.03%
Lodgepole Pine Forest	55.2	18.74%
Montane Riparian Scrub	18	6.11%
Open Ground	4.0	1.36%
Ruderal	6.1	2.06%
Water	10.7	3.64%
Wet Montane Meadow	98.3	33.36%
<b>Total</b>	<b>294.6</b>	<b>100%</b>

Source: El Dorado County 2003 and California Tahoe Conservancy

Wet Montane Meadow (Holland code #45110). The wet meadows within the Proposed Project Area are dominated by sedges including Nebraska sedge (*Carex nebrascensis*) and slender-beak sedge (*Carex athrostachya*). Long-stalked clover (*Trifolium longipes*), dandelion (*Taraxacum officinale*), leafy arnica (*Arnica chamissonis*), water miners lettuce (*Montia chamissoi*), narrowleaf miners lettuce (*Montia linearis*), and cinquefoil (*Potentilla gracilis*) are also common. Much of the wet montane meadow seems to be in transition toward dry montane meadow, it is unclear if these communities are supported by surface water or by groundwater (TRCD 2003, CTC 2005b).

Jeffrey Pine Forest (Holland code # 85100). Jeffrey pine forest was the predominant forest type within the Proposed Project Area. This community type is dominated by Jeffrey pine (*Pinus jeffreyi*), interspersed with white fir (*Abies concolor*) and incense cedar (*Calocedrus decurrens*). Lodgepole pine (*Pinus contorta* ssp. *murrayana*) was found in areas that collect more moisture. The understory is dominated by gooseberries and currants (*Ribes* spp.), service-berry (*Amelanchier alnifolia* var. *pumila*), and Sierra chinquapin (*Chrysolepis sempervirens*).

Jeffrey Pine/Fir Forest (Holland code #85210). Jeffrey pine/fir forest occurs on drier slopes and flats and on coarse soils. Jeffrey pine and white fir dominate the tree layer, but lodgepole pine is also common.

Lodgepole Pine Forest (Holland code # 86100). Lodgepole pine forest is found on moist sites such as creek banks and meadow margins within the Proposed Project Area.

Big Sagebrush Scrub (Holland code #35210). Big sagebrush scrub occurs as small patches in the Proposed Project Area. This cover type is dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). Rubber rabbitbrush (*Chrysothamnus nauseosus*) and bitterbrush (*Purshia tridentata*) are the common associates of this community in the Proposed Project Area.

Developed Ground. Developed ground includes locations with man-made structures and the vegetation associated with those structures. Areas of housing developments are located on the south end and east side of the study area and the Proposed Project Area. The developed ground includes houses and other buildings and roads.

Ruderal Vegetation. Ruderal vegetation occurs in areas where vegetation is subject to routine disturbance. Invasive plants are often found in these areas as well as pioneer native species. Ruderal vegetation occurs within the Proposed Project Area at locations including roads and trails, the former stables parking area by the gate, a snowmobile staging area, and a former equestrian jumping ring.

### **C. Existing Aquatic Environment**

Aquatic habitat is predominantly flowing water composed of riffles, runs, and pools (CTC 2005a). A few backwater areas and side channels may contain standing water seasonally. The substrate is dominated by sands and small gravel. The gravel is often a

thin veneer over hardpan clay or embedded with sand and is poor habitat for benthic macroinvertebrates or substrate-spawning fish such as trout. Some sections of Reach 5 have eroded down to the clay hardpan with overlying silts. Additionally, water temperature fluctuations may be extreme during summer due to low flows or lack of stream shading vegetation. Aquatic habitat conditions are fair to poor due to homogenous channel conditions (i.e. too few pools and riffles), lack of riparian vegetation, limited substrate quality, lack of cover (e.g., undercut banks), actively eroding banks, and limited depth during the summer low flow period (CTC 2005b). Many of these attributes are a result of an incised channel. It is anticipated that the Proposed Project will ultimately improve fish habitat by restoring the overall function of a montane wet meadow stream while maintaining a diversity of habitats that may be utilized by a diverse assemblage of aquatic species.

Fish surveys conducted in 2005 and 2006 documented nine species in the Proposed Project Area, including native species (Lahontan redband [Richardsonius egregius], Lahontan speckled dace [Rhinichthys osculus robustus], tui chub [Siphateles bicolor], Paiute sculpin [Cottus beldingi], mountain whitefish [Prosopium williamsoni], and Tahoe sucker [Catostomus tahoensis], mountain sucker [Catostomus platyrhynchus]) and introduced trout (rainbow trout [Oncorhynchus mykiss], brown trout [Salmo trutta] and brook trout [Salvelinus fontinalis]) (CTC 2005a, 2007b). Lahontan cutthroat trout were extirpated in the 1930's and have been replaced by rainbow trout, brook trout, and brown trout (CTC 2004). (CTC 2005a, 2007b).

#### **D. No Action**

Under the No Action alternative restoration efforts to restore natural stream functions in Reach 5 and 6 of the Upper Truckee River would not be implemented. Current conditions would continue within the project area. No restoration actions to reduce sediment loads entering Lake Tahoe, restore floodplain connectivity, improve terrestrial and aquatic habitat, or increase groundwater levels would be implemented to accomplish the purpose and need in the project area.

#### **E. Proposed Action**

The Proposed Project would restore natural function to the Sunset Stables Reach of the UTR by constructing a new river channel that is geomorphically stable under the current hydrologic conditions, is hydrologically connected to the adjacent floodplain, and exhibits desirable aquatic habitat features (Figure 5). In addition, the former Sunset Stables site would be revegetated with native vegetation to reduce erosion and sedimentation into the UTR.

The proposed restoration activities would result in a channel width, depth, and sinuosity pattern more consistent with the current flow and sediment transport needs of the river. This would be accomplished primarily through new channel construction, and would also involve abandoning, filling, and revegetating the existing eroding and incised channel. The newly constructed channel would be smaller (narrower and shallower) than the

existing channel and would be designed to be more resistant to erosion by improving streambank stability and incorporating more variable channel bed substrate.

The streambanks of the new channel would be stabilized with sod blocks, riparian vegetation planting, and/or large wood and rock placement. As a result, sediment production from streambank erosion would be reduced, thereby decreasing the sediment contributions to Lake Tahoe from this source. Additionally, the restored channel would sustain coarser substrate in riffles and provide a stream habitat more conducive to the production of native fish species. Some portions of the Sunset Stables Reach channel would stay in their existing location and act as transition zones and/or grade control structures between upstream and downstream reaches.

The reduced channel size (i.e. width and depth) would also result in more frequent overbank flooding (every year or two), depositing more sediment and nutrients onto the floodplain rather than transporting them downstream and to Lake Tahoe. The reduced channel depth would raise the bed elevation, and would in turn raise the groundwater table in the adjacent meadow. This would benefit the wet meadow vegetation and improve the riparian and meadow habitat quality. Several resources would benefit from the proposed channel and floodplain restoration, including; water quality, terrestrial and aquatic wildlife species, and terrestrial (riparian and meadow) and aquatic vegetation.

The Proposed Project would involve:

- Constructing approximately 12,000 feet of new channel within the Sunset Stables Reach of the Upper Truckee River (replacing nearly all of Reach 5 and much of Reach 6).
- Planting and temporarily irrigating native riparian vegetation along both sides of the new channel (approximately 24,000 feet).
- Creating floodplain features such as willow clumps that enhance suitable habitat for key wildlife and plant species (approximately 20 acres distributed across the Proposed Project Area).
- Removing conifers in and adjacent to the newly constructed channel (approximately 20 acres of conifer removal throughout the Proposed Project Area).
- Using a combination of excavated soil from the new channel alignment and possibly imported soil to partially fill the existing oversized channel, and revegetating the disturbed area with native riparian plant species (majority of the abandoned channel would be filled and revegetated in this way).
- Installing grade control structures at the upstream and downstream ends of the reach, redirecting flow into the new channel, and blocking off the existing channel to prevent recapture.

In order to minimize potential impacts on existing infrastructure, the alignment of the new channel was designed to avoid water and sewer pipelines. The South Tahoe Public Utilities District (STPUD) holds easements for location and access to its sanitary sewer

collector lines (gravity-fed), water line (pressurized line), and back-up effluent export line (also called “force main export line”) on the Proposed Project Area. The main collector line and the back-up effluent export line run along the eastern side of the meadow and cross the river where the river channel runs east across the meadow (Figure 6). Several gravity sewer lines and the water line also cross the river channel.

The Proposed Project would be constructed in two phases to accommodate constraints in land ownership, funding and construction: Reach 5 (LTBMU and Conservancy lands) and Reach 6 (Conservancy land). At this time, Reach 5 is anticipated to be constructed first, followed after at least one year by Reach 6 construction. Each phase would last approximately three to four years in order to allow sufficient time for the new channel and floodplain to establish vegetation for the Upper Truckee River. Figure 6 shows the location of access roads and potential areas for staging and dewatering. The construction sequence is as follows:

- Year One** In Reach 5 only, lower the buried STPUD water and backup effluent export lines where the new channel will cross them so as not to compromise the integrity of the buried utilities. This will be completed prior to starting the construction of the new channel.
- Year Two** Excavate the new channel in the selected reach. Plant with native riparian vegetation and install irrigation.
- Year Three** Allow the new channel to “season” and continue irrigation to establish riparian vegetation (only if necessary in Reach 5).
- Year Four** Construct the crossings of the existing channel and new channel, and the tie-ins to the upstream and downstream ends of the Proposed Project reach. Connect the new channel to river flow in the fall. Monitor performance of banks. Backfill the old channel, recontour and revegetate.

This phasing of project implementation reduces potential cumulative impacts of having adjacent reaches exposed during the same year. Depending on the start date of Reach 6 construction, the Proposed Project could be completed in 4-7 years.

## **F. Design Features**

Following is a list of design features and mitigation measures that will be included in the Proposed Project actions to either protect or benefit wildlife species:

### *Design Features*

- During project implementation any detection of listed species, sensitive species, or special status wildlife species, or location of nest or dens of these species will be reported to a LTBMU or TRPA biologist. These nest or den locations will be protected in accordance with the SNFPA (2000, 2004) and the Environmental Threshold Carrying Capacities for the Lake Tahoe Region guidelines (TRPA 1982) or the MBTA.

- Prior to project implementation, surveys for willow flycatchers would be conducted to determine the locations of any active nest sites. On NFS lands, any detection of willow flycatcher nests would be reported to the LTBMU Forest Wildlife Biologist. These willow flycatcher nests would be protected in accordance with the SNFPA (2004) which prohibits restoration activities within suitable habitat surrounding the active nest sites between June 1 and August 31. On CTC lands, any detection of nests would be reported to the CDFG and LTBMU and nests would likewise be protected.
- In order to minimize the impact on the willow community, clipping should take place in a random fashion, taking more from larger clumps and less from smaller clumps. Clipping in a single willow clump should not be great enough to alter the visual shape or the overall structure of the clump. No branches attached to a bird nest or within one meter of any part of a bird nest should be clipped.
- All trash created during construction will be properly contained (wildlife-proof containers) and removed at the end of each day.
- Retain/add downed wood in the open meadow areas where feasible for native amphibian and small mammal species. Density should be approximately three logs of >30 cm diameter at midpoint per 0.4 ha.
- Salvage/retain large trees for wildlife habitat, future large wood recruitment, and to create snags in the future, unless removal is necessary for construction of the channel or access routes.
- Tree and snag removal within the wildlife movement corridor (forested land south of the airport) would be limited to trees within the footprint of the new channel or access routes. Access routes would be positioned around existing trees and snags to avoid tree removal to the extent practical. Logs and brush piles would be left within the corridor area to provide wildlife cover when it would not constitute a hazard to people or property. Conifer removal for the new channel alignment and access and haul roads would be minimized in the wildlife movement corridor area (forested area south of the airport), only those trees that are in the direct alignment of the channel or access road or that are a hazard to safe operations would be removed. When not a hazard to people or property, larger logs and snags would be purposely retained within the Project Area to provide habitat for wildlife that depend on them for perches, nesting, or cover.
- Construction activities would be phased and managed so as not to present a continuous barrier to wildlife movement. Construction time would be minimized in migration corridors to complete constructing within a matter of days. Construction would only occur during summer daylight hours. Equipment and materials would not be stored in or near wildlife movement corridors and restoration-related human activity would be minimized within known migration corridors
- Construction activities would be scheduled to avoid upstream fish migration periods (after late June to mid-July depending on the water year).
- Western pearl shell Mussels (*Margaritifera falcata*) will be removed from the active river segment prior to diverting channel flow into the newly constructed channel. To

the extent feasible, mussels will be relocated to similar habitat areas which have similar depth, substrate, and geomorphic setting (i.e. edge of pool, center of run, under overhanging bank) as the site from which they are removed or to another location deemed suitable because of the presence of other mussels. The extent of the removal will be determined in the field by Forest Service aquatic biologist in consultation with CDFG biologists and will take into consideration the mussel population within and outside of the segments to be dewatered relative to the mussel population in other parts of the Upper Truckee River.

