CalPeco 625 and 650 Electrical Line Upgrade Project

Management Indicator Species Report

PREPARED FOR:
United States Department of Agriculture, Forest Service
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150

and

United States Department of Agriculture, Forest Service
Tahoe National Forest
10811 Stockrest Springs Road
Truckee, CA 96161

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USDA Forest Service – Lake Tahoe Basin Management Unit

and

Truckee Ranger District – Tahoe National Forest

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ACRONYMS AND ABBREVIATIONS

1982 Planning Rule	1982 National Forest System Land and Resource Management Planning Rule
APM	Applicant Proposed Measure
BBS	Breeding Bird Survey
BIO	Applicant Proposed Measure for Biological Resources
BMI	Benthic Macroinvertebrates
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulation
cfs	cubic feet per second
CPUC	California Public Utility Commission
CWHR	California Wildlife Habitat Relationship
dbh	diameter at breast height
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPN	eastside pine
FEW	freshwater emergent wetland
IBI	Index of Biological Integrity
LRMP	Land and Resource Management Plan
LTBMU	Lake Tahoe Basin Management Unit
MAPS	Monitoring Avian Productivity and Survivorship
µm	microns
mg/l	milligrams/liter
MIS	Management Indicator Species
MRI	montane riparian
NEPA	National Environmental Policy Act
NFS	National Forest System
O/E	observed to expected
PEA	Proponents Environmental Assessment
PPN	ponderosa pine
RFR	red fir
RPF	Registered Professional Forester
RIVPACS	River Invertebrate Prediction and Classification System
ROD	Record of Decision
ROW	Right-of-way

SCI	Stream Condition Inventory
SMC	Sierran mixed conifer
SNEP	Sierra Nevada Ecosystem Project
SNF Bioregional MIS	Sierra Nevada Forests Bioregional Management Indicator Species
SNF MIS Amendment	Sierra Nevada Forests Management Indicator Species Amendment
SNFPA	Sierra Nevada Forest Plan Amendment
TNF	Tahoe National Forest
USDA	United States Department of Agriculture
USGS	U.S. Geologic Survey
WFR	white fir
WQ	Applicant Proposed Measure for Water Quality
WTM	wet meadow

1 INTRODUCTION

The purpose of this report is to evaluate and disclose the impacts of the CalPeco 625 and 650 Electrical Line Upgrade Project ("project") on the habitat of the 12 Management Indicator Species (MIS) identified in the *Lake Tahoe Basin Management Unit* (LTBMU) *Land and Resource Management Plan* (LRMP) (USDA 1988) and the Tahoe National Forest (TNF) LRMP (USDA 1990) as amended by the S*ierra Nevada Forests Management Indicator Species Amendment* (SNF MIS Amendment) *Record of Decision* (ROD) (USDA Forest Service 2007). This report documents the effects of the project on the habitat of selected project-level MIS. Detailed descriptions of the project alternatives are provided in the *CalPeco 625 and 650 Electrical Line Upgrade Project Environmental Impact Statement (NEPA)/Environmental Impact Statement (TRPA)/Environmental Impact Report (CEQA)* (EIS/EIS/EIR) (Ascent Environmental 2013). This report describes: (1) the project background, purpose, and need; (2) vegetation communities and wildlife habitats present in the project area; and (3) effects of the project on MIS habitats within National Forest System (NFS) land managed by the LTBMU and TNF.

MIS are animal species identified in the *SNF MIS Amendment Record of Decision* (ROD) signed December 14, 2007, which was developed under the *1982 National Forest System Land and Resource Management Planning Rule* (1982 Planning Rule) (36 CFR 219). Guidance regarding MIS set forth in the LTBMU and TNF LRMPs as amended by the *2007 SNF MIS Amendment ROD* directs Forest Service resource managers to (1) at the project scale, analyze the effects of projects on the habitat of each MIS affected by such projects, and (2) at the bioregional scale, monitor populations and/or habitat trends of each MIS, as identified in the LTBMU and TNF LRMPs as amended.

This report specifically follows the *Sierra Nevada Project-level MIS Report Template Outline and Key Points for its Use* (dated 13 January 2011), which was provided by the LTBMU and TNF. The report also includes standardized text and references developed and provided by the Forest Service where appropriate.

1.A DIRECTION REGARDING THE ANALYSIS OF PROJECT-LEVEL EFFECTS ON MIS

Project-level effects on MIS habitat are analyzed and disclosed as part of the EIS/EIS/EIR being prepared pursuant to the National Environmental Policy Act (NEPA) (42 U.S. Code 4321-4347), the Council on Environmental Quality (CEQ) Regulations Implementing NEPA (40 Code of Federal Regulation [CFR] 1500-1508), Forest Service Manual 1950, and Forest Service Handbook 1909.15. This report and the EIS/EIS/EIR both examine the environmental effects of the project on MIS habitat by discussing how direct, indirect, and cumulative effects would change habitats in the analysis area. The analysis area for this MIS report includes the portion of the project that is located on NFS lands.

The project-level impacts to habitat are then related to broader scale (bioregional) population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the type of monitoring identified for MIS in the LRMPs as amended by the SNF MIS Amendment ROD. Hence, where the current LTBMU and/or TNF LRMP identify distribution population monitoring for an MIS, the project-level habitat effects analysis for that MIS is informed by available distribution population monitoring data, which are gathered at the bioregional scale. The bioregional scale monitoring identified in the LTBMU and TNF LRMP, as amended, for MIS analyzed for the project is summarized in Section 3 of this report.

Adequately analyzing project effects on MIS generally involves the following steps:

- identifying which habitat and associated MIS would be either directly or indirectly affected by the project alternatives; these MIS are potentially affected by the project.
- summarizing the bioregional-level monitoring identified in the LRMP, as amended, for this subset of MIS.
- analyzing project-level effects on MIS habitat for this subset of MIS.
- discussing bioregional scale habitat and/or population trends for this subset of MIS; and
- relating project-level impacts on MIS habitat to habitat and/or population trends at the bioregional scale for this subset of MIS.

These steps are described in detail in the Pacific Southwest Region's draft document *MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination* (May 25, 2006). This MIS Report documents application of the above steps to select project-level MIS and analyzes the effects of the CalPeco 625 and 650 Electrical Line Upgrade Project on relevant MIS habitat located on NFS lands within the overall project area.

1.B DIRECTION REGARDING MONITORING OF MIS POPULATION AND HABITAT TRENDS AT THE BIOREGIONAL SCALE

The bioregional scale monitoring strategy for the LTBMU and TNF MIS is found in the *2007 SNF MIS Amendment ROD*. Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS except for the greater sage-grouse. For aquatic macroinvertebrates, the bioregional scale monitoring identified is Index of Biological Integrity and Habitat. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the *Sierra Nevada Forests Bioregional Management Indicator Species* (SNF Bioregional MIS) Report (USDA Forest Service 2010) which is hereby incorporated by reference.

1.B.1 MIS HABITAT STATUS AND TREND

All habitat monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMPs as amended by the *2007 SNF MIS Amendment ROD* (USDA Forest Service 2007).

Habitats are the vegetation types (e.g., early-seral coniferous forest) or ecosystem components (e.g., snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007), as listed below in Table 1. These habitats are defined using the California Wildlife Habitat Relationship (CWHR) System developed by the California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game) in 2005. The CWHR System provides the most widely used habitat relationship models for California's terrestrial vertebrate species (ibid). It is described in detail in the *SNF Bioregional MIS Report* (USDA Forest Service 2010).

Habitat status is the current amount of habitat on the Sierra Nevada Forests. Habitat trend is the direction of change in the amount or quality of habitat over time. The methodology for assessing habitat status and trend is described in detail in the *SNF Bioregional MIS Report* (USDA Forest Service 2010).

1.B.2 MIS POPULATION STATUS AND TREND

All population monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the *2007 SNF MIS Amendment ROD* (USDA Forest Service 2007). Population monitoring strategies for MIS of the LTBMU are also identified in the *2007 SNF MIS Amendment ROD* (USDA Forest Service 2007). Population status is the current condition of the MIS related to the population monitoring data required in the *2007 SNF MIS*

Amendment ROD for that MIS. Population trend is the direction of change in that population measured over time. This information is presented in detail in the *2008 SNF Bioregional MIS Report* (USDA Forest Service 2010).