- Salvage/recovery of fish will be conducted during dewatering of existing channel segments by electro-shocking or other suitable means as developed through consultation with the California Department of Fish and Game and LTBMU fisheries staff. Fish will be moved approximately 500 -700 feet upstream or downstream of project activities. Block nets will be installed to ensure fish do not move back into the segments to be dewatered. Block nets will be cleaned one to two times daily to ensure the nets are working correctly.
- Temporary haul roads will be constructed for transport of fill and/or stockpiling material where it crosses into the SEZ. These roads are anticipated to be constructed of geotextile fabric topped with sand, or an alternative with equal or lesser impacts. Haul roads will be temporary and will be removed and restored to their preconstruction condition, including decompaction and revegetation as needed.
- A SWPPP will be created as part of the NPDES requirements for projects larger than one acre in size. An erosion control and BMP plan will be included within the SWPPP. BMPs and the erosion control plan described in the approved SWPPP would be implemented during project activities. These measures may include but will not be limited to: silt fences, straw wattles, water filled berms, mulching, dewatering pumps, gravel/sand bags, storm water drainage system, construction fencing, and revegetation
- Stockpiled and transported material will be covered and/or kept visibly moist to control fugitive dust emissions, stormwater runoff, and wind erosion.
- Disturbed areas, such as staging areas and access road footprints, will be revegetated or stabilized as needed once construction is complete. Specifications for this work will be included in the construction drawings.
- Localized pumping will be used to clear the construction area of turbid standing water resulting from the excavation of saturated soils and intercepted stormwater. Pumped water would be used to irrigate planted vegetation or sod borrow areas, sprayed on the meadow surface or uplands to allow infiltration at the Project site, held in Baker Tanks, or treated to remove suspended sediment to comply with the requirements of the permit prior to discharging to the river.

During drafting activities, a screen will be placed over the drafting siphon to avoid impacts to juvenile fish.

- Water drafting sites should be located in areas that will avoid adverse effects to stream flows and depletion of pool habitat. If instream flows or water drafting sites are not sufficient due to a lack of water, water would be obtained from local

municipal water hydrants. Water drafting sites will be reviewed by a hydrologist or fisheries biologist every two weeks during low flow periods and determinations made regarding adequate minimum flows. If flows are not adequate for instream needs, drafting will be discontinued.

## **V. POTENTIALLY AFFECTED SPECIES AND EFFECTS OF THE PROPOSED ACTION**

The Proposed Project assessment considered Region 5 sensitive (non-botanical) species and threatened and endangered (non-botanical) species. Fourteen (14) special-status wildlife species were initially identified as potentially occurring in the Proposed Project Area (Table 3): two (2) fishes, one (1) invertebrate, two (2) amphibians, five (5) birds, and four (4) mammals. Of these, 7 species are not expected to occur within the Proposed Project Area due to range, elevation, and/or habitat limits.

This section analyzes the direct and indirect effects of the Proposed Project on the eight species that occur and/or have potential habitat in the Proposed Project Area: northern goshawk, willow flycatcher, California spotted owl, Townsend's big-eared bat, American marten, Lahontan cutthroat trout, and Great Basin rams-horn snail. The cumulative effects analysis considers present and future projects anticipated in the Upper Truckee River watershed. Projects considered in species-specific cumulative effects analyses are listed below in Table 4.

In general, cumulative projects within the Tahoe Basin that are listed in Table 4 would include, but not be limited to new development, water quality protection projects, recreation projects, and restoration projects. These projects could involve removal and/or modification of areas that have the potential to contain special-status species and sensitive natural communities. Many of these projects would be beneficial and restorative in the long term, through improving channel form and geomorphic processes of the UTR and reducing erosion and enhancing and protecting wildlife habitats within the Tahoe Basin. However, as development in the Region continues, sensitive wildlife species native to the Region and their habitats, including those species listed under State and Federal ESA's could be impacted by the combined action of these projects in conjunction with any effects generated by the Proposed Action.

Species not expected to occur in the Proposed Project Area will not be discussed further in this assessment (see Table 3 for a more detailed description of why these species are not expected to occur). These 14 species include: bald eagle, osprey, great grey owl, yellow-headed blackbird, Sierra Nevada mountain beaver, California wolverine, Sierra Nevada snowshoe hare, Sierra Nevada red fox, American badger, Mount Lyell salamander, northern leopard frog, Sierra Nevada yellow-legged frog, Lahontan Lake tui chub, and Lake Tahoe benthic stonefly.

<b>Table 3. Special-status wildlife species potentially occurring in the Lake Tahoe Basin, occurrence of habitat in the Proposed Project Area, and habitat characteristics</b>				
<b>SPECIES</b>	<b>STATUS</b>	<b>HABITAT CHARACTERISTICS</b>	<b>HABITAT PRESENT?</b>	<b>RATIONALE FOR DETERMINING NO HABITAT</b>
<b>Birds</b>				
<i>Accipiter gentilis</i> Northern goshawk	FSS,	Mature coniferous forests with open understory and dense canopy for roosting and nesting. Mature coniferous forest interspersed with open meadows for feeding	Potential	-
<i>Empidonax trallii</i> Willow flycatcher	FSS,	Nests in extensive montane willow thickets 2,000-8,000 feet elev.	Potential	-
<i>Haliaeetus leucocephalus</i> Bald eagle	FSS	Coniferous and conifer/hardwood forests near large bodies of open water	No habitat	No large bodies of open water in the Project area.
<i>Strix nebulosa</i> Great grey owl	FSS	Breeds in old-growth red fir, mixed conifer, or lodgepole pine habitats, always in the vicinity of wet meadows	No habitat	Not known to occur in the Tahoe basin.
<i>Strix occidentalis occidentalis</i> California spotted owl	FSS	Mature conifer forests with suitable nest sites or foraging areas	Potential	-
<b>Mammals</b>				
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	FSS	Desert scrub, chaparral, oak woodland, and conifer forest. Roosts in caves, mines, buildings, and large trees.	Potential	-
<i>Gulo gulo luteus</i> California wolverine	FSS	Montane conifer, subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats. Prefer areas with low human disturbance.	No habitat	Human disturbance in the Project Area creates unsuitable conditions.
<i>Martes americana</i> American marten	FSS	Mature coniferous forests with closed canopy.	Potential	-
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	FSS	Coniferous forests above 5,000 feet, often associated with montane meadows.	No habitat	Believed to be extirpated from the Tahoe basin.

<b>Table 3. Special-status wildlife species potentially occurring in the Lake Tahoe Basin, occurrence of habitat in the Proposed Project Area, and habitat characteristics (continued)</b>				
<b>SPECIES</b>	<b>STATUS</b>	<b>HABITAT CHARACTERISTICS</b>	<b>HABITAT PRESENT?</b>	<b>RATIONALE FOR DETERMINING NO HABITAT</b>
<b>Fish</b>				
<i>Gilia bicolor pectinifer</i> Lahontan lake tui chub	FSS	Large, deep lakes of the Lahontan basin. Algal beds in shallow, inshore areas for spawning, egg incubation, larval rearing.	No habitat	No large, deep lakes in the Project Area.
<i>Oncorhynchus clarkii henshawi</i> Lahontan cutthroat trout	FT	Lakes and streams of the Lahontan basin.	Potential	-
<b>Amphibians</b>				
<i>Rana pipiens</i> Northern leopard frog	FSS	Quiet permanent or semi-permanent aquatic habitat with emergent and submergent vegetation.	No habitat	The Lake Tahoe basin is not in the historic range of northern leopard frog (Jennings et al. 2004).
<i>Rana sierrae</i> Sierra Nevada yellow-legged frog	FSS	Inhabits ponds, tarns, lakes, and streams at moderate to high elevations.	No habitat	No suitable habitat exist in the Project Area because of the persistence of introduced predatory aquatic species.
<b>Invertebrates</b>				
<i>Helisoma (Carminifex) newberryi</i> Great Basin rams-horn	FSS	Larger lakes and slow rivers, including larger spring sources and spring-fed creeks. Snails burrow in soft mud.	Potential	-
<b>Status explanations:</b> FSS = LTBMU Sensitive Species, Regional Forester's Sensitive Species List, Region 5 California State List: CSC = CA Special Concern; CE = CA Endangered; CT = CA Threatened; CFP = CA Fully Protected Federal List (USFWS): FC = Candidate for listing; FE = Endangered; FT = Threatened				

Sources: CDFG 2008; USFWS 2008; USDA Forest Service 2008

<b>Table 4 - List of Related Projects in the Upper Truckee River Watershed and the South Shore Area</b>	
<b>Name</b>	<b>Description and Status</b>
<b>River and Stream Restoration Projects</b>	
Upper Truckee River Restoration and Golf Course Reconfiguration Project	<b>Description:</b> This State Parks and Reclamation project would occur in the Upper Truckee watershed at the Washoe Meadows State Park and Lake Valley State Recreation Area, which are located on the west side of U.S. 50 just south of Sawmill Road in Meyers. Project alternatives include combinations of floodplain and channel restoration, and golf course reconfiguration or modification. <b>Status:</b> An EIR/EIS/EIS is currently being prepared for the project and construction could begin in 2010, and would last for 2 years (with most channel work occurring during one season).
Upper Truckee Middle Reaches 3 and 4 Restoration Project	<b>Description:</b> This project proposed and being implemented by CSLT and US Army Corps of Engineers with funding from the Conservancy and Reclamation will be located along the Upper Truckee River from roughly 0.5 mile northeast of the northern runway limit of the Lake Tahoe Airport to approximately the midpoint of the runway. A new channel was constructed and revegetated in 2008, and in the third year the river's flow will be diverted into the new channel, and the abandoned channel will be backfilled and revegetated. <b>Status:</b> Construction was constructed in 2008 and is undergoing revegetation with final construction for connecting the channel expected in 2011 .

<b>Table 4 - List of Related Projects in the Upper Truckee River Watershed and the South Shore Area (continued)</b>	
<b>Name</b>	<b>Description and Status</b>
Upper Truckee River Middle Reaches 1 and 2 Stream Restoration Project	<p><b>Description:</b> This project proposed by the Conservancy and the TRCD would be located from U.S. 50 upstream to the vicinity of the South Lake Tahoe Airport, and just downstream of the Upper Truckee Middle Reaches 3 and 4 Restoration Project. It would restore this reach by recontouring and revegetating channel banks and filling a gully channel.</p> <p><b>Status:</b> Environmental review has begun for the project and a MND/IS, and EA/FONSI are anticipated. Construction could begin in 2010 and would last for 2 years, and in-channel work is anticipated to last for approximately 1 construction season.</p>
Upper Truckee River and Marsh Restoration Project	<p><b>Description:</b> This project proposed by the Conservancy and RESD would be located along the most downstream reach of the Upper Truckee River from U.S. 50 to where the river connects to Lake Tahoe. It would restore this reach by creating an inset floodplain, narrowing and aggrading the channel, or by creating a new channel, depending on the project alternative implemented. The project also includes recreation and access improvements.</p> <p><b>Status:</b> Schematic plans and preparation of an EIR/EIS/EIS are in progress. Construction could begin in 2010 and would last for 3 years, and in-channel work could last approximately 2.5 construction seasons.</p>
Lahontan Cutthroat Trout Upper Truckee River Expansion Project	<p><b>Description:</b> The purpose is to assist range expansion of LCT from Meiss Meadow source in the headwaters of the Upper Truckee River. The USFS would reclaim 10 miles of stream and 85 acres of small lake habitat by remove introduce brook trout that compete with LCT.</p> <p><b>Status:</b> The LCT UTR Expansion Project was initiated in 2008 and will continue through 2014.</p>
Angora Creek Restoration Project	<p><b>Description:</b> This project proposed by the USFS would restore approximately 3,000 ft of Angora Creek and the associated floodplain just upstream of the Lake Tahoe Blvd crossing.</p> <p><b>Status:</b> The project is undergoing environmental review as part of the Angora Fire Long-term Restoration Project. Construction activities could begin in 2011, and continue through 2012.</p>
South Shore Fuel Reduction and Healthy Forest Restoration Project	<p><b>Description:</b> This project by USFS LTBMU would reduce fuel hazards and restore ecosystem health through vegetation treatments on approximately 10,000 acres in the South Shore of Lake Tahoe, including treatments in the Upper Truckee River watershed. The Proposed Project would include vegetation management treatments on approximately 2,500 acres each year for 4 years.</p> <p><b>Status:</b> A Final EIS is anticipated to be completed in the summer or fall of 2010. Implementation could begin as early as fall of 2010 and continue for at least 4 years.</p>
High Meadows Forest Plan Designation; Ecosystem Restoration; and Access Travel Management Project	<p><b>Description:</b> This project by the USFS would be located in 1,790 acres in the upper Cold Creek watershed, which is part of the Trout Creek watershed. It could include creation of new channels and associated floodplain on the Mainstem, East Fork, and North Fork of Cold Creek; removal and fill of diversion ditches; removal of lodgepole pines; rerouting and decommissioning of roads and trails, and redesign of stream crossings by roads and trails to reduce effects on aquatic ecosystems.</p> <p><b>Status:</b> The project has been undergoing environmental review. Construction activities could begin in 2009 and could continue through 2011.</p>
<b>Erosion Control and Water Quality Projects</b>	
Sierra Tract Erosion Control Project	<p><b>Description:</b> This project proposed by the CSLT with funding from the Conservancy and USFS is located in the Sierra Tract Subdivision in the Trout Creek watershed in the City of South Lake Tahoe. It entails construction of a stormwater conveyance and treatment system, and stabilization of roadsides with vegetation. This project has been structured into 5 phases.</p> <p><b>Status:</b> Construction of Phase 1 began in 2007 and this phase is still being implemented. Phase 2 has already been constructed. Phase 3 is being planned and designed and may be constructed in 2009. Planning and design of Phases 4 and 5 have not yet begun, but construction is expected in 2010 and 2011, respectively.</p>

<b>Table 4 - List of Related Projects in the Upper Truckee River Watershed and the South Shore Area (continued)</b>	
<b>Name</b>	<b>Description and Status</b>
Al Tahoe Erosion Control Project	<p><b>Description:</b> This project by the CSLT with funding from the USFS would be implemented in 320 acres of the Al Tahoe neighborhood in the Trout Creek watershed in the City of South Lake Tahoe, adjacent to the project site for the Upper Truckee River and marsh restoration project. Using a variety of measures, the project would treat runoff from 41–77% of the project area, depending on the project alternative implemented. Treatment measures differ among project alternatives and may include discouraging parking, local revegetation, placement of riprap, curb and gutter, protection of road shoulders with permeable pavement, and other measures.</p> <p><b>Status:</b> Project alternatives are under development. Construction could begin in 2009, and continue until 2014 or 2015.</p>
El Dorado U.S. 50 Segment 2–Lake Tahoe Airport to U.S. 50–SR 89 Junction Water Quality Improvement Project	<p><b>Description:</b> This project by Caltrans would be located in the watershed of the Upper Truckee River on U.S. 50 from the Lake Tahoe Airport to the junction of U.S. 50 and SR 89 in the City of South Lake Tahoe. It would provide containment, or treatment, or both of stormwater runoff from this segment of U.S. 50.</p> <p><b>Status:</b> An IS/ND has been prepared and construction could begin in 2010, and continue until 2012</p>
El Dorado SR 89, Segment 1–Luther Pass to Meyers Water Quality Improvement Project	<p><b>Description:</b> This project by Caltrans would be located on SR 89 from Luther Pass to the intersection with U.S. 50 in Meyers. It would provide containment, or treatment, or both of stormwater runoff from this segment of SR 89.</p> <p><b>Status:</b> An IS/ND has been prepared and construction has begun, and could continue until 2014.</p>
Montgomery Estates Phases 1, 2, and 3 Water Quality Project	<p><b>Description:</b> This project proposed by El Dorado County with funding from the Conservancy and USFS would be located in the watershed of Trout Creek in the City of South Lake Tahoe. It would implement various slope stabilization, infiltration, sediment trapping, and channel or road source treatment BMPs to reduce the amount of sediment discharging into Cold or Trout Creeks.</p> <p><b>Status:</b> Project alternatives are being formulated and evaluated. Construction of Phase 1 could begin in 2010. At least two more years of construction will be required for Phases 2 and 3, but these phases are on hold and thus their construction may not immediately follow Phase 1.</p>
Cold Creek Fisheries Project	<p><b>Description:</b> This project by El Dorado County and the Conservancy would be located at and upstream from the intersection of Pioneer Trail with Cold Creek, which is in the watershed of Trout Creek. Within this area, the project would remove or improve all man-made fish barriers, and evaluate and if necessary remove debris jams and beaver dams.</p> <p><b>Status:</b> Project alternatives are being formulated and evaluated. Construction occurred in 2010.</p>
Angora 3A and 3B Water Quality Project	<p><b>Description:</b> The project by the EDOT with funding from the Conservancy, El Dorado County, TRPA, Bureau of Reclamation, and USFS would be located in an approximately 45-acre area along Angora Creek. The project would implement measures to reduce the quantity of fine sediment reaching Angora Creek and to reduce the peak flow of stormwater reaching Angora Creek during large storm events.</p> <p><b>Status:</b> The project was construction in 2008 and is in the process of revegetation.</p>
Apalachee 3B – Water Quality Project	<p><b>Description:</b> This project by the EDOT with funding from the Conservancy, El Dorado County, TRPA, and USFS would be located in El Dorado County in the Tahoe Paradise Addition Units 4 and 5 off of Pioneer Trail in the Upper Truckee River and Trout Creek watersheds. It would increase retention and infiltration of runoff from impervious surfaces during large storm events. It also would stabilize eroding cut slopes and roadside drainage ditches, and treat runoff before it discharges into Trout Creek and the Upper Truckee River.</p> <p><b>Status:</b> The project has gone out to bid. Construction could began in 2008 and is anticipated to be completed in 1 season.</p>
Angora Fisheries and Water Quality Project	<p><b>Description:</b> This project by the EDOT with funding from the Conservancy, El Dorado County, and Reclamation would be located in the watershed of the Upper Truckee River at the Angora Creek crossing of Lake Tahoe Boulevard. It would modify Angora Creek in the vicinity of the culverts under Lake Tahoe Boulevard to improve fish passage. As part of these modifications, fill would be removed in the SEZ.</p> <p><b>Status:</b> The project was constructed in the later summer and fall of 2010.</p>

<b>Table 4 - List of Related Projects in the Upper Truckee River Watershed and the South Shore Area (continued)</b>	
<b>Name</b>	<b>Description and Status</b>
Christmas Valley Phase 2 Water Quality and Recreation Access	<b>Description:</b> This project by the EDOT with funding from the Conservancy, El Dorado County, TRPA, and USFS would be located in the watershed of the Upper Truckee River along State Route 89 from the intersection with U.S. 50 to Portal Drive. It would provide a bike trail, and reduce both peak discharge of stormwater during large storm events and the quantity of fine and coarse sediment entering the Upper Truckee River from the project area. <b>Status:</b> Design and environmental review have begun for the project. Construction could begin in 2009 and completed in 2010.
Sawmill 2 Bike Path and Erosion Control Project	<b>Description:</b> This project by would be located in the watershed of the Upper Truckee River along Sawmill Road from Lake Tahoe Boulevard to U.S. 50. It would provide a bike trail through the project area, and it would install appropriate BMPs to reduce erosion and nutrient loading, and to increase treatment of stormwater runoff from existing impervious surfaces in the project area. <b>Status:</b> Project planning has begun and construction began in 2008 and was completed in 2009.
<b>Other Projects</b>	
Greenway Bike Trail Project	<b>Description:</b> This project by the Conservancy would be located between the intersection of Pioneer Trail and U.S. 50 in Meyers, California and Van Sickle State Park at Stateline, Nevada. A portion of this project site is in the watershed of the Upper Truckee River and a portion is in the Trout Creek Watershed. Several alternative routes and two design alternatives have been developed. <b>Status:</b> A draft EIR/EIS/EIS is anticipated to be released in 2010. Construction could begin in 2011 or 2012, and could last for several years.
Lake Tahoe Airport Runway Restoration Project	<b>Description:</b> This project by CSLT would be located at the South Lake Tahoe Airport adjacent to the Upper Truckee River. Along the existing runway, it would remove a 25-foot wide by 1,300-foot long area of impervious surface and replace a portion of this area with pervious concrete, and from the remainder of this area, it would remove fill from within the SEZ of the Upper Truckee River and revegetate the area. <b>Status:</b> Environmental review and permitting have begun for this project. Construction began in 2008 and was completed.
Sawmill 1B Bike Trail Project – Air Quality and Recreation Access	<b>Description:</b> This project by the EDOT with funding from the Conservancy, El Dorado County, and TRPA would be located along U.S. 50 from the entrance to the Lake Tahoe Golf Course to Sawmill Road. It would provide a bike trail across the project area. <b>Status:</b> An IS/MND was completed and approved by the El Dorado County Board of Supervisors in 2005. Construction occurred in 2009.
Riparian Hardwoods Restoration and Enhancement	<b>Description:</b> This project by State Parks is being implemented in selected areas of State Park properties including Washoe Meadows and Lake Valley State Recreation Areas. It involves the removal of lodgepole pines along the maintenance road adjacent to the Upper Truckee River upstream of the golf course in Meyers. <b>Status:</b> A mitigated negative declaration exists for the project. The project began in 2008 and continued into 2009.
Multi-Agency Fuel Reduction Plan	<b>Description:</b> This plan is a multi-agency strategy for coordinating implementation of fuel reduction treatments in the Lake Tahoe Basin. The strategy identifies a substantial portion of the Upper Truckee River and Trout Creek watersheds as priority areas for treatment. <b>Status:</b> Fuel reduction treatments are on-going, and the plan identifies priority areas for treatment during the next 5 and 10 years (i.e., 2008–2012 and 2013–2018, respectively).
Sunset Stables Aspen Restoration	<b>Description:</b> This project by the Conservancy involves removal of encroaching conifers in aspen stands on Conservancy at Sunset Stables on the Upper Truckee River. Project supported by EIP Wildlife. <b>Status:</b> Initial treatment done in 2002. Remaining stands to be treated by Conservancy’s Forest Health and Fuel Management Program began in 2009.

<b>Table 4 - List of Related Projects in the Upper Truckee River Watershed and the South Shore Area (continued)</b>	
<b>Name</b>	<b>Description and Status</b>
Lake Tahoe Boulevard Enhancement Project	<p><b>Description:</b> This project by the EDOT with funding from the Conservancy, El Dorado County, and TRPA would be located in the watershed of the Upper Truckee River in a corridor along Lake Tahoe Boulevard from Tahoe Mountain Road to the City of South Lake Tahoe. It would reduce Lake Tahoe Boulevard from 4 to 2 lanes, and along the road it would construct a 2-mile long bike trail along the road, restore 4 acres of stream environment zone, and implement erosion control measures.</p> <p><b>Status:</b> Environmental review has begun for the project and an environmental review document is anticipated to be released in 2008. Construction could begin in 2010 and could continue for 2 years.</p>
Heavenly Mountain Resort Master Plan	<p><b>Description:</b> This plan by Vail Resorts, Inc. guides improvement, expansion, and management of facilities and uses at Heavenly Mountain Resort, including areas within the Cold Creek watershed (which is within the Trout Creek watershed). Phase I projects include: replacing ski lifts and regrading ski trails; constructing a 1,000-seat restaurant, a bridge for skiers, and 152 acres of new ski trails; and other facilities.</p> <p><b>Status:</b> The final EIR/EIS/EIS for the amended version of this plan was approved by TRPA in 2007, and construction of Phase I a project has begun and will continue for the next 2 to 4 years (through 2009–2011).</p>
Additional Urban Development	<p><b>Description:</b> This urban development would consist of numerous small residential, commercial, industrial, and infrastructure projects in the project vicinity and elsewhere in the watershed of the Upper Truckee River and south shore of Lake Tahoe. These projects might include some construction activities in the channel of perennial or intermittent waterways (e.g., at road and utility crossings).</p> <p><b>Status:</b> Additional urban development is on-going, and anticipated to be on-going throughout implementation of the Project.</p>

**A. Northern goshawk (*Accipiter gentilis*)**

Status: Forest Sensitive Species

Habitat Requirements

In general, northern goshawks require mature conifer and deciduous forests with large trees, snags, downed logs, dense canopy cover, and open understories for nesting. Goshawk foraging habitat includes forests with dense to moderately open overstories, and open understories interspersed with meadows, brush patches, riparian areas, or other natural or artificial openings. Although absolute structural characteristics of nesting habitat may differ between vegetation types and geographic regions, relative habitat use patterns are consistent: nest sites have greater canopy cover, greater basal area, greater numbers of large diameter trees, lower shrub/sapling/understory cover and numbers of small diameter trees, and gentle to moderate slopes relative to non-used random sites (Hall 1984, Hargis et al. 1994, Keane 1999). This habitat provides large trees for nest sites, a closed canopy for protection from predators and thermal cover, and open understories that provide for maneuverability and detection of prey below the canopy. Northern goshawks are year-round residents of the Tahoe basin.

Species Occurrence

There are no historic detections of northern goshawks in the Proposed Project Area, and broadcast surveys failed to detect this species in 2007 (USFS 2007)) and 2008 (USFS 2008). The closest recent (2000 or later) goshawk detection occurred in 2004

approximately ½ kilometer east of the Project Area near Pioneer Trail. The closest recent nest occurred in 2010 at a new territory east of Sawmill Pond approximately 1,931 meters west of the Project Area. This nest failed soon after discovery (USFS 2011)

## **No Action**

### Direct, Indirect, and Cumulative Effects

The No Action Alternative would avoid short term impacts to northern goshawk. In the long term, however, aspen stands and existing riparian cottonwood gallery forest in the project area would likely be lost to conifer invasion resulting in a permanent loss of potential for these habitat types to contribute highly productive habitat for goshawk. No action would also forgo the opportunity to increase the quantity of nesting and foraging habitat along the riparian corridor in areas currently lacking riparian vegetation within the project area.