There are a myriad of approaches for monitoring populations of MIS, from simply detecting presence to detailed tracking of population structure (USDA Forest Service 2001, Appendix E, page E-19). A distribution population monitoring approach is identified for all of the terrestrial MIS in the *SNF MIS Amendment ROD*, except for the greater sage-grouse (USDA Forest Service 2007). Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time. Presence data are collected using a number of direct and indirect methods, such as surveys (population surveys), bird point counts, tracking numbers of hunter kills, counts of species sign (such as deer pellets), and so forth. The specifics regarding how these presence data are assessed to track changes in distribution over time vary by species and the type of presence data collected, as described in the *SNF Bioregional MIS Report* (USDA Forest Service 2010).

1.B.3 AQUATIC MACROINVERTEBRATE STATUS AND TREND

For aquatic macroinvertebrates, condition and trend is determined by analyzing macroinvertebrate data using the predictive, multivariate *River Invertebrate Prediction and Classification System* (RIVPACS) (Hawkins 2003) to determine whether the macroinvertebrate community has been impaired relative to reference condition within perennial water bodies. This monitoring consists of collecting aquatic macroinvertebrates and measuring stream habitat features according to the *Stream Condition Inventory* (SCI) manual (Frasier et al. 2005). Evaluation of the condition of the biological community is based upon the "observed to expected" (O/E) ratio, which is a reflection of the number of species observed at a site versus the number expected to occur there in the absence of impairment. Sites with a low O/E score have lost many species predicted to occur there, which is an indication that the site has a lower than expected richness of sensitive species and is therefore impaired.

2 SELECTION OF PROJECT LEVEL MIS

MIS for the LTBMU and TNF are identified in the 2007 SNF MIS Amendment (USDA Forest Service 2007). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS, as indicated in Table 1, below. In addition to identifying the habitat or ecosystem components (1st column), the CWHR type(s) defining each habitat/ecosystem component (2nd column), and the associated MIS (3rd column), Table 1 discloses whether or not the habitat of the MIS is potentially affected by the CalPeco 625 and 650 Electrical Upgrade Project (4th column). Category "3" in the 4th column indicates that the MIS habitat would be either directly or indirectly affected by the project.

2.A CATEGORY 1 MIS

No west-slope chaparral shrubland habitat suitable for fox sparrow or oak-associated hardwood/hardwood-conifer forest habitat suitable for mule deer occur on TNF lands within the project area or vicinity (these species and habitat types are not included as MIS or MIS habitats for the LTBMU). As per Forest Service direction (*Sierra Nevada Project-level MIS Report Template Outline and Key Points for its Use* [dated 13 January 2011], which was provided by the LTBMU and TNF), black-backed woodpecker, and the ecosystem component of snags in burned forest, are only analyzed for fire salvage and fire restoration projects. Additionally, no stand-replacing burned forest and associated snag habitat for black-backed woodpecker are found within the project area or vicinity.

2.B CATEGORY 2 MIS

No Category 2 MIS were identified in this analysis.

Table 1 LTBMU and Tahoe National Forest Management Indicator Species and Selection of MIS for Project-Level Analysis for the CalPeco 625 and 650 Electrical Upgrade Project

Habitat or Ecosystem Component	CWHR Type(s) Defining the Habitat or Ecosystem Component [1]	Management Indicator Species	Category for Project Analysis[2]
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	aquatic macroinvertebrates	**3**
Shrubland (west-slope chaparral types) (TAHOE NATIONAL FOREST only)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	fox sparrow *(Passerella iliaca)*	**1**
Oak-associated Hardwood & Hardwood/conifer(TAHOE NATIONAL FOREST only)	montane hardwood (MHW), montane hardwood-conifer (MHC)	Mule deer *(Odocoileus hemionus)*	**1**
Riparian	montane riparian (MRI), valley foothill riparian (VRI)	Yellow warbler *(Dendroica petechia)*	**3**
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific tree frog *(Pseudacris regilla)*	**3**
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail *(Oreortyx pictus)*	**3**
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 4, all canopy closures	Mountain quail *(Oreortyx pictus)*	**3**
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (blue) grouse *(Dendragapus obscures)*	**3**
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6.	California spotted owl, *(Strix occidentalis occidentalis)* American marten, *(Martes Americana)* Northern flying squirrel, *(Glaucomys sabrinus)*	**3**
Snags in Green Forest	Medium and large snags in green forest	Hairy woodpecker, *(Picoides villosus)*	**3**
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	Black-backed woodpecker *(Picoides arcticus)*	**1**

[1] All CWHR size classes and canopy closures are included unless otherwise specified; **dbh** = diameter at breast height;

Canopy Closure classifications:
S = Sparse Cover (10–24% canopy closure) **P** = Open cover (25–39% canopy closure)
M = Moderate cover (40–59% canopy closure) **D** = Dense cover (60–100% canopy closure)

Tree size classes:
1 (Seedling)(<1" dbh) **4** (Small tree)(11"–23.9" dbh)
2 (Sapling)(1"–5.9" dbh) **5** (Medium/Large tree)(>24" dbh)
3 (Pole)(6"–10.9" dbh) **6** (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

[2] **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.
Category 2: MIS whose habitat is in or adjacent to project area, but would not be either directly or indirectly affected by the project.
Category 3: MIS whose habitat would be either directly or indirectly affected by the project.

2.C CATEGORY 3 MIS

The MIS whose habitat would be either directly or indirectly affected by the project are identified as Category 3 in Table 1. These MIS are carried forward in this analysis, which evaluates the direct, indirect, and cumulative effects of the proposed alternatives on the habitat of these MIS. The MIS selected for project-level MIS analysis for the project are aquatic macroinvertebrates, yellow warbler, Pacific tree frog, mountain quail, sooty (blue) grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker.

3 BIOREGIONAL MONITORING REQUIREMENTS FOR MIS SELECTED FOR PROJECT-LEVEL ANALYSIS

3.A MIS MONITORING REQUIREMENTS

The *Sierra Nevada Forests Management Indicator Species Amendment* (SNF MIS) (USDA Forest Service 2007) identifies bioregional scale habitat and/or population monitoring for the MIS for ten National Forests, including the LTBMU and TNF (USDA Forest Service 2007). The habitat and/or population monitoring requirements for both LTBMU's and TNF's MIS are described in the *SNF Bioregional MIS Report* (USDA Forest Service 2010) and are summarized below for the MIS being analyzed for the CalPeco 625 and 650 Electrical Line Upgrade Project. The applicable habitat and/or population monitoring results are described in the *SNF Bioregional MIS Report* (USDA Forest Service 2010) and are summarized in Section 5, below, for the MIS being analyzed for the CalPeco 625 and 650 Electrical Line Upgrade Project.

Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components, including those analyzed for the CalPeco 625 and 650 Electrical Line Upgrade Project: shrubland, riparian, wet meadow, early seral coniferous forest, mid seral coniferous forest, late seral open canopy coniferous forest, late seral closed canopy forest, and snags in green forest. Bioregional monitoring activities are described below.

Bioregional monitoring for aquatic macroinvertebrates: the Index of Biological Integrity (IBI) and habitat condition and trend are measured by collecting aquatic macroinvertebrates and analyzing the resulting data using the RIVPACS (Hawkins 2003) to determine whether the macroinvertebrate community has been impaired relative to reference condition within perennial water bodies. In addition, stream habitat features are measured according to the *SCI Manual* (Frasier et al. 2005).

Distribution population monitoring at the bioregional scale for fox sparrow, yellow warbler, Pacific tree frog, mountain quail, sooty (blue) grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker will be analyzed for the CalPeco 625 and 650 Electrical Line Upgrade Project. Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time (also see USDA Forest Service 2001, Appendix E).

3.B HOW MIS MONITORING REQUIREMENTS ARE BEING MET

Habitat and/or distribution population monitoring for all MIS is conducted at the Sierra Nevada scale. Refer to the *SNF Bioregional MIS Report* (USDA Forest Service 2010) for details by habitat and MIS.