The No Action Alternative could lead to a long term decrease in habitat within the project area. The other past, present, and reasonably foreseeable future projects in the vicinity will have a long term positive effect on the habitat. Due to the small size of the project area compared to the amount of goshawk habitat in the vicinity, there would be no cumulative effects from the No Action Alternative.

## **Proposed Action**

### Direct and Indirect Effects

This Proposed Project is not expected to have direct effects on northern goshawk, largely because this species is not present in the Proposed Project Area. If this species is encountered during construction of the Proposed Project, it will be protected by following standard management requirements such as limited operating periods (LOPs) around nests. Effects of the Proposed Project to potential goshawk habitat may include a short term reduction in habitat quality, due to reduced structure and canopy cover in locations where large conifers must be removed to allow channel construction or to reduce conifer encroachment in meadow riparian habitat. Most of the trees that will be removed are along Reach 6 in the forested areas south of the airport. Indirect effects include a long term increase in the quality and quantity of riparian forest. Mature riparian forest is anticipated due to the re-established channel-floodplain connectivity and active riparian and floodplain re-vegetation that will occur in areas where riparian vegetation is currently lacking. The mature riparian forest could potentially provide a mixture of foraging, roosting and nesting habitat for northern goshawks. Therefore, long-term effects of the proposed actions also include the potential increase in the area of suitable nesting and foraging habitat. Once the Proposed Project is completed it would have a positive effect on this species.

### Cumulative Effects

The projects listed in Table 4, when combined with the Proposed Project and ongoing forest health and fuels management activities by LTBMU and the Conservancy on their lands have the potential to affect northern goshawk habitat in the Basin. These future and ongoing projects and management activities may initially disturb northern goshawk nesting, foraging, and/or roosting habitat. However, in the long-term these activities will create healthy forests and improve northern goshawk habitat by increasing the distribution of forest age classes, opening the understory for maneuverability and detection of prey, and reducing tree stand density within the forest landscape.

The Proposed Project could contribute to cumulative effects on this species because it will result in reduced structure and canopy cover in locations where large conifers must be removed to allow channel construction or to reduce conifer encroachment in meadow riparian habitat. However, no goshawks are known to occur in the project site, and any impacts of this project would be minor as a result. Collectively, the cumulative effects of this project in addition to past, present and reasonably foreseeable future projects listed in Table 4 on individuals and foraging and nesting habitat are minor, as although these activities may initially disturb potential northern goshawk nesting, foraging, and/or roosting habitat, the purposes of many of the projects listed in Table 4 are to restore forests and improve water quality. These include activities that will improve northern goshawk habitat by increasing the distribution of forest age classes, opening the understory for maneuverability and detection of prey, and reducing tree stand density within the forest landscape.

### Determination

The Proposed Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of the northern goshawk.

### Rationale

- Northern goshawks are not currently present in the Proposed Project Area.
- Effects of the proposed action on potential northern goshawk habitat quality include short term disturbance from construction and long-term reduction of forest canopy density (large trees removed in construction of new channel) in the dispersal area.
- Expected long term benefits are habitat enhancement from increased riparian forest along the stream.

### **B. Willow flycatcher (*Empidonax trillii*)**

Status: Forest Sensitive Species

### Habitat Requirements

Willow flycatchers are highly habitat specific, and utilize wet meadows with well-developed willow or other deciduous shrub element; in some cases riparian deciduous shrubs along streams are also used. Willow flycatcher occupied meadows generally contain > 60% willow cover with willows that are structurally diverse (> 2 meters tall; Bombay et al 2003). The presence of water during the breeding season (late May to mid September) appears to be an important habitat component (Fowler et al. 1991). Fowler and others (1991) proposed 0.62 acres as the minimum size meadow useable for willow flycatchers. Willow flycatchers have also been found in riparian habitats of various types and sizes ranging from small lakes or ponds surrounded by willows with a fringe of meadow or grassland, to willow lined streams, grasslands, or boggy areas.

### Species Occurrence

The LTBMU has mapped willow flycatcher 'emphasis' habitat in the Proposed Project Area in patches along the river and in the wet meadow (CTC 2008a) (Figure 5). The Sierra Nevada Forest Plan Amendment Record of Decision defines 'emphasis' habitat as meadows larger than 15 acres with standing water on June 1 and a deciduous shrub component that are within 5 miles of an occupied site (USDA Forest Service 2004).

In 2007, LTBMU field crews detected one adult and adult territory in northernmost meadow of the Proposed Project Area. In 2008, no willow flycatchers were detected during LTBMU field surveys. However, in early August 2009, there was an incidental detection of a male willow flycatcher in the Proposed Project Area. This individual was determined to be a non-territorial floater by the Willow Flycatcher Demography Crew (USFS 2009).

### **No Action**

#### Direct, Indirect, and Cumulative Effects

The No Action Alternative would avoid short term impacts to willow flycatcher, but would forgo the potential to increase habitat quality and quantity along the riparian corridor within the project area.

Willow flycatcher habitat is not abundant in the basin. Since the No Action Alternative could lead to a long term decrease in habitat within the project area, there could be a minor cumulative impact due to the continued degradation of the habitat.

### **Proposed Action**

#### Direct and Indirect Effects

Direct effects of the proposed action to individual willow flycatchers that may be present could include short term reduction in habitat quality and quantity during channel construction, due to disturbance on the meadow and cuttings from willows. If this species is encountered during construction of the Proposed Project, it will be protected by following standard management requirements such as LOPs around nests (no

construction permitted between June 1 and August 31 within suitable habitat around an active nest). Prior to project implementation, R5 protocol surveys for willow flycatchers will be conducted by qualified Forest Service personnel, as needed, to attempt to determine the locations of active nest sites. If pre-project surveys determine that a nest is not active, associated LOP(s) may be lifted at the Forest Service wildlife biologist's discretion. Indirect effects include positive long-term effects on willow flycatcher habitat. Construction of a new channel is expected to increase the extent and duration of floodplain inundation and to increase meadow wetness through raised groundwater levels. The restored hydrologic processes combined with extensive riparian plantings that will be installed as part of the construction will increase the quality and quantity of riparian willow scrub habitat in portions of the Proposed Project Area. Therefore, the Proposed Project will have a positive effect on this species.

### Cumulative Effects

In addition to the Proposed Project, there are several stream restoration projects that will restore the channel form and hydrologic function of the Upper Truckee River (Table 4). These include the California Department of Parks and Recreation Golf Course project proposed upstream, the City of South Lake Tahoe's (CSLT) project immediately downstream (new channel constructed in 2008), the Conservancy's Reach 1 and 2 project, the Conservancy's Upper Truckee River Marsh Project, and the Angora Creek restoration project just upstream of Lake Tahoe Blvd.

Cumulative effects of these, and other reasonably foreseeable future projects (Table 4) on individuals include collective temporary displacement from project action areas during project implementation, however sufficient amounts of suitable habitat exist within the adjacent areas of the Truckee River and its tributaries such that willow flycatchers should have suitable areas of refuge during project implementation. Additionally no substantial impacts are expected to flycatcher breeding activities as nest buffers and LOPs have been and will be implemented where necessary so as to avoid project impacts to nesting pairs. Cumulative effects of these projects in the Tahoe Basin on willow flycatcher habitat include a net short term localized reduction in overall habitat quantity and quality (reduced habitat and foraging) along the Upper Truckee River on a project by project basis. Riparian revegetation occurs rapidly but cumulatively individual projects may affect localized habitat for possibly up to seven years due restoration projects along the river (see Table 4). However, long term cumulative effects of these actions should be beneficial to willow flycatcher habitat due to the restoration of riparian vegetation, more frequent and longer overbanking events, and raised groundwater levels in the meadows.

### Determination

The Proposed Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of the willow flycatcher.

### Rationale

- Willow flycatchers are rarely present at the Proposed Project Area. Direct effects will be minimized by conducting a pre-construction survey and implementing the appropriate LOP.
- Parts of existing willow riparian scrub habitat will be affected by construction of the Proposed Project, but these effects will be offset through restoration of hydrologic processes combined with extensive riparian plantings that will be installed as part of the construction.
- The Proposed Project will have long-term benefits for this species by enhancing and expanding willow riparian habitat (through restoration of hydrological processes and riparian vegetation).

### **C. California spotted owl (*Strix occidentalis occidentalis*)**

Status: Forest Sensitive Species

#### Habitat Requirements

California spotted owl occurs in several forest vegetation types, including mixed conifer, ponderosa pine, red fir, and montane hardwood (USFS 2004). Suitable habitat for spotted owl nesting and roosting is generally characterized by having 1) two or more canopy layers; 2) dominant and codominant trees in the canopy averaging at least 24 inches dbh; 3) at least 70 percent total canopy cover (including the hardwood component); 4) higher than average levels of very large, old trees; and 5) higher than average levels of snags and downed woody material. High canopy cover and dense forest structure is important as thermal cover during roosting. In general, stands suitable for spotted owl foraging have 1) at least two canopy layers; 2) dominant and codominant trees in the canopy averaging at least 11 inches dbh; 3) at least 40 percent canopy cover in overstory trees; and 4) higher than average numbers of snags and downed woody material. Spotted owls forage most frequently in intermediate to late-successional forest with greater than 40 percent canopy cover and a mixture of tree sizes, including some larger than 24 inches dbh. Although habitat characterized by canopy cover as low as 40 percent can be suitable for foraging, owls spend disproportionately less time in areas with canopy cover less than 40 percent. California spotted owl are year-round residents of the Tahoe basin and are a nocturnally active (e.g., foraging) species that roost during the day.

#### Species Occurrence

No spotted owls have been detected in the Proposed Project Area, either historically or during the LTBMU surveys in 2007 (USFS 2007) or 2008 (USFS 2009)). There are no spotted owl protected activity centers (PACs) in the Proposed Project Area. Spotted owls exist in the watershed but not near the Proposed Project Area. The closest recent detection (2000 or later) is approximately 2,190 meters from the area and the closest PAC is approximately 2,400 meters from the area.

## **No Action**

### Direct, Indirect, and Cumulative Effects

The No Action Alternative would avoid short term impacts to California spotted owl, but would forgo the potential to enhance habitat quality and quantity along the riparian corridor within the project area.

The No Action Alternative could lead to a long term decrease in habitat within the project area. The other past, present, and reasonably foreseeable future projects in the vicinity will have a long term positive effect on the habitat. Due to the small size of the project area compared to the amount of goshawk habitat in the vicinity, there would be no cumulative effects from the No Action Alternative.

## **Proposed Action**

### Direct and Indirect Effects

The Proposed Project is not expected to have direct effects on spotted owls due to the lack of occupied or suitable habitat in the Proposed Project Area. Indirect effects to potential spotted owl habitat may include a short term reduction in habitat quality (reduced structure and canopy cover) where large conifers along the new channel alignment must be removed to allow channel construction. Most of the trees to be removed are along Reach 6 in the forested areas south of the airport. Efforts will be made to minimize tree removal where possible, specifically the removal of large trees. This limited tree removal will create healthy forests and improve California spotted owl habitat in the long-term, by increasing the distribution of forest age classes, creating more canopy layers, and reducing tree stand density within the forest landscape. Therefore, the Proposed Project will have a positive effect on this species.

### Cumulative Effects

Cumulative effects of past, present and reasonably foreseeable future projects on individuals include collective temporary displacement from project action areas during project implementation. The Proposed Project will contribute to cumulative effects on this species because it will result in reduced structure and canopy cover in locations where large conifers must be removed to allow channel construction or to reduce conifer encroachment in meadow riparian habitat. However, sufficient amounts of suitable habitat exist within the Tahoe Basin that are outside the collective project action areas such that spotted owls should have suitable areas of refuge during project implementation. Additionally no substantial impacts are expected to spotted owl breeding activities as LOPs have been and will be implemented where necessary so as to avoid project impacts to nesting pairs. Cumulative effects of the projects listed in Table 3 on spotted owl habitat in the project area and the Lake Tahoe Basin include a net short-term reduction in overall habitat quantity and quality (reduced vegetation structure and canopy cover) for possibly up to seven or more years due to restoration activities in

burned and degraded habitats or fuel management programs that reduced forest structure (i.e., ladder fuels) and canopy closures. However, long term cumulative effects of these actions should be beneficial to spotted owl habitat as the forest matures and is more resistant to catastrophic wildfire, and as the riparian forest within the proposed project area matures.

### Determination

The Proposed Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of the California spotted owl.

### Rationale

- California spotted owl or their PAC's are not present in the Proposed Project Area.
- Effects of the proposed action on potential spotted owl habitat quality include short term disturbance from construction and long-term reduction of forest canopy density (large trees removed in construction of new channel).
- In the long-term the limited removal of conifers within the Proposed Project Area will create healthy forests and improve spotted owl habitat by increasing the distribution of forest age classes, creating more canopy layers, and reducing tree stand density within the forest landscape.

### **D. American Marten (*Martes americana sierrae*)**

Status: Forest Sensitive Species

### Habitat Requirements

Forest types in the western slopes of the Sierra Nevada and northern Sierra Nevada that are important for marten include red fir, lodgepole pine, subalpine conifer, mixed conifer-fir, Jeffrey pine, and eastside pine (Spencer *et al.* 1983). Martens are closely associated with relatively mesic, late successional coniferous forests with complex physical structures (large snags, large down woody material, and debris piles), especially near the ground. These complex ground cover characteristics provide protection from predators, support prey, allow access to subnivean (below snow) spaces, and provide protective thermal microenvironments particularly important in the winter. Empirical data on use of forested habitat on the eastside of the Sierra Nevada by marten are sparse. Marten in these habitats appear to focus on microhabitat elements available in greater proportion than westside areas, such as rock piles and scree slopes (Cablak and Spaulding 2002).

Forest habitat within the Proposed Project Area is too small and fragmented by residential development to support regular use by mesocarnivores such as American marten, although it is likely used as a passage corridor for individuals moving between forest habitat to the east and Twin Peaks to the west (H.T. Harvey and Associates 2007). The Proposed Project Area south of the airport has been identified as an important passage corridor for wildlife crossing the Upper Truckee River Valley between Christmas

Valley and Lake Tahoe in Reach 6 because this is the area of least resistance (less urbanization and more forest cover) in the south lakeshore region (Figure 5).

### Species Occurrence

Patches of potential suitable habitat occur in the Proposed Project Area. A survey in early 2006 detected marten utilizing undeveloped land around the Proposed Project Area to the west, southeast, and northeast (H.T. Harvey and Associates 2007). In 2008, a single marten was detected at wildlife camera stations in the undeveloped forest area south of the airport runway (Garth Alling, Hauge Breuck Associates, pers. comm. March 2008).

### **No Action**

#### Direct, Indirect, and Cumulative Effects

There will be no direct or indirect effects to marten from the No Action Alternative. No direct or indirect effects would occur; therefore no cumulative effects would occur.

### **Proposed Action**

#### Direct and Indirect Effects

The forest habitat within the Project Area is likely used as a movement corridor, but is too small and fragmented to support regular use by martens. Construction activities and tree removal along the new channel alignment could affect American marten either directly (disturbance of individuals if present) or indirectly (reduced habitat structure and canopy cover in the movement corridor). Individuals could be temporarily displaced from forested areas during construction to adjacent and nearby suitable habitat.

Conifer removal in the wildlife corridor will be minimized. If this species is encountered during construction of the Proposed Project, it will be protected by following standard management requirements. Indirect effects include a possible reduction of habitat quality (reduced structure and canopy cover in the migration corridor).

#### Cumulative Effects

Cumulative effects of past, present and reasonably foreseeable future projects listed in Table 4 on individuals include collective temporary displacement from project action areas during project implementation. The Proposed Project will contribute to cumulative effects on this species because it will result in reduced structure and canopy cover that will temporarily disturb American marten migration corridor habitat. However, sufficient amounts of suitable habitat exist within the Tahoe Basin that are outside the collective project action areas such that marten should have suitable areas of refuge and movement corridors during project implementation. Additionally no substantial impacts are expected to marten breeding activities, as no known den sites exist in the project area, and because LOPs will be implemented if and when necessary to avoid project impacts to any den

sites that may be identified. Cumulative effects of these projects on marten habitat in the Tahoe Basin and the UTR vicinity include a net short term reduction in overall habitat quantity and quality (reduced vegetation structure and canopy cover) the UTR for possibly up to seven or more years due primarily to restoration activities along the UTR and forest management practices that will reduce forest structure and canopy closure. However, long term cumulative effects of these actions should be beneficial to marten habitat as the thinned forest matures and is more resistant to catastrophic wildfire, and as the riparian forest within the proposed project area matures.

### Determination

The Proposed Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of the American marten.

### Rationale:

- Marten use the southern part of the Proposed Project Area only occasionally, likely as a passage corridor across the river between larger blocks of suitable habitat in uplands to the east and west. Suitable habitat within the Proposed Project Area is too fragmented and disturbed to be used regularly by marten. Therefore the impact on marten will be minimized.
- Minimal short term effects of proposed actions on individuals due to temporary displacement from dispersal area during project implementation to adjacent and nearby suitable habitat.
- Effects of the proposed action to marten habitat quality include short term disturbance from construction and long-term reduction of forest cover (large trees removed in construction of new channel) in the dispersal area. Replanting and installation of brush piles and down woody debris in the corridor area will be implemented to minimize impacts on this species. Long term benefits expected in the passage corridor are habitat enhancement from increased riparian cover along the stream.

### **E. Townsend's big-eared bat (*Corynorhinus townsendii*)**

Status: Forest Sensitive Species

### Habitat Requirements

Townsend's big-eared bats are found throughout California in a wide variety of habitats, from desert scrub to chaparral, oak woodland, and conifer forest (Pierson & Rainey 1998). They are primarily a cave-dwelling bat, but can also be found roosting in large trees (Fellers & Pierson 2002; Gellman & Zielinski 1996). These bats prefer to forage along habitat edges, including coniferous forest edge habitat and riparian habitat. Small moths are the principal food of this species. Beetles and a variety of soft-bodied insects also are taken. They capture their prey in flight using echolocation, or by gleaning from

foliage (Fellers & Pierson 2002). This species travels up to 15 km from their day roosts when foraging (Pierson & Rainey 1998).

The trees within the Proposed Project Area are likely too small to provide suitable roosting habitat for Townsend's big-eared bat. However, suitable roosting trees are likely located within 15 km of the Proposed Project Area (CDFG 2005). Because the Proposed Project Area is located within foraging range of potential roosting trees, the forest edge habitat and the riparian habitat within the Proposed Project Area could provide suitable foraging habitat for this species.

### Species Occurrence

Townsend's big-eared bats have not been detected within the Proposed Project Area. The closest known occurrence of Townsend's big-eared bats was at Cookhouse Meadow in 2007. Cookhouse Meadow is located approximately 7 km to the south of the Proposed Project Area. (Borgmann et al 2008) The forest edge habitat and the riparian habitat within the Proposed Project Area could provide suitable foraging habitat for this species.

### **No Action**

#### Direct, Indirect, and Cumulative Effects

There will be no direct or indirect effects to Townsend's big-eared bat from the No Action Alternative. No direct or indirect effects would occur; therefore no cumulative effects would occur.

### **Proposed Project**

#### Direct and Indirect Effects

The Proposed Project is not expected to have direct effects on Townsend's big-eared bats because this species is not known to be present in the Proposed Project Area and because there is no suitable roosting habitat for this species within the Proposed Project Area. Indirect effects to this species include short term reduction in riparian foraging habitat quality and quantity during channel construction. Indirect effects also include a long-term increase in the quality and quantity of riparian forest. Mature riparian forest is anticipated due to the re-established channel-floodplain connectivity and active riparian and floodplain re-vegetation that will occur in areas where riparian vegetation is currently lacking. The mature riparian forest could potentially provide increased foraging habitat for Townsend's big-eared bats. Therefore, long-term effects of the proposed actions also include the potential increase in the area of suitable foraging habitat for this species. Once the Proposed Project is completed it would have a positive effect on this species.

### Cumulative Effects

In addition to the Proposed Project, there are several stream restoration projects that will restore the channel form and hydrologic function of the Upper Truckee River (Table 4). These include the California Department of Parks and Recreation Golf Course project proposed upstream, the City of South Lake Tahoe's project immediately downstream (new channel constructed in 2008), the Conservancy's Reach 1 and 2 project, the Conservancy's Upper Truckee River Marsh Project, and the Angora Creek restoration project just upstream of Lake Tahoe Blvd. Cumulative effects to individuals from these projects, as well as other past, present and reasonably foreseeable future projects listed in Table 3 are likely to be unsubstantial as projects are outside of preferred roosting habitat (caves and large trees) and are limited to occurring for the most part in potential foraging habitat. In addition, most projects are implemented during the day, outside of the foraging period for these bats. Occasional temporary displacement of foraging individuals is a potential impact, but alternate suitable habitat occurs within their range and outside these project areas for use during temporary displacement. Further, given the phased implementation of nearby project (CSLT project constructed in 2008, Proposed Project anticipated construction starting 2011, and unknown but future dates for the other projects), any Townsend's big-eared bats that may be using foraging habitat along the UTR projects will be able to move to other unaffected habitat along the river during the period of construction for each individual project. Consequently, no cumulative effects to roost sites will occur, because no direct or indirect effects of the proposed action are anticipated. Cumulative effects to foraging habitat include an increase in overall foraging habitat along the UTR as the meadow areas expand.

### Determination

The Proposed Project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability of the Townsend's big-eared bat.

### Rationale

- Townsend's big-eared bats have not been detected within the Proposed Project Area. Further, suitable roosting habitat for this species is not located within the Proposed Project Area.
- Parts of existing riparian foraging habitat will be affected by construction of the Proposed Project, but these effects will be offset through restoration of hydrologic processes combined with extensive riparian plantings that will be installed as part of the construction.
- The Proposed Project will have long-term benefits for this species by enhancing and expanding riparian foraging habitat (through restoration of hydrological processes and riparian vegetation).

**F. Sierra Nevada yellow-legged frog (*Rana sierrae*)**

Status: Forest Sensitive Species, Federal Candidate for Listing

**Habitat Requirements**

The Sierra Nevada yellow-legged frog is the characteristic high-montane anuran of the Sierra Nevada (Jennings and Hayes 1994). *Rana sierrae* ranges from the Diamond Mountains northeast of the Sierra Nevada in Plumas County, California, south through the Sierra Nevada to the type locality, the southern-most locality at Matlock Lake just east of Kearsarge Pass (Inyo County, California). In the extreme northwest region of the Sierra Nevada, several populations occur just north of the Feather River, and to the east, there was a population on Mt. Rose, northeast of Lake Tahoe in Washoe County, Nevada, but, as mentioned above, it is now extinct. West of the Sierra Nevada crest, the southern part of the *R. sierrae* range is bordered by ridges that divide the Middle and South Fork of the Kings River, ranging from Mather Pass on the John Muir Trail east to the Monarch Divide. East of the Sierra Nevada crest, *R. sierrae* occurs in the Glass Mountains just south of Mono Lake (Mono County, CA) and along the east slope of the Sierra Nevada south to the type locality at Matlock Lake (Inyo County, CA).

Sierra Nevada yellow-legged frogs are highly aquatic, rarely venturing far from water. They are well-known inhabitants of alpine lakes above timberline in the central Sierra Nevada (Jennings and Hayes 1994, Vredenberg 2004), but they are actually considered a stream-dwelling species that has recently colonized those lakes (Zweifel 1955). Sierra Nevada yellow-legged frogs are well-adapted for existence at high altitudes, where the early onset of winter and the late disappearance of snow and ice from waterways strongly limit their seasonal and reproductive activity. These frogs presumably winter in lake and stream substrata, and they emerge as soon as 24-hour air temperatures continuously remain above freezing, sometimes as late as June. These frogs spawn very soon after "iceout," and females deposit egg masses in vegetation along undercuts and other subsurface concealed sites (Zweifel 1955). Tadpoles overwinter and metamorphose in their second or third year after hatching. Thus, this species requires permanent water for successful recruitment, and strongly favors aquatic habitat with concealed underwater refugia.

Habitat suitability in the Proposed Project area is impaired by the presence of nonnative salmonids, such as rainbow trout, brook trout, and brown trout, which are known to prey on tadpoles (Knapp and Mathews 2000). Non-native salmonids were introduced into the Project Area in the late 1800's. Although this area could be deemed historical habitat, as even in the existing impaired status physical habitat does exist, due the presence of non-native predatory aquatic species, no suitable habitat exist in the project area. Restoration of the biological habitat is not in the scope and scale of this project; therefore, even after restoration efforts, habitat will not exist in the project area. This species will not be analyzed further.

### Cumulative Impacts

No cumulative impacts to individuals will occur because no direct or indirect impacts to individuals are expected.

### Determination

The Proposed Project will not affect Sierra Nevada yellow-legged frog.

### Rationale

- No suitable habitat exists in the Project Area because of the persistence of introduced predatory aquatic species.

### **G. Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*)**

Status: Federal Threatened

#### *Lahontan cutthroat trout*

Lahontan cutthroat trout was listed as an endangered species in 1970 (Federal Register\_Vol. 35, p.13520). In 1975, under the Endangered Species Act of 1973 as amended (ESA), LCT was reclassified as threatened to facilitate management and to allow for regulated angling (Federal Register Vol. 40, p.29864). In 1995, the U.S. Fish and Wildlife Service (USFWS) released its recovery plan for LCT, encompassing six river basins within LCT historic range, including the Truckee River basin.