4 PROJECT DESCRIPTION

4.A PROJECT BACKGROUND

On January 1, 2011, California Pacific Electric Company (CalPeco) purchased the Sierra Pacific Power Company's California electric service territory. The physical boundaries of the service territory include the California portion of the Lake Tahoe Basin and extend north to Portola and Loyalton and south to Walker in Mono County. The service territory includes the North Lake Tahoe Transmission System, which is a loop that runs from Truckee to Squaw Valley to Tahoe City to Kings Beach and then back to Truckee. The following lines comprise this loop:

- One 60 kV electric line, the 609 Line, and one 120 kV electric line, the 132 Line, from Truckee to Squaw Valley;
- One 60 kV electric line from Tahoe City to Squaw Valley, the 629 Line;
- One 60 kV electric line from Kings Beach to Tahoe City, the 625 Line; and
- One 60 kV electric line from Truckee to Kings Beach, the 650 Line.

The proposed CalPeco 625 and 650 Electrical Line Upgrade Project, which is the subject of this MIS Report, consists primarily of an upgrade of the 625 and 650 Electrical Lines and associated substations from an existing 60 kilovolt (kV) capacity to a 120 kV capacity to allow the entire transmission loop to operate at 120 kV. The electrical lines and associated infrastructure are owned by CalPeco, the project proponent.

The proposed project is located in northeastern Placer County and southeastern Nevada County, California (Exhibit 1). The project components are predominantly located on lands managed by the U.S. Forest Service (USFS); these lands are located in the Tahoe National Forest (TNF) and in the Lake Tahoe Basin Management Unit (LTBMU). The project area also includes the Town of Truckee and the unincorporated communities of Kings Beach and Tahoe City, as well as the Martis Creek Lake Recreation Area managed by the U.S. Army Corps of Engineers (USACE) and Burton Creek State Park. Land use in the project area is predominantly forested, with segments of residential, industrial, and tourism-related uses where the project components enter more developed communities. A project overview map showing the location of each project component and alternative and the extent of NFS lands traversed by the project are provided in Exhibit 2. Each line has been divided into numbered segments, which are also depicted in Exhibit 2. The locations of the primary project components are described in detail in Section 4.A.3, "Project Location," below.

4.A.1 PURPOSE AND NEED

The North Lake Tahoe Transmission System must be able to supply peak loads at adequate voltage levels without overloading the system components. Although the system will not incur peak load levels at all times, it must be capable of meeting this maximum demand when it does occur. Industry-accepted criteria and regulatory standards also require the system to supply peak loads with any one component of the system out of service, termed single-contingency reliability.

The system can currently only provide single-contingency reliability with use of the Kings Beach Diesel Generation Station. However, there are regulatory limitations on the annual hours of operation for the generation station, which could be exceeded if the station is the only mechanism to respond to both single-contingency outages and any multiple-contingency outages.

The current system is subject to regular outages, with the most common/probable mechanisms being high winds blowing down power poles, trees falling onto the power lines, snow loading causing line failure, and wildfire.

Currently, the 625 Line experiences the most outages in the North Lake Tahoe Transmission System, with the primary causes being snow loading and downed trees. The 625 Line provides a particular challenge due to its remote location and lack of road access. Inspections and maintenance must often be deferred to the winter months because trucks cannot reach much of the alignment and over-snow vehicles must be used for access. The lack of vehicle access also slows repair response time, resulting in longer outages than if the line were in a more accessible location.

The 625 and 650 Electrical Line Upgrade Project is designed to fulfill five primary purposes/objectives.

1. Provide normal capacity for current and projected loads.
2. Provide reliable capacity to assure adequate service to all customers during single-contingency outages.
3. Reduce dependence on the Kings Beach Diesel Generation Station.
4. Reduce the risk of fire hazards and outage durations associated with wooden poles and encroaching vegetation.
5. Provide more reliable access to the 625 Line for operation and maintenance activities.

Capacity and reliability would be achieved by upgrading the 625 and 650 Lines and associated facilities (e.g., substations) from their existing 60 kV capacity to 120 kV capacity. Increased resiliency to outages and fire hazards would be achieved by replacing existing wooden poles with the proposed steel poles, which are stronger and more resistant to wildfire. Increased vehicle access to the 625 Line for inspection, maintenance, and repairs would be achieved by re-routing the line to a less remote location with existing access roads, and creating new overland travel ways where needed. Improving truck access to the 625 Line for inspections and maintenance would also increase the lines resilience to outages.

4.A.2 PROJECT OBJECTIVES

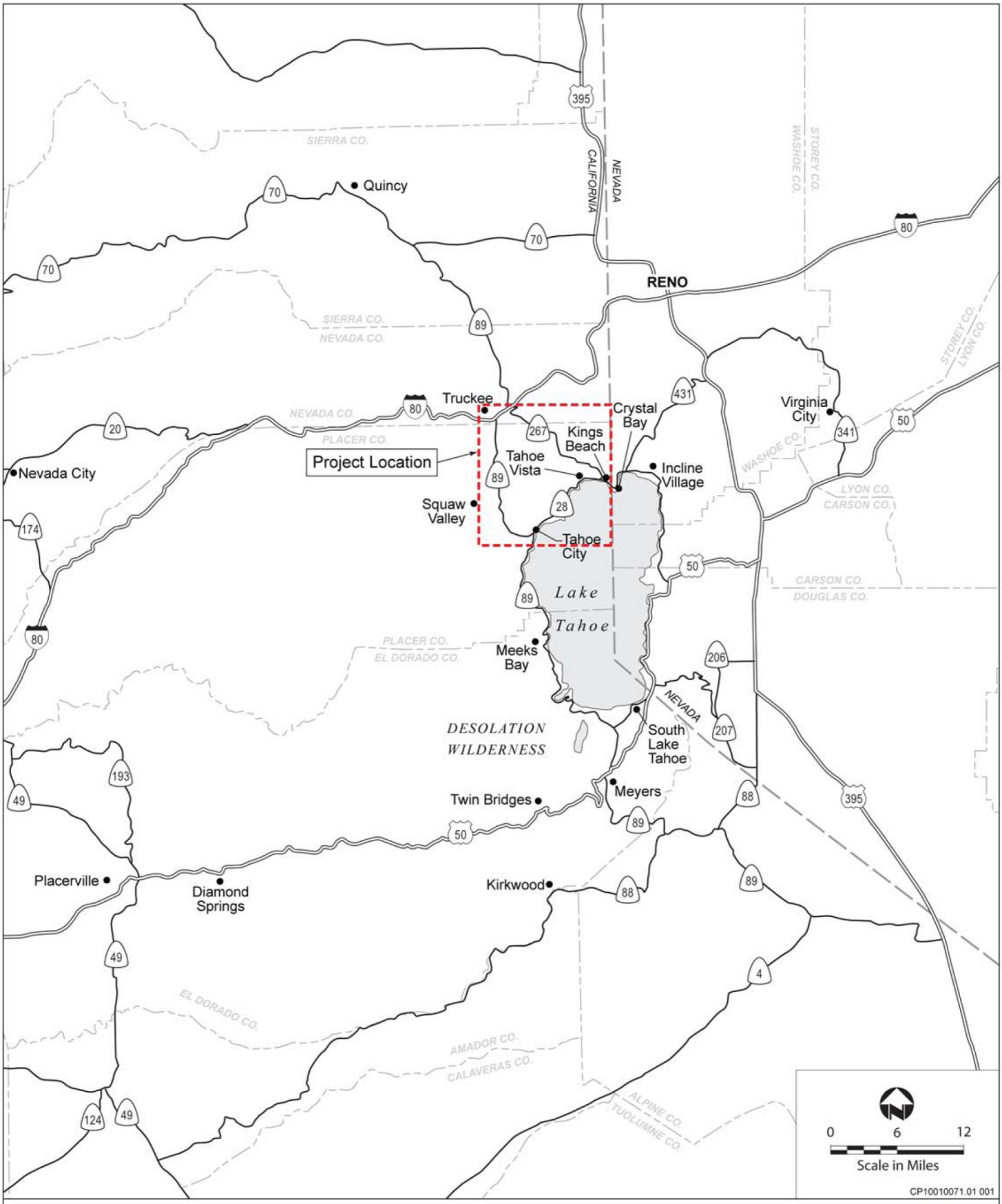
The 625 and 650 Electrical Line Upgrade Project addresses five primary objectives:

1. Provide normal capacity for current and projected loads.
2. Provide reliable capacity to assure adequate service to all customers during single-contingency outages.
3. Reduce dependence on the Kings Beach Diesel Generation Station.
4. Reduce the risk of fire hazards and outage durations associated with wooden poles and encroaching vegetation.
5. Provide more reliable access to the 625 Line for operation and maintenance activities.