Historically, LCT occurred throughout the Truckee River drainage from the headwaters in California downstream to Pyramid Lake (Gerstung, 1988). The LCT in Pyramid Lake and Lake Tahoe were known regionally as a valuable food source consumed by the Pyramid Lake Paiute Tribe, the Washoe Tribe, early explorers and by commercial fishermen (Fowler and Bath 1981). By 1938 LCT had been extirpated from the Tahoe Basin. Recovery efforts restored a reproducing population in the upper headwaters of the Truckee River, other plantings have occurred but none have been shown to be reproducing. Additionally, LCT have been stocked into Fallen Leaf Lake as part of a USFWS pilot research project to examine their interactions with nonnative lake trout. LCT habitat is present within the project are but the widespread distribution of non-native salmonids would make their persistence unlikely.

Lahontan cutthroat trout were introduced to the headwaters of the Upper Truckee River in Meiss Meadows (adjacent to the planning area) in the late 1980's and early 1990's through a cooperative effort between the CDFG, USFS and FWS. Non-native brook trout were initially removed from the Upper Truckee River prior to the LCT introduction by means of rotenone application. It was suspected that brook trout were illegally introduced back into the Meiss Meadow area post-chemical treatment from downstream adjacent source populations. Since that time brook trout removal has occurred by utilizing manual electrofishing methods. Brook trout were not sampled in the headwaters during recent removal efforts in 2007 and removal efforts will continue to occur in 2008 (estimated to be the final year). The Meiss Meadow population is one of the only high-elevation meadow populations of LCT in the Sierra-Nevada Mountain Range and also functions as a source population for LCT in lower river segments of the Upper Truckee.

Snorkel surveys in the Upper Truckee River above Christmas Valley conducted in 2006 and 2007 discovered LCT had occupied stream reaches as much as 1.5 miles below Meiss Meadows. This tendency of LCT to move downstream in the Upper Truckee River is expected to continue within the next 2-5 years. Due to this downstream movement there is potential for the species to occupy habitat in the Upper Truckee River within the Sunset Stables Restoration Reach Project Area in the next 5 years.

### Habitat Requirements

Lahontan cutthroat trout (LCT) inhabit lakes and streams and require spawning and nursery habitat characterized by cool water, pools in close proximity to cover and velocity breaks, well vegetated and stable stream banks, and relatively silt free rocky substrate in riffle-run areas (USFWS 1995).

Non-native salmonids have displaced many LCT populations. Introduced fall spawning salmonids may have an advantage over spring spawning LCT because altered watersheds provide poor habitat with such conditions as excessive turbidity, limited spawning gravel, and high flows. Furthermore, nursery habitat during the summer may be impacted by rapidly increasing water temperatures, and drying of stream segments important for fry survival. Habitat improvement without the removal of non-native salmonids could impact LCT populations through hybridization and displacement (USFWS 1995).

Habitat suitability in the Proposed Project Area is impaired by degraded aquatic habitat conditions (patchy riparian vegetation, unstable banks, lack of extensive cover) and the presence of nonnative salmonids, such as rainbow trout, brook trout, and brown trout, which are known competitors (USFWS 1995).

### Species Occurrence

LCT have not been documented by fish surveys conducted in the Proposed Project Area (Reach 5 and 6) in 2005 and 2006 (CTC 2007b) and in downstream reaches (Reach 3 and

4 for the City of South Lake Tahoe's Middle Reach restoration project) in 2007 or 2008 during fish rescues. However, the potential for adult LCT to move into or through the Proposed Project Area is possible as the physical habitat does exist and population expansion efforts are occurring upstream.

### **No Action**

#### **Direct, Indirect and Cumulative Effects**

Under the No Action Alternative, there would be no direct effects to LCT. Indirect effects of the No Action Alternative would be perpetuating unfavorable habitat conditions, thus providing limited spawning, rearing and feeding habitat for future LCT population growth and other native aquatic species. No direct or indirect effects would occur; therefore no cumulative effects would occur.

### **Proposed Action**

#### **Direct and Indirect Effects**

Any potential direct effect on LCT individuals would be incidental harassment during stream restoration activities. More specifically, potential harassment could include fish salvage efforts, short term handling while moving fish out of the dewatered river segments, and short term effects of turbidity or sedimentation during channel connecting events. When fish salvage occurs, LCT will be moved approximately 500 - 700 feet upstream or downstream of the project area. Block nets will be installed to insure no fish move back into the dewatered segments. Block nets will be cleaned one to two times daily. The potential for harassment would not be high as LCT individuals are expected to be an infrequent occurrence and in very low numbers if they are encountered. Mortality to LCT individuals is not expected during implementation activities. Design features have been developed to ensure any direct effects to individuals are minimal.

#### **Cumulative Effects**

In addition to the Proposed Project, there are several stream restoration projects that will restore the channel form and hydrologic function of the Upper Truckee River, as described above. These projects will have short term localized impacts on instream habitat, due to construction activities in segments of the channel, and then dewatering of the stream channel once flow is diverted to the new channel. However, these projects are anticipated to result in improved physical aquatic habitat due to restoration of appropriate channel form, installation of woody debris and other instream habitat features, and planting of riparian vegetation.

The Proposed Project will contribute to cumulative effects on this species because it will cause short term localized impacts on instream habitat, due to construction activities in segments of the channel, and then dewatering of the stream channel once flow is diverted to the new channel. The Proposed Project will disturb potential habitat in the short term,

but restoration of the stream channel will have long-term benefits to physical structure of aquatic habitat.

When considering effects from past, present and future foreseeable actions and the Proposed Project, LCT populations in the Upper Truckee River are expected to continue to expand in size and distribution; however competition with non-native salmonids would continue to be a limiting factor of population growth. Any localized effects from the Proposed Project (i.e. sedimentation) in the Upper Truckee River would be offset as physical habitat and biological restoration is expected to occur over the next 5 – 10 years.

From a stream restoration perspective there are 5 large scale river restoration efforts on a watershed level intended restore channel and floodplain conditions. These projects, in conjunction with this project and the LCT expansion project, will improve existing aquatic habitat (spawning and rearing) for LCT and other native aquatic species as well as contribute to the expansion of LCT in this historic drainage.

#### Determination

The Proposed Project **may affect, but is not likely adversely affect** the Lahontan cutthroat trout for both the No Action and the Proposed Project.

#### Rationale

- Lahontan cutthroat trout are not present in the Upper Truckee River basin except for a reintroduced population in the uppermost watershed. They have not been documented in the Proposed Project Area during several fish surveys.
- Potential impacts to this species will be minimized by conducting monitoring for LCT.
- Biological habitat suitability is impaired due to the presence of non-native trout, which are a major factor in the extirpation of numerous LCT populations.
- Restoration may improve the physical habitat in the Proposed Project Area for LCT, although these potential gains will likely be offset by the persistence of nonnative trout.

#### **H. Great Basin rams-horn (*Helisoma (Carnifex) newberryi*)**

Status: Forest Sensitive Species

#### Habitat Requirements

Large lakes and slow rivers with muddy substrate, including larger spring sources and spring-fed creeks. This habitat is not generally available within the Upper Truckee River within the Proposed Project Area.

### Species Occurrence

This species has not been documented in the Proposed Project Area, although no surveys targeting this species have been conducted. The aquatic habitat in the Proposed Project Area is dominated by hardpan clay, sand and gravel to cobble substrate. The gravel is often a thin veneer over hardpan clay or embedded with sand and is poor habitat for benthic macroinvertebrates. Additionally, water temperature fluctuations may be extreme during summer. Although the Proposed Project Area does not include high quality habitat for this species, it is possible the Great Basin rams-horn snail may inhabit some areas of the Proposed Project Area, but has merely gone undetected.

### **No Action**

#### Direct, Indirect and Cumulative Effects

The no action alternative would avoid short term impacts to ram's horn snail. No direct or indirect effects would occur; therefore no cumulative effects would occur.

#### Cumulative Effects

No cumulative impacts to individuals will occur because no direct or indirect impacts to individuals are expected.

### **Proposed Action**

#### Direct and Indirect Effects

No specific surveys for this species have been conducted but it is possible the Great Basin rams-horn snail does inhabit the Proposed Project Area, but has merely been undetected. In such a case direct effects to individuals could include physical injury or death when flow is diverted from the old river channel and the channel is backfilled

Indirect effects are not anticipated because after construction, the new channel length will remain approximately the same and provide the same amount of potential habitat for this species. The Proposed Project may affect potential habitat by reducing the amount of fine muds and silts in the channel that are the preferred habitat of the Great Basin rams-horn snail.

#### Cumulative Effects

In addition to the Proposed Project, there are several stream restoration projects that will restore the channel form and hydrologic function of the Upper Truckee River (Table 4). These projects will have short term localized impacts on instream habitat and any individuals that may be present, due to construction activities in segments of the channel, and then dewatering of the stream channel once flow is diverted to the new channel. Over time these projects are anticipated to result in improved physical aquatic habitat due

to restoration of appropriate channel form, installation of woody debris and other instream habitat features, and planting of riparian vegetation.

The Proposed Project will contribute to cumulative effects on this species because it will cause short term localized impacts on instream habitat, due to construction activities in segments of the channel, and then dewatering of the stream channel once flow is diverted to the new channel. Potential impacts to this species will be minimized by removing any Great Basin rams-horn snails that are found from the active Proposed Project reach prior to diverting channel flow into the newly constructed channel. The Proposed Project will disturb potential habitat in the short term, but restoration of the stream channel will have long-term benefits to physical structure of aquatic habitat.

#### Determination

The Proposed Project **may affect individuals, but is not likely to result in a trend toward Federal listing** or loss of viability of the Great Basin rams-horn snail.

#### Rationale

- The Proposed Project will not contribute to the Federal listing of Great Basin rams-horn snail because poor quality habitat currently exists in the Proposed Project area.
- The small possibility that Great Basin rams-horn snail occurs in the Proposed Project area is insufficient to justify forestalling restoration of the Upper Truckee River in the Project area.
- Any Great Basin rams-horn snails that are found will be removed from the active Proposed Project reach prior to diverting channel flow into the newly constructed channel.
- Restoration will not decrease the amount of potential suitable physical habitat for this species.

<b>Table 5. Threatened, Endangered, and Sensitive Species for the Lake Tahoe Basin Management Unit, and effect determinations for project level analysis for the proposed Sunset Stables Upper Truckee River project</b>				
<b>Species</b>	<b>Special Status</b>	<b>Known to Occur in the Project Area</b>	<b>Suitable Habitat in Project Area</b>	<b>*Determination</b>
<b>Birds</b>				
<i>Accipiter gentilis</i> Northern goshawk	FSS	No	Yes	MANL
<i>Empidonax trallii</i> Willow flycatcher	FSS	Yes	Yes	MANL
<i>Haliaeetus leucocephalus</i> Bald eagle	FSS, Fed delisted	No	No	No Effect
<i>Strix nebulosa</i> Great grey owl	FSS	No	No	No Effect
<i>Strix occidentalis occidentalis</i> California spotted owl	FSS	No	Yes	MANL
<b>Mammals</b>				
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	FSS	No	Yes	MANL
<i>Gulo gulo luteus</i> California wolverine	FSS	No	No	No Effect
<i>Martes Americana</i> American marten	FSS	Yes	Yes	MANL
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	FSS	No	No	No Effect
<b>Amphibians</b>				
<i>Rana pipiens</i> Northern leopard frog	FSS	No	No	No Effect
<i>Rana sierrae</i> Sierra Nevada yellow-legged frog	FSS	No	No	No effect
<b>Fish</b>				
<i>Gilia bicolor pectinifer</i> Lahontan lake tui chub	FSS	No	No	No Effect
<i>Oncorhynchus clarkii henshawi</i> Lahontan cutthroat trout	Federally Threatened	No	Yes	NLAA
<i>Hypomesus transpacificus</i> Delta smelt	FT	No	No	NA
<b>Invertebrates</b>				
<i>Helisoma newberryi newberryi</i> Great Basin rams-horn	FSS	No	Yes	MANL

\*Federally Listed Species

NA - Will not affect the species or its designated critical habitat.

NLAA - May Affect Not Likely to Adversely Affect the species or its designated critical habitat.

LAA - May affect and is likely to adversely affect the [name of species] or its designated critical habitat

Sensitive Species

NE - Will not affect the species.

MANL - May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.

MALT - May affect individuals, and is likely to result in a trend toward Federal listing or loss of viability.

\*\* Uncertain identification of a tadpole.

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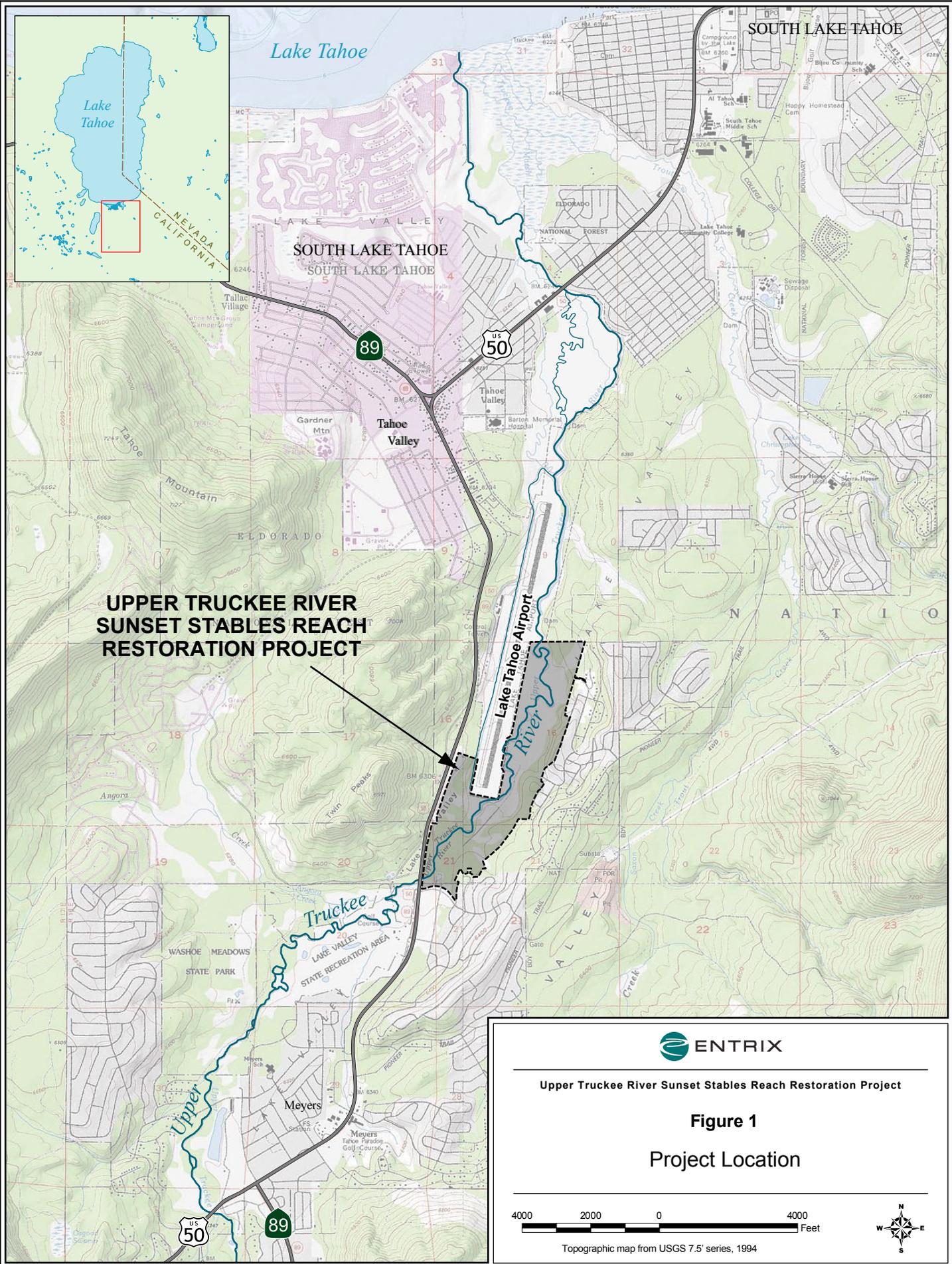
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## **FIGURES**

1. Location of Proposed Project
2. Property Ownership in the Proposed Project Area
3. Proposed Project Area
4. Vegetation communities and land cover at Proposed Project Area
5. Terrestrial Habitat and Biological Features at the Proposed Project Area
6. Proposed Project Components

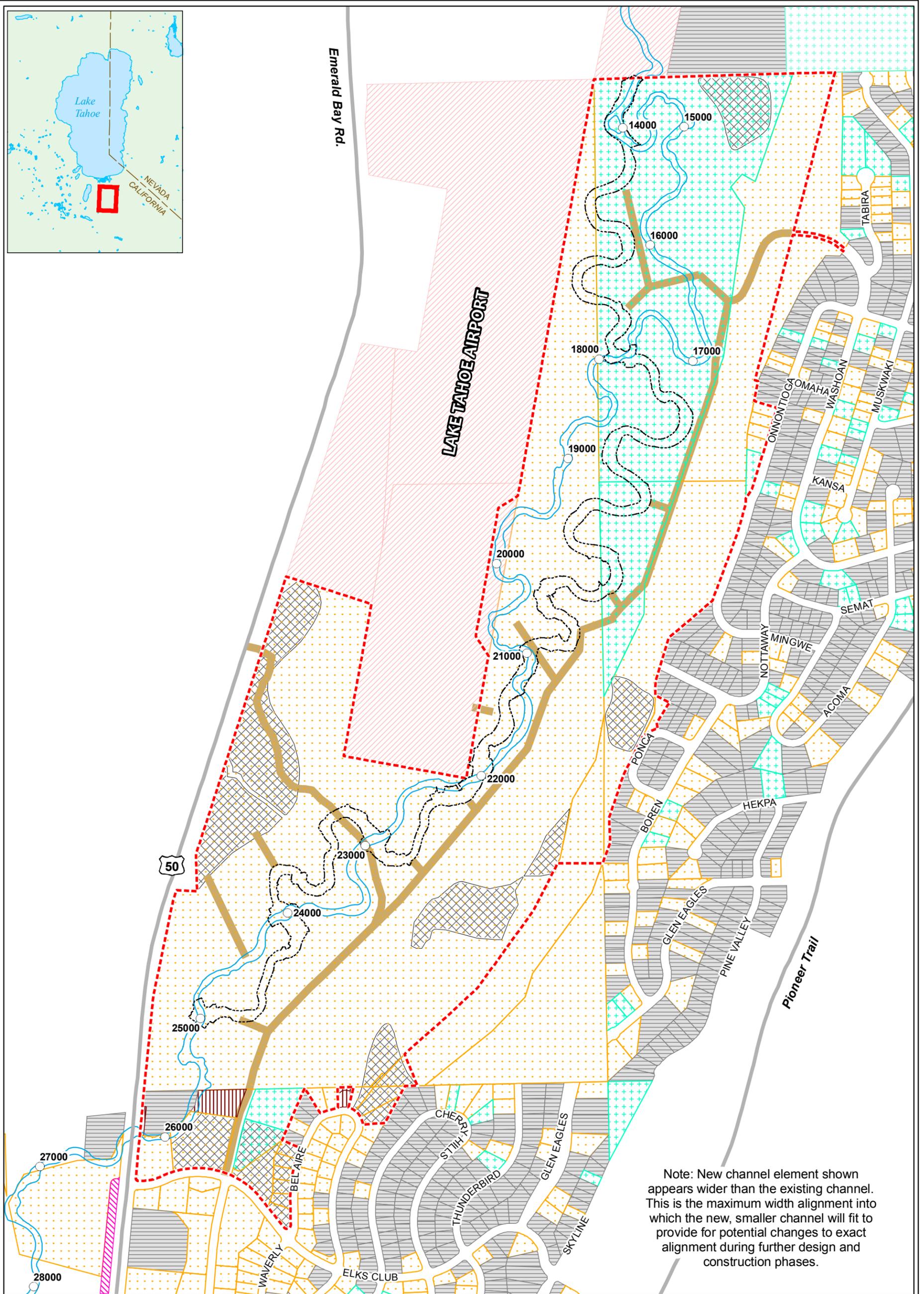


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Emerald Bay Rd.

LAKE TAHOE AIRPORT



Note: New channel element shown appears wider than the existing channel. This is the maximum width alignment into which the new, smaller channel will fit to provide for potential changes to exact alignment during further design and construction phases.

- |  |                                    |
|--|------------------------------------|
| Project Boundary                                 | <b>Ownership*</b>                  |
| Upper Truckee River                              | City - South Lake Tahoe            |
| 1000-foot River Station                          | State - DOT                        |
| Alignment Based on 50% Design Plans              | California Tahoe Conservancy (CTC) |
| Potential Storage/Staging and/or Dewatering Area | U.S. Forest Service                |
| Potential Haul Route                             | Private                            |
|  | Other (County/STPUD)               |