4.A.3 PROJECT LOCATION

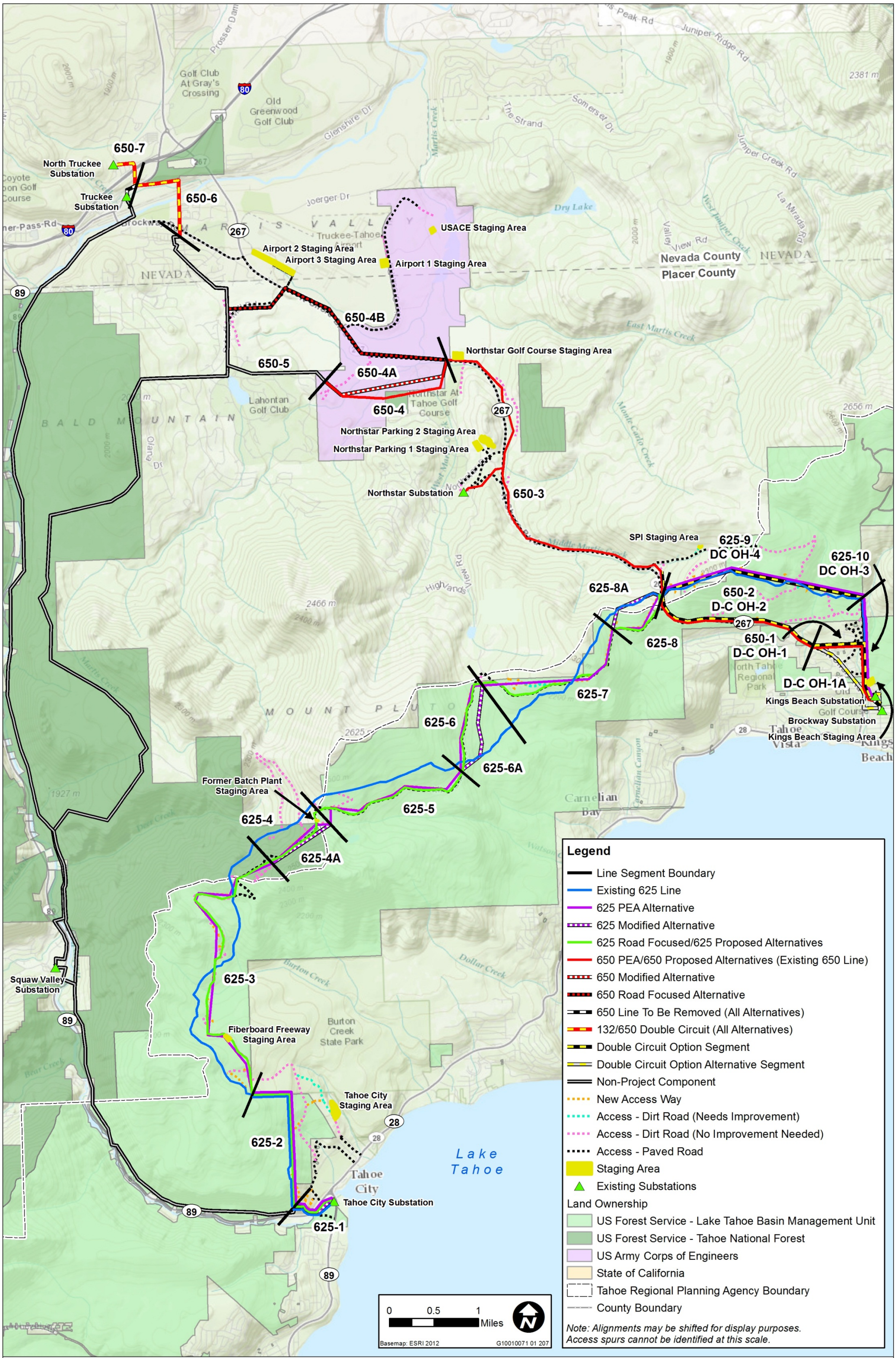
The proposed CalPeco 625 and 650 Electrical Line Upgrade Project is located in northeastern Placer County and southeastern Nevada County, California (Exhibit 1). The project components are predominantly located on lands managed by the USFS; these lands are located in the TNF and in the LTBMU. The project area also includes the Town of Truckee and the unincorporated communities of Kings Beach and Tahoe City, as well as the Martis Creek Lake Recreation Area managed by the USACE and Burton Creek State Park. Land use in the project area is predominantly forested, with segments of residential, industrial, and tourism-related uses where the project components enter more developed communities. A project overview map showing the location of each project component and alternative and the extent of NFS lands traversed by the project is provided in Exhibit 2. Each line has been divided into numbered segments, which are also depicted in Exhibit 2.

Segments of the project on NFS lands are located in Township 15N Range 16E Sections 1 and 12, Township 15N Range 17E Section 7, Township 16N Range 16E Sections 13, 23, 24, 26, and 35; Township 16N Range 17E Sections 1-3, 8-10, 12, and 16-18; Township 16N Range 18E Section 18; Township 17N Range 16E Section 11; and Township 17N Range 17E Section 30 of the Mt. Diablo Meridian (21).



Source: Ascent Environmental 2012

Exhibit 1 **Regional Location Map**



Source: Data received from TriSage in 2012; adapted by Ascent Environmental in 2013

Exhibit 2 **Project Features**

625 LINE

The existing 625 Line and the proposed action alternatives all generally run in a northeast-southwest direction between the communities of Kings Beach and Tahoe City and are located primarily on NFS lands managed by the LTBMU, though Segments 625-4, 625-4A, and part of Segment 625-3 are on NFS land managed by the TNF (Exhibit 2). Each of the 625 Line action alternatives would generally parallel the Fiberboard Freeway, but Alternative 3 (Road-Focused Alternative) and Alternative 4 (Proposed Alternative) would follow the Fiberboard Freeway more precisely, whereas the Alternative 1 (PEA Alternative) would deviate more from the roadway alignment to provide a straighter line with fewer angle points. The Alternative 2 (Modified Alternative) would follow the same alignment as the PEA Alternative, except in Segments 625-1A, 4A, 6A, and 8A where the alignment is relocated to avoid or minimize effects to specific resources. Segments 625-9 and 625-10 (from Kings Beach to SR 267 at Brockway Summit) would follow the same route under the PEA and Modified Alternatives, except in the Modified Alternative the 650 Line would be double-circuited with the 625 Line (both lines would share the same poles) . Under the Road Focused and Proposed Alternatives the 625 Line would be double-circuited with 650 Line along SR 267.

650 LINE

Segments 650-1 and 650-2 are partially located on NFS lands managed by LTBMU, primarily along SR 267 heading northwest out of Kings Beach. With the Modified Alternative, Segments 650-1 and 650-2 would be eliminated and the 650 Line would be constructed as a double-circuit configuration with the 625 Line in Segments 625-9 and 625-10; these segments are also located primarily within NFS lands managed by LTBMU. Under the PEA and Proposed Alternatives, Segment 650-4 would cross TNF land for approximately 0.25 mile in Martis Valley adjacent to the Northstar Golf Course, but this segment would be realigned outside of NFS lands under the Modified and Road Focused Alternatives. A portion of Segment 650-6 under all action alternatives traverses TNF land along Glenshire Road in the town of Truckee (Exhibit 2) and this segment would be the same under each alternative.

STAGING AREAS

Three staging areas are being considered on NFS lands. The Kings Beach Staging Area is located just north of the Kings Beach Substation and is accessed using an existing dirt access road located at the end of Canterbury Drive. This location was formerly used as a landfill and as a result, has a previously disturbed area that measures approximately 300 feet by 300 feet (2 acres). Activity at this location would be restricted to this previously disturbed area. The vegetation within the planned staging area mainly consists of bunch grasses and scattered Jeffrey pines under 10 feet in height, and has a light infestation of cheatgrass and a moderate woolly mullein infestation.

The Former Batch Plant Staging Area is located approximately 300 feet north of the new 625 Line near mile post (MP) 9.3 (near Segment 625-4) and is accessed from Mount Watson Road. This approximately 120-foot by 80-foot (0.2 acre) area is previously disturbed and has little natural vegetation directly within the staging area. The surrounding area's primary vegetation type is red fir (*Abies magnifica*) forest.