**ENTRIX**

Upper Truckee River Sunset Stables Reach Restoration Project

**Figure 2**

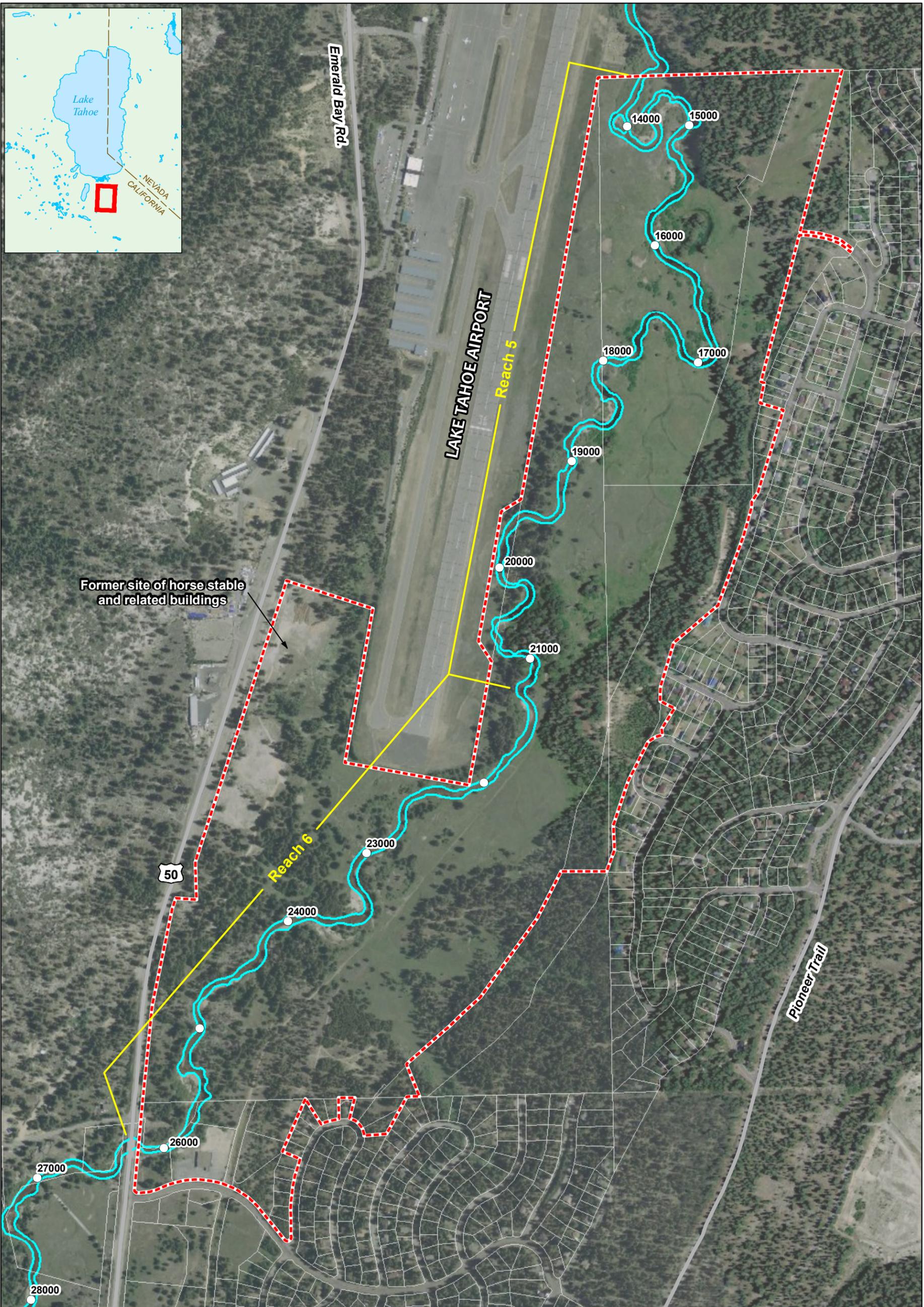
Property Ownership in the Project Area

500 250 0 500 Feet

Projection: California Stateplane, Zone 2  
Datum: NAD 83

4/12/11

\* Modified El Dorado County parcel data to reflect CTC Ownership

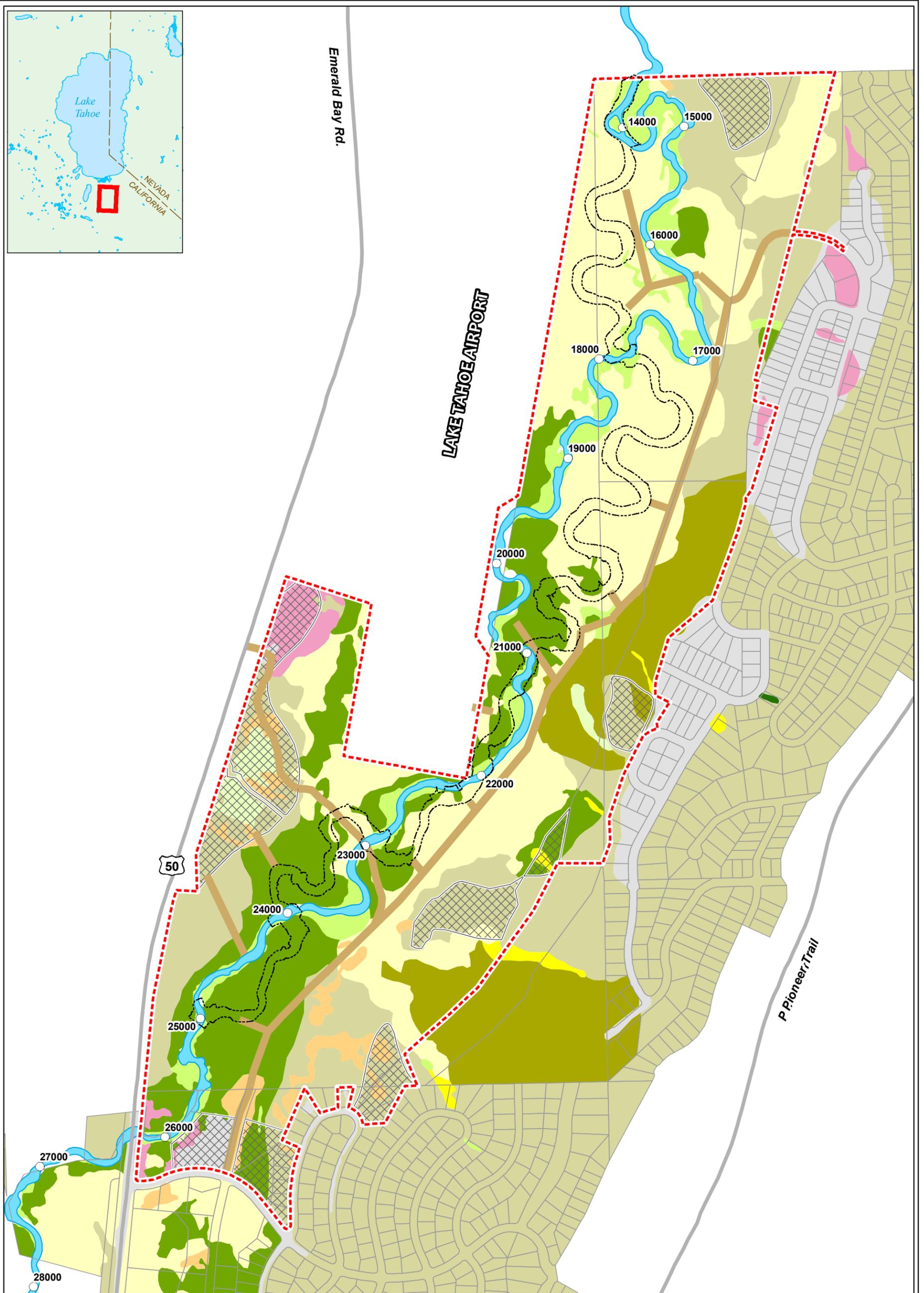


- Project Boundary
- Parcel Boundary
- Upper Truckee River
- 1000-foot River Station

  
 Upper Truckee River Sunset Stables Reach Restoration Project  
**Figure 3**  
 Project Area

  
 Projection: California Stateplane, Zone 2  
 Datum: NAD 83

  
 3/30/11



- Project Boundary
- Upper Truckee River
- 1000-foot River Station
- Parcel Boundary
- Alignment Based on 50% Design Plans
- Potential Storage/Staging and/or Dewatering Area
- Potential Haul Route

- Vegetation Communities**
- Aspen Forest
  - Big Sagebrush Scrub
  - Developed
  - Jeffrey Pine Forest
  - Jeffrey Pine/Fir Forest
  - Lodgepole Pine Forest
  - Montane Riparian
  - Montane Riparian Scrub
  - Open Ground
  - Ruderal
  - Wet Montane Meadow



**Upper Truckee River Sunset Stables Reach Restoration Project**

**Figure 4**

**Vegetation Communities in the Project Area**



500 250 0 500 Feet



3/30/11

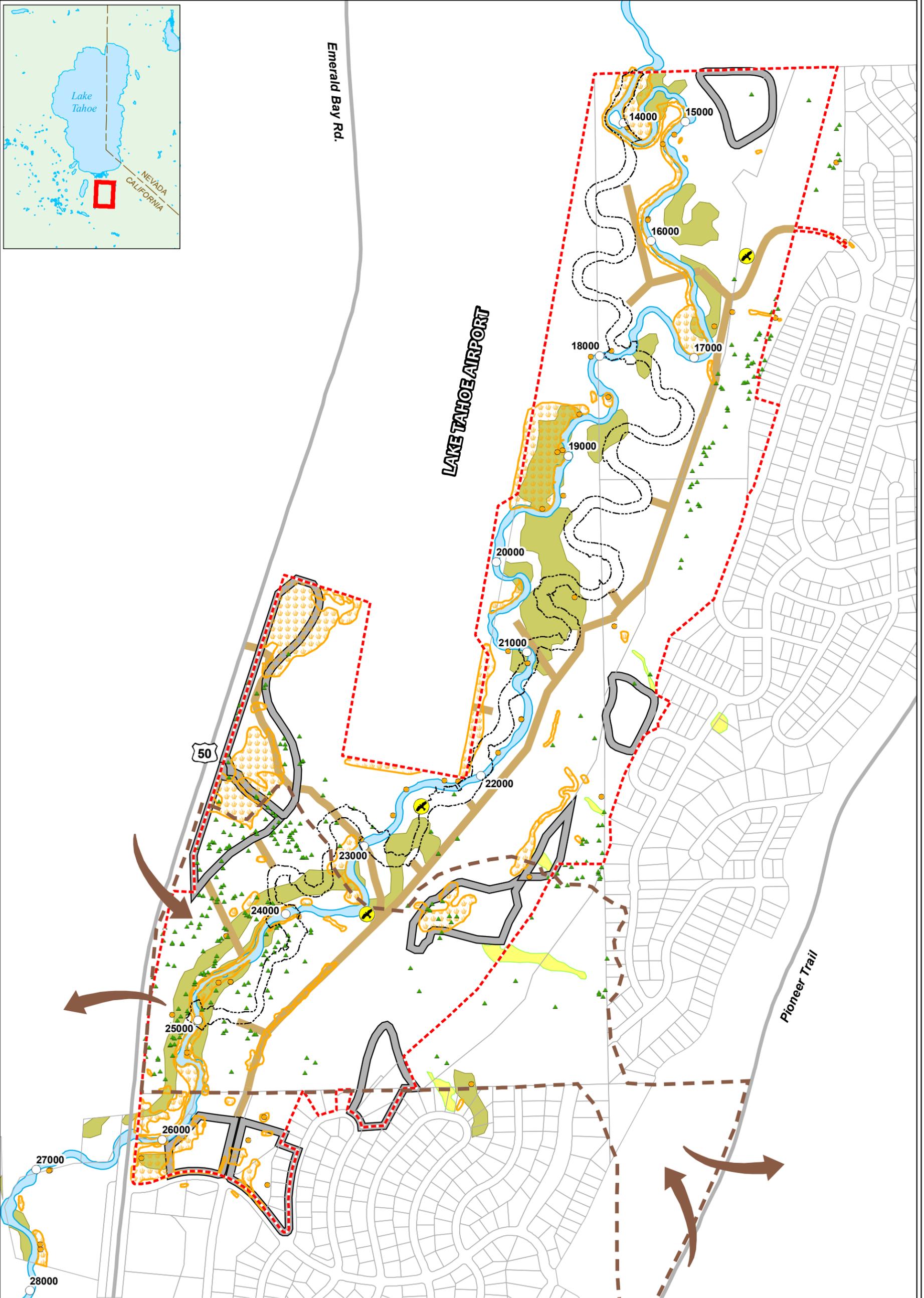
Projection: California Stateplane, Zone 2  
Datum: NAD 83



Emerald Bay Rd.

LAKE TAHOE AIRPORT

Pioneer Trail



- Project Boundary
- Upper Truckee River
- 1000-foot River Station
- Parcel Boundary
- Alignment based on 50% Design Plans
- Potential Storage/Staging and/or Dewatering Area
- Potential Haul Route

- Terrestrial Habitat and Biological Features**
- => 30-inch DBH Trees
  - Invasive / Exotic Plant Occurrences
  - Invasive / Exotic Plant Occurrences
  - Aspen Forest
  - Willow Flycatcher Suitable Habitat\*
  - Willow Flycatcher - 2009 Visual / Aural Detections
  - Wildlife Corridor (Presumed)\*\*

Upper Truckee River Sunset Stables Reach Restoration Project

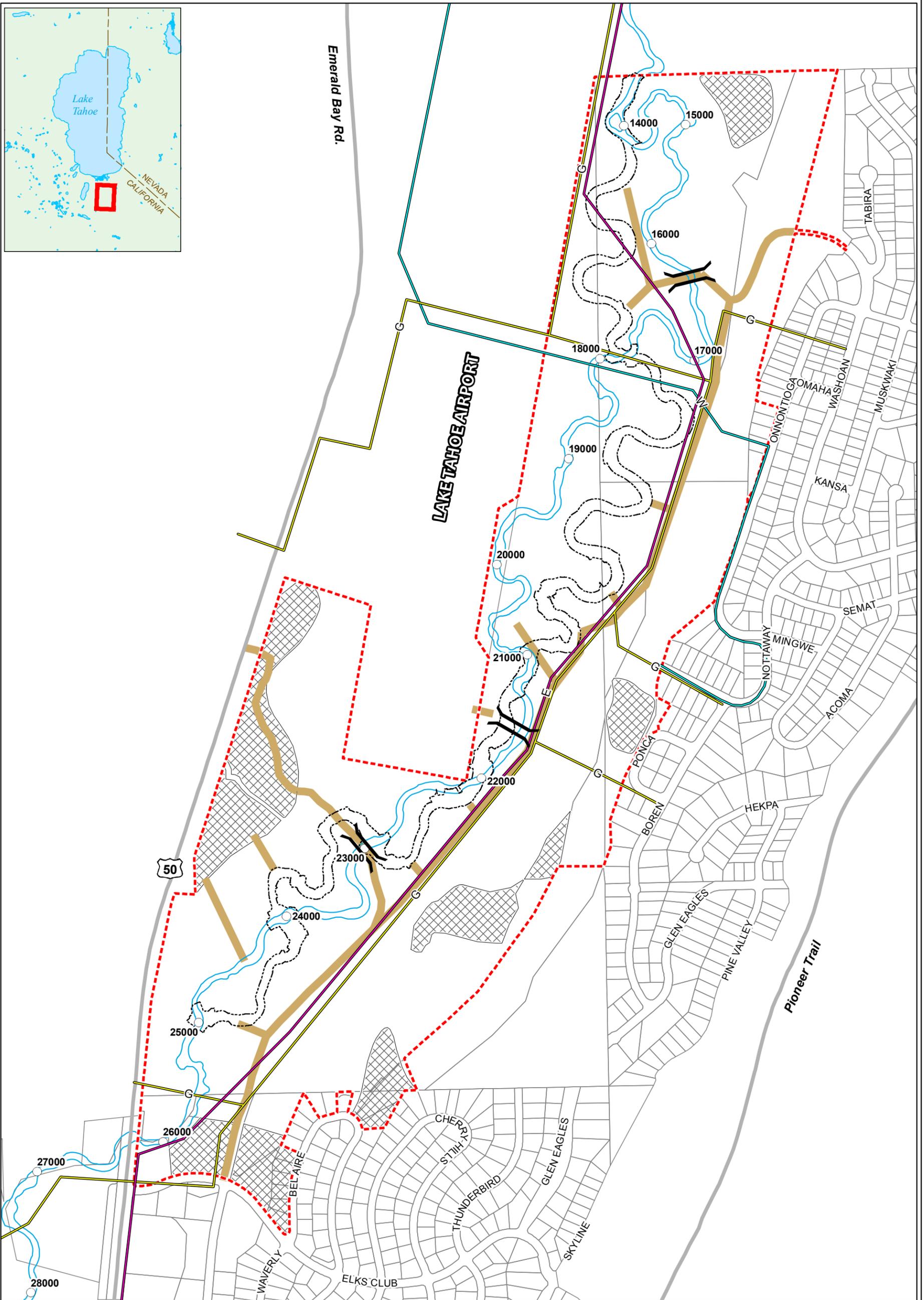
**Figure 5**

**Terrestrial Habitat and Biological Features in the Project Area**

500 250 0 500 Feet

Projection: California Stateplane, Zone 2  
Datum: NAD 83

3/30/11



- Project Boundary
- Upper Truckee River
- 1000-foot River Station
- Parcel Boundary
- Alignment Based on 50% Design Plans
- Potential Storage/Staging and/or Dewatering Area
- Potential Haul Route
- Temporary Crossing / Bridge
- Existing Sewer/Water Lines**
  - E Backup Effluent Export
  - G Sewer Gravity
  - W Water

Upper Truckee River Sunset Stables Reach Restoration Project

**Figure 6**

**Proposed Project Components**

Projection: California Stateplane, Zone 2  
Datum: NAD 83

4/19/11