The Fiberboard Freeway Staging Area is located approximately 200 feet east of the new 625 Line near MP 12.8 (near Segment 625-3) and is accessed from Mount Watson Road. This approximately 200-foot by 100-foot (0.5 acre) area is previously disturbed but has some vegetative cover. The vegetation on site is dominated by mountain whitethorn (*Ceanothus cordulatus*) with scattered pines.

4.B PROPOSED ACTION

The proposed action consists primarily of an upgrade of the 625 and 650 Electrical Lines and associated substations from an existing 60 kilovolt (kV) capacity to a 120 kV capacity to allow the entire transmission loop to operate at 120 kV. The electrical lines and associated infrastructure are owned by CalPeco, the project proponent. The primary project components that would occur at least partially on NFS lands are: 1) removal of

the existing 625 Line that extends between Tahoe City and Kings Beach and construction of a new, rerouted 625 Line, and 2) rebuild of the existing 650 Line that extends from Kings Beach to the Town of Truckee. In addition to the electric line improvements, a number of access ways would be improved or created and existing NFS roads would be used for construction and operational access. In some locations, improvements to existing NFS roads would be required (e.g., grading, widening, removal of encroaching vegetation). The proposed system improvements would increase the ability to maintain the current maximum system loads while experiencing an outage on any one of the four legs of the system, and decrease reliance on the Kings Beach Diesel Generation Station for back-up power generation. In addition, rebuilding and realigning the power lines would reduce the likelihood of outages associated with high winds, felled trees, snow loading, and forest fires and improve access to the lines for inspection, maintenance, and repair activities.

Four action alternatives are being evaluated at an equal level of detail (Exhibit 2). The Alternative 1 (PEA Alternative) is the alternative described in the Proponent's Environmental Assessment (PEA) submitted by Sierra Pacific Power Company as part of the original permit application provided to the California Public Utilities Commission (CPUC) in 2010. Alternative 2 (Modified Alternative) is similar to the PEA Alternative, but includes rerouting of some portions of the alignment based on various factors, such as resource constraints, public and agency input received during scoping, additional information gathered during detailed field reviews, and further progress on project engineering and design. Alternative 3 (Road Focused Alternative) re-routes the 625 Line to more closely follow the Fiberboard Freeway and other area roadways and places more of the 650 Line as well as the 625 Line on a double-circuit along State Route (SR) 267. The Road Focused Alternative includes a sub-alternative (Alternative 3A) that begins placement of the 625/650 Line double-circuit at a more southerly point, closer to Kings Beach. Alternative 4 (Proposed Alternative) is a combination of Alternative 3 (Road Focused Alternative) for the 625 Line improvements and elements of the Alternative 1(PEA Alternative) and Alternative 3 (Road Focused Alternative) for the 650 Line improvements. Alternative 4 (Proposed Alternative) allows facilities to be in proximity to existing roadways, while maximizing the use of an already upgraded portion of the 650 Line in Segment 650-5. The following paragraphs describe components of the action alternatives that would occur on NFS lands. A regional location map and a map of the proposed alternative alignments are provided in Exhibits 1 and 2, respectively. Detailed descriptions of the alternatives are provided in the *CalPeco 625 and 650 Electrical Line Upgrade Project EIS/EIS/EIR* (Ascent Environmental 2013).

Alternatives 1, 3, and 4 include two Applicant Proposed Measures (APMs) that alter the proposed power line alignment to minimize scenic impacts. APM SCE-7 moves the 650 Line along SR 267 between Kings Beach and Brockway summit further away from SR 267. APM SCE-8 moves the 625 Line along the Truckee River in Tahoe City slightly south, further away from the river (see discussion below).The following paragraphs summarize components of the action alternatives that would occur on NFS lands.

4.B.1 REMOVAL AND RECONSTRUCTION OF THE EXISTING 625 LINE

As part of the upgrade to 120 kV for the North Lake Tahoe Transmission System, CalPeco is proposing to reconductor (i.e., old electrical line is replaced with new line) and reroute the 625 Line with the objective that the new conductor (i.e., wire along the towers) can accommodate 120 kV capacity and to align the line more closely with the existing roadways in the area. After completion of the new 625 Line, the existing line would no longer be needed and would be removed. The removal of the existing 625 Line would involve approximately 15 miles of conductor and 341 wooden poles. For analysis purposes, the line was broken into segments. There are one to three alternative alignments considered for each segment of the new 625 Line (e.g., only one possible route is being considered in Segment 625-2 but three possible routes are being considered for Segment 625-4). With incorporation of APM SCE-8, Alternatives 1, 3, and 4 would be setback into the 64-Acre Recreation Site in Tahoe City. Setting the line back from the Truckee River corridor would shield views of the power line from SR 89 and the Truckee River.

4.B.2 REBUILD OF THE EXISTING 650 LINE

Approximately 10 miles of the existing 650 Line would be rebuilt. Various segments would either be rebuilt in the existing ROW and alignment, or constructed along a new alignment, depending on the alternative being

considered. Where the existing alignment is followed, new poles would generally be placed 7-10 feet from the existing poles (which would be removed as part of the project, except in cases where there is underbuild [existing electrical distribution or communication lines on the same pole as the power lines to be replaced] that cannot be moved to the new poles), but in some areas, new poles could be further from existing poles to best support the system design (e.g., to remove existing angle points in the line or avoid sensitive resources).

In the Kings Beach/Brockway Summit area, incorporation of APM SCE-7 into the project would result in installation of the power line in a new corridor east of SR 267. Replacement poles for the 650 Line would be sited to eliminate or substantially reduce their visibility from the highway within the Lake Tahoe Basin, as compared to the existing 650 Line, without causing new visual impacts from tree removal or construction of access ways that would be required to erect and maintain the line. The realigned portion of the 650 Line would be unseen or minimally visible from the highway.

4.B.3 SUBSTATIONS

There are no substations on NFS lands; however, construction at the Tahoe City Substation would require a temporary work area outside of the existing fence line on an adjacent NFS land parcel managed by the Lake Tahoe Basin Management Unit (LTBMU). In order to upgrade the substation while maintaining distribution capabilities, portable (temporary) transformers would be required during construction and would be connected to the 625 Line or 629 Line (a separate line in the looped system extending from Tahoe City to Squaw Valley that has already been upgraded to 120 kV capacity under a separate project) using temporary poles. These transformers would be located on the NFS parcel (i.e., the 64-acre parcel) immediately to the south of the Tahoe City Substation. The portable transformers would be mounted on two trailers, measuring 8 feet wide by 40 feet long. The temporary poles would be similar to the existing 60-kV poles. Upon completion of the Tahoe City Substation upgrade, these temporary poles and transformers would be removed and the 625 and 629 lines would be connected to the permanent, new transformers.

4.B.4 PERMANENT RIGHT-OF-WAY REQUIREMENTS

CalPeco currently holds easements from the USFS, USACE, the California Department of Parks and Recreation, Placer County, other public entities, and various private landowners that own properties that are crossed by the existing 650 Line, 625 Line, 132 Line, and Northstar Fold. The widths of the existing easements vary, but average approximately 30 feet. The easement for the proposed Northstar Fold would widen from approximately 40 feet to 95 feet between the westernmost pole and the Northstar Substation due to the divergence of the separate circuits. As part of project implementation, CalPeco would negotiate with the existing landowners to obtain a permanent easement of 40 feet for single-circuit options (one line on each pole) for the new 625 and 650 Lines for operation and maintenance purposes. For segments of Alternative 2 (Modified Alternative), Alternative 3 (Road Focused Alternative), and Alternative 4 (Proposed Alternative) where a double-circuit option is being considered, a permanent easement of 65 feet would be pursued. The wider easement and associated vegetation management is desired for double-circuit options because equipment damage from tree fall, wildfire, or other events could cause failure in two lines simultaneously and significantly affect service in the whole North Lake Tahoe Transmission System.

4.B.5 TEMPORARY RIGHT-OF-WAY REQUIREMENTS

To accommodate construction, a temporary 65-foot-wide ROW would be established for the new 625 Line and 650 Line (single-circuit options), the Northstar Fold, and the 132 Line. All disturbances outside of the permanent 40 foot wide easement described above would be temporary and the land would be restored to its original condition following construction, unless otherwise requested by the landowner or land management agency. For double-circuit options, all construction activity would occur within the 65-foot permanent easement.

4.B.6 POLE WORK AREAS

To accommodate construction equipment and activities, work areas surrounding each pole location would be cleared of vegetation and graded as necessary to provide a safe work area. Each angle pole (where there is a turn in the line) would require an approximately 0.5-acre work area measuring approximately 65 feet by 335 feet; each tangent pole (where the line continues in a straight path) would require an approximately 0.25-acre work area measuring approximately 65 feet by 170 feet; however, these work areas can be reduced or adjusted to avoid sensitive resources. Pole work areas would typically be accessed by truck using existing access roads or new access ways and the power line ROW. In areas where the terrain is too rugged for truck access, crews would use all-terrain vehicles or hike in by foot to access the pole sites.

An additional temporary work area may be required in instances where anchors would be installed outside of the temporary ROW. In these instances, a work area up to 15 feet wide and 50 feet long, extending from the ROW to the anchor location, would be established to provide access for the construction equipment and crew.

4.B.7 STRINGING SITES

Multiple stringing sites would be required during the removal and installation of the conductors. In general, stringing sites would be approximately 300 feet in diameter (approximately 1.6 acres) and would be spaced at a distance between approximately 500 feet and approximately 8,000 feet apart depending on the terrain and surface conditions along the ROW, as well as placement of angle structures. On average, they would be located approximately 2,500 feet apart. Stringing sites require a relatively flat surface; therefore, they would need to be cleared and may need to be graded to allow for safe equipment operation. Site preparation would require heavy equipment for removing obstacles (e.g., large rocks, trees, brush). Vegetation would be removed, as necessary, to provide safe and efficient work areas. Mowing or grubbing would be the preferred method for clearing vegetation.

4.B.8 ACCESS

The electrical line ROWs would primarily be accessed through the use of existing, paved municipal roadways and paved and dirt USFS system roads. However, additional access ways would need to be developed to facilitate access from existing roads to the power line ROWs for construction and later inspections, maintenance, and repairs. For the purpose of this assessment, all roads used to access the site are termed "access ways."[1] Access ways include existing paved roads, existing dirt roads, and new dirt roads and "two-track" pathways that would be developed for the project. Where access ways would be on slopes greater than 20 percent, a wider access way would require grading, as discussed below.

Among the access ways to be used are categories titled "Dirt Road (No Improvement Needed)" and "Paved Road"; these are existing dirt and paved roads that would be used to access the power line ROWs during project construction and operation and maintenance activities. These roads would be used as they currently exist and

[1] The criterion for defining a road varies by the agency with jurisdiction. Each land manager or owner may have different requirements for design, construction, maintenance, and use. TRPA Code defines "road" as a smooth or paved surface designed for travel by motor vehicles. In general, the impacts are assessed based on the coverage of the road surface. The project does not include the construction of any new paved roads. Roads on National Forest System lands described for this project are either temporary or permanent. Temporary Roads are built to facilitate the construction of the project. They are completely restored at the conclusion of construction and no longer used or open to vehicles. Permanent Roads would be included as part of the National Forest Road System. They are classified in five levels from Maintenance Level 1 (basic custodial care, closed to vehicles) to Maintenance Level 5 (high comfort; passenger car). This project includes the use of roads that are already included in the National Forest Road System (e.g., Fiberboard Freeway) and construction of new roads. New roads may be both completely new construction or may utilize portions of old legacy roadways. For this project, new roads, which include any road not previously part of the National Forest System, are assumed for analysis to be Maintenance Level 2, to facilitate the long term operational and maintenance needs of the project. Given the different uses and definitions of the term "road", the term "access way" is used in this document to encompass the various types of facilities that may provide vehicle access. The term "access way" is not specifically defined by any of the lead agencies, but is used herein to describe a route within the project area (that may or may not require widening or clearing), which is required for construction and /or operation of the project. For the purpose of this document, access ways include several categories of routes, including existing dirt roads, National Forest System roads, existing roads and trails that are not part of a formal designated travel system, new dirt roads constructed as part of the project, and existing and new "two-track" pathways intended for power line operations and maintenance access. Calculations of required access way mileage for each alternative are estimates based on preliminary engineering.

no changes or modifications are proposed. If these roads are damaged during construction, they would be restored to pre-project conditions.

Another category, "Dirt Road (Needs Improvement)", represents existing dirt roads that would require some modification to support their use during project construction. In most instances, the improvement or modification would consist of removing rocks and logs that may have fallen onto the road and trimming brush, branches, and other vegetation encroaching on the roadway to provide sufficient width and clearance to allow construction vehicles (e.g., cable trucks, tensioning trucks) to pass. In some instances, water bars (an interceptor dyke that is used to prevent erosion on sloping roads) and other features that might obstruct use by construction vehicles would be removed and then replaced after the construction process is complete. After completion of construction, no further work on these existing dirt roads is proposed. If the roads were damaged during construction (e.g., if deep ruts or potholes were created), they would be repaired to pre-project conditions prior to project completion.

The category of "new access ways" indicates a location where a new vehicle travel pathway would be created where one does not currently exist. A majority of the mileage of new access ways would be within the power line ROWs providing "centerline access routes". The centerline access routes would be approximately 10-feet wide, and although "centerline" is in the category title, in reality the route would move back and forth within the power line ROW, going on either side of power poles, avoiding boulders and other barriers, and responding to topography. In addition, turnouts (30-feet wide) would be needed approximately every 1,000 feet for vehicle passing. The power line ROWs would initially be cleared of trees and shrubs as part of project construction. After completion of construction, the centerline access routes would be maintained in low growing vegetation for erosion control while allowing over-land vehicle travel by line trucks and inspection trucks (i.e., pickup trucks).

New access ways outside the power line ROW would be similar to centerline access routes in all respects except for location. They would first be developed during project construction to support construction vehicle access to the ROW. Many of the new access ways would consist of short spur roads connecting existing roadways to nearby portions of the power line ROW. In instances where existing topography and vegetation allow vehicle access to the ROW without development of a spur road/new access way, no travel way would be developed and inspection and maintenance vehicles would drive over the existing ground surface. Trees and shrubs would be removed during construction to create an approximately 10-foot wide access way. After completion of construction, the new access way would be maintained in low growing vegetation to allow over-land vehicle travel for inspection and maintenance (Road Maintenance Level 2 per the Forest Service Handbook 7709.58, 10, 12.3).

In locations where slopes are greater than 20 percent, it is assumed that some grading would be necessary to create a suitable access way (either within or outside the power line ROW) that can be traveled by maintenance and inspection vehicles. In particularly steep areas, the new access way would likely require switch back roadways to provide moderate grades and generally level cross-slopes, and would result in a noticeable change in the topography. New access ways requiring grading/earth moving due to terrain would be approximately 10 feet wide for straight sections and up to 25-feet wide at curves to safely allow the movement of construction equipment and vehicles to each site. Cut and fill slopes, would disturb a wider area. Typically, each access way requiring grading/earth moving would first be cleared of vegetation and graded by a bulldozer. A motor grader would then level the access way in accordance with the engineered specification. Erosion control best management practices (BMPs) (e.g., water bars) would also be installed to address erosion control and water quality protection concerns. Gravel would not typically be placed on these roadways. However, it may be applied where a dirt access way intersects a paved public road to minimize the potential for dirt and mud being tracked onto public roadway. Gravel may also be applied as an erosion control BMP if appropriate. The new access way would then be revegetated with low growing vegetation and maintained as described above for other access ways, except where BMPs would not allow for revegetation.

The new access ways would not be intended for public access. Where new access ways connect to, or cross, existing roads or trails, barriers to access, such as boulders or gates would be placed at the entrance to the access way. During maintenance and inspection activities any evidence of public use would be noted, and public access barriers could be adjusted, if needed.

Miles of existing USFS system roads to be used during project construction and operation that both do and do not need improvements and miles of proposed new access ways on NFS lands are summarized by Forest in Tables 2 and 3.

Table 2 Roads and Access Ways within the LTBMU

Number	Alternative 1: PEA (miles)		Alternative 2: Modified (miles)		Alternative 3: Road Focused (miles)		Alternative 3A: Road Focused with Double Circuit Option (miles)		Alternative 4: Proposed (miles)	
	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW
Miles of existing USFS system roads to be used (no improvement)	16.5	16.0	16.5	16.1	16.5	13.8	16.5	13.8	16.5	13.8
Miles of Existing USFS system roads to be used (improved)	0.5	0.4	0.5	0.4	-	-	-	-	-	-
Miles of new access ways on USFS Land	15.0	6.6	12.1	5.5	4.3	1.2	3.9	1.2	4.3	1.2
Total	**32.0**	**23.0**	**29.1**	**22.0**	**20.7**	**15.0**	**20.4**	**15.0**	**20.7**	**15.0**

Table 3 Roads and Access Ways within the TNF

Number	Alternative 1: PEA (miles)		Alternative 2: Modified (miles)		Alternative 3: Road Focused (miles)		Alternative 3A: Road Focused with Double Circuit Option (miles)		Alternative 4: Proposed (miles)	
	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW
Miles of existing USFS system roads to be used (no improvement)	2.5	2.4	2.5	2.4	2.5	2.3	2.5	2.3	2.5	2.3
Miles of Existing USFS system roads to be used (improved)	-	-	-	-	-	-	-	-	-	-
Miles of new access ways on USFS Land	0.8	0.7	1.0	0.3	0.2	-	0.2	-	0.2	-
Total	**3.3**	**3.1**	**3.5**	**2.7**	**2.7**	**2.3**	**2.7**	**2.3**	**2.7**	**2.3**

4.B.9 STAGING AREAS

Three staging areas proposed for use during construction are located on LTBMU land (Kings Beach, Former Batch Plant, and Fiberboard Freeway). There are no staging areas proposed on TNF land.

The Kings Beach Staging Area would be used for material storage and equipment staging and as a helicopter landing zone. To prepare this staging area, minor improvements to the existing access road—including the removal of approximately 10 trees—would be required and a temporary fence would be installed around its perimeter.

The Former Batch Plant Staging Area would be used to store and stage material and equipment, and may also be used for logging activities related to the project. Vegetation and brush present would be cleared and approximately 30 trees would be removed to prepare this staging area for use.

The Fiberboard Freeway Staging Area would be used to store and stage material and equipment, and for logging operations related to the project. Vegetation and brush would be cleared and approximately five trees would be removed to prepare this staging area for use.

4.B.10 CLEAN-UP AND POST-CONSTRUCTION RESTORATION

Surplus material, equipment, and construction debris would be removed at the completion of construction activities. All man-made construction debris would be removed and recycled or disposed of at permitted landfill sites, as appropriate. Cleared vegetation would either be chipped and stored on the ROW for later use during reclamation or disposed of off-site, depending on agency agreements. In some instances, agencies have historically requested that some wood poles be left on site for a specific purpose such as raptor perching and nesting, trail alignment borders, or for erosion control in areas of steep terrain. If this occurs, CalPeco will comply with the requests.

All areas that are temporarily disturbed around each pole, as well as areas used for conductor stringing, staging, and temporary vehicle access would be restored to preconstruction conditions, to the extent practicable, following construction. This would include returning areas to their original contours and reseeding in accordance with USFS guidelines. Unless otherwise requested by the USFS, existing access roads on NFS land that have been widened would be returned to their preconstruction widths and USFS approved seed mixes would be applied to disturbed areas. CalPeco would attempt to close or restrict vehicle access to areas that would not remain open to the public or that have been seeded until the reclamation success criteria have been achieved. Rocks removed during access way grading and foundation excavation would be redistributed over the ROW to resemble adjacent site conditions.

4.B.11 OPERATIONS AND MAINTENANCE

Current operations and maintenance activities would continue with implementation of the action alternatives. The CalPeco North Lake Tahoe District Office operations personnel would patrol the lines on an annual basis. Separately from these yearly patrols, CalPeco vegetation management staff would conduct an annual hazard tree inspection, in conjunction with a California Registered Forester. As needed, CalPeco operations staff would also patrol the lines in the event of unexplained outages or significant natural incidents, such as fire, flood, or electrical storms, to inspect and repair damage. Inspections would be conducted using helicopters, all-terrain vehicles, and/or line trucks.

The typical inspections would involve a visual review of the line along a path that is roughly parallel to the centerline and along existing dirt access roads. Vegetation management activities would include tree and vegetation trimming or removal to maintain the 40-foot or 65-foot wide easement in accordance with CPUC General Order No. 95, Rule 35 and California Public Resources Code Section 4293. Hazard trees (i.e., dead, dying, diseased, decaying, or bug-infested trees) would also be removed as part of these vegetation management activities. In addition to the annual inspections, CalPeco operation and maintenance personnel would conduct pole-climbing inspections every five years. These inspections would include accessing each power pole site using four-wheel-drive vehicles on existing dirt access roads. CalPeco personnel would climb each pole to inspect the integrity and condition of the hardware and insulators.

The electrical line would be accessed via the centerline access routes established during construction. After completion of construction, the centerline access routes would be maintained in low growing vegetation that provides erosion control while allowing over-land vehicle travel by line trucks and inspection trucks (i.e., pickup trucks). Line trucks would access the power line ROW using the centerline access routes several times per year for routine maintenance, while inspection trucks would access the ROW one to two times per year. Vehicles would also travel on the centerline access routes as needed to perform repairs. If any of the existing access roads become impassable, CalPeco would contact the property owner prior to use or conducting any potential improvements.

5 EFFECTS OF PROJECT ON SELECTED MIS

This section describes the methods of mapping and estimating impacts to MIS habitats in the analysis area, provides a summary of habitat types in the analysis area and overview of project-related impacts to habitats, and evaluates the direct and indirect effects of project implementation on each MIS included in this analysis.

5.A METHODS

To evaluate and describe the presence or absence and quality of MIS habitats and other biological resources in the analysis area, map land cover types, and identify potential effects of project implementation on those resources, project biologists reviewed existing data sources providing information for the project area and conducted reconnaissance surveys of the site. The reconnaissance surveys were conducted on June 19 and 20, 2012 and July 11, 12, and 13 by botanist Tammie Beyerl and wildlife biologists Heather Valentine and Steve Henderson, and July 11 through July 15, 2012 by botanist Ken McDonald and ecologist Tom Herzog. The wildlife biologists also conducted surveys on August 8 and 29, 2012. A reconnaissance-level habitat assessment of the proposed alignment alternatives, proposed access ways, access roads, and other project elements was conducted. For field survey and resource mapping purposes, the project analysis area covered all project elements and generally comprised a 200-foot-wide corridor centered on the existing and proposed electric lines and access ways (i.e., the area within 100 feet of the centerline); however, for existing roads that would not need improvement but would be used for access during construction, the analysis area encompassed the area within 50 feet of the road centerline.

Classification and descriptions of vegetation communities and MIS habitat types generally follow California Wildlife Habitat Relationships (CDFG 2012b) and Holland (1986), with modifications to account for local variability and communities not specifically treated in these two classification systems. Meadow community classification and descriptions are based on *Meadow Hydrogeomorphic Types for the Sierra Nevada and Southern Cascade Ranges in California* (Weixelman et al. 2011).

Potential impacts of each alternative on MIS habitats and other resources were initially identified by overlaying GIS layers of proposed project components on the land cover maps of the analysis area. Any natural community and wildlife habitat that overlapped with an area of proposed modification was considered to be directly affected during project construction. An estimate of the amount of vegetation removal planned for the clearing of the ROWs, work areas, and access ways was determined. Permanent effect is based on the 40-foot-wide permanent electric line ROW that would remain following project completion plus new and improved access roads. Additional temporary effect is the maximum amount, in addition to what would remain as a permanent ROW or access way following project construction, assumed for temporary construction. This is based on a 65-foot-wide construction corridor along the entire length of the electric line alignments, minus the 40-foot-wide permanent maintenance ROW. Additional acreage of temporary habitat effects result from vegetation removal at staging. These impacts are considered temporary because these areas would be restored and revegetated following construction. Following construction, the 40-foot-wide permanent ROW would be cleared periodically to allow overland travel by line and inspection trucks, but low-growing native plants, such as mule ears, pinemat manzanita and mahala mat would be allowed to establish and the ROW would not be maintained in a barren state or covered by an impervious surface; however, trees and taller shrubs would not be allowed to establish under the electric lines. The existing 625 Line would be decommissioned and common vegetation would be allowed to reestablish within the existing 20-foot ROW.

In addition to using the project-specific, field-based land cover mapping data described above, existing CWHR GIS data were provided by LTBMU and used to quantify project effects on specific MIS habitat factors. Specifically, this existing CWHR dataset was used to quantify effects on MIS habitats in terms of CWHR tree size and canopy closure classes, where applicable.

As stated previously, four action alternatives are under consideration for the CalPeco 625 and 650 Electrical Line Upgrade Project, including Alternative 1 (PEA Alternative), Alternative 2 (Modified Alternative), Alternative 3 (Road Focused Alternative), and Alternative 4 (Proposed Alternative). The action alternatives are similar; each consists of ten route segments along the 625 Line and two full segments along the 650 Line, as well as a portion of two other segments of the 650 Line. In segments 625-1, 625-2, 625-9, and 625-10, as well as 650-1, 650-2, and 650-6, all alignment options are the same. The middle segments of the 625 Line (Segment 625-3 through 625-8) and Segment 650-4 in the Martis Valley contain various alignment options.

The 625 and 650 Electrical Line Upgrade Project also includes Alternative 5 (No Project /No Action Alternative), under which some vegetation management would occur along the existing right-of-way (ROW) in order to raise the system to current standards set forth by the California Public Utilities Commission (CPUC). However, no real changes to habitat or conversion of cover types would occur under Alternative 5 (No Project/No Action Alternative), as vegetation management activities would primarily consist of trimming and limited removal of trees along the existing cleared easement. Therefore, no analysis is included in this report for impacts of Alternative 5 (No Project /No Action Alternative) on MIS species and their habitat.

The following sections document the effects of project implementation on habitat for the following 'Category 3' MIS: aquatic macroinvertebrates, yellow warbler, mountain quail, sooty (blue) grouse, spotted owl, American marten, northern flying squirrel, and hairy woodpecker. The analysis of effects on habitat for the selected project-level MIS is conducted at the project scale. Detailed information on the MIS is documented in the SNF Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference. Cumulative effects at the bioregional scale are tracked via the SNF MIS Bioregional Monitoring, and detailed in the SNF Bioregional MIS Report (USDA Forest Service 2010).

5.B OVERVIEW OF HABITAT TYPES AND EFFECTS

Coniferous forest communities are the predominant habitat types in the analysis area. Riparian vegetation communities are present along rivers and streams in the analysis area, including the Truckee River, Martis Creek, and Griff Creek. Appendix A includes a series of several vegetation maps that show the distribution of vegetation communities and habitat types in the analysis area. Table 4 provides a brief description of each habitat type mapped in the analysis area for each alternative. An overview of potential permanent and additional temporary impacts to native (non-developed) habitat by CWHR type and alternative are summarized in Table 5, below. This summary was used to estimate impacts to habitat on the MIS addressed in this analysis, as discussed in the following sections.

Table 4 Vegetation Community/Habitat Types Mapped in the Study Area for Each Action Alternative and the Existing 625 Line Corridor

Vegetation Community/ Habitat Type	Summary Description
Coniferous Forest Habitats	
Red Fir Forest	Typically dominated by even-aged, monotypic stands of mature red fir. In the study area, scattered western white pine and sugar pine are present. The understory is much more open than the mixed conifer forests, with the primary understory shrub species being pinemat manzanita. A heavy duff layer exists in this community, contributing to the lack of understory diversity. This is the most abundant community in the study area and is primarily present at the higher elevations along the existing and new 625 Lines.
White Fir-Red Fir Forest	Similar to red fir forest, but with white fir and red fir codominant throughout and occasional occurrences of incense cedar and Jeffrey pine. The understory is also similar to the description of red fir forest, with the primary understory shrub species being pinemat manzanita. A heavy duff layer exists contributing to the lack of understory diversity. Within the study area, occurs primarily along Segments 625-8 through 625-10 and 650-1 through 650-2.

Table 4 Vegetation Community/Habitat Types Mapped in the Study Area for Each Action Alternative and the Existing 625 Line Corridor

Vegetation Community/ Habitat Type	Summary Description
Jeffrey Pine-White Fir Forest	Similar to mixed conifer forest, but with shorter trees, and dominated by Jeffrey pine and white fir. The understory of this community tends to be open with scattered montane chaparral species, and smaller trees, blue wild rye, and snowberry. A thick layer of duff is typical, contributing to the low understory abundance. Common understory species observed include pinemat manzanita, mule ears, mountain monardella, and rockcress species. Jeffrey pine-white fir forest occurs within the study area, mainly along the 625 Line and Segments 650-1 through 650-2.
Jeffrey Pine Forest	Open forest community clearly dominated by Jeffrey pine. In the study area, lodgepole pine is also present in small numbers. Canopy cover is less dense than in other forest communities as Jeffrey pine tends to be more scattered throughout the community. This generally allows for the understory of the Jeffrey pine forest to contain plants requiring drier, sunnier conditions than in other conifer communities. These understory plants include big sagebrush, bitterbrush, rabbitbrush, mule ears, and Idaho fescue. Present in the study area primarily along Segments 650-3, 650-4B, and 650-6.
Sierran Mixed Conifer Forest	Dense forest dominated by a mix of white fir, red fir, Jeffrey pine, sugar pine, and incense cedar (3 or more codominant). Historic burning and logging have created wide variability in stand structure and composition in this community. Canopy cover varies from nearly 100 percent to a more open canopy. In open areas, the understory consists of a variety of shrubs, grasses, and forbs, including mahala mat, mountain whitethorn, tobacco brush, pinemat manzanita, greenleaf manzanita, bush chinquapin, huckleberry oak, and several currant species. Mixed conifer forest is the second most widespread vegetation community in the study area, extending from Kings Beach north to the Brockway Summit area along the existing and new 625 Lines and the 650 Line and between Brockway Summit and Tahoe City along the existing and new 625 Lines. At higher elevations, the vegetation community transitions from mixed conifer forest to red fir forest.
Chaparral and Scrub Habitats	
Sagebrush Scrub	Comprised of soft-woody shrubs dominated by mountain big sagebrush. Occurs on a variety of soils and terrain. Rubber rabbitbrush and bitterbrush are the most common associates of this community in the study area. Found within the Martis Valley and Truckee portions of the study area along Segments 650-4, 650-4B, and 650-6 and associated access roads.
Montane Chaparral	Composition changes with elevation, soil type, and aspect. Montane chaparral exists in small patches throughout the study area and is characterized by one or more of the following species: mountain whitethorn, tobacco brush, greenleaf manzanita, pinemat manzanita, huckleberry oak, bush chinquapin, and bitter cherry. Open areas in the Sierran mixed conifer forest are dominated by this vegetation community. These openings are either natural forest openings or clearings created by disturbances, such as logging, road construction, fire, or utility line clearance. Much of the ROW beneath the existing 625 and 650 Lines where regular vegetation maintenance occurs is dominated by montane chaparral species.
Riparian Habitats	
Montane Riparian	Varies greatly in vegetative structure and species composition. Many of the montane riparian areas at higher elevations consist of extremely dense, shrub-like mountain alder and willow with no standing or flowing water. Along the Truckee River, large mountain alder, black cottonwood, and willows are the dominant species, with an extensive understory of a wide variety of herbaceous vegetation. Along Middle Martis Creek and Martis Creek, small, shrub-like willows dominate the vegetative community and are surrounded by an expansive wet meadow. Several montane riparian communities in the study area are not associated with perennial flowing streams or seasonal channels, but instead with wet seeps or small ravines.
Open Water	Areas containing pools of standing or flowing freshwater with little to no emergent vegetation. This category is comprised of a man-made pond along Segment 650-6 and a portion of the Truckee River channel in Segments 625-1 and 625-1A.

Table 4 Vegetation Community/Habitat Types Mapped in the Study Area for Each Action Alternative and the Existing 625 Line Corridor

Vegetation Community/ Habitat Type	Summary Description
Meadow Habitats	
Wet Montane Meadow	Comprised of a wide variety of grasses and forbs adapted for growth in saturated soils, such as sedges, rushes, and bentgrasses. Wet meadows in the project area have seasonally saturated soils and are usually associated with an adjacent riparian forest or scrub community, seep, or waterway. The best examples of this relationship are located along Middle Martis Creek, West Martis Creek, and Martis Creek, where soils are too wet, due to a shallow water table, throughout much of the year to support trees. Several small wet meadow communities exist throughout the study area. Additionally, the 650 Line traverses a large wet meadow in the Martis Creek Wildlife Area.
Dry Montane Meadow	Characterized by dense growth of perennial herbs and graminoids such as common bluegrasses, yarrow, dryland rushes, and mat muhly. Dry meadows form in areas where water is concentrated near the soil surface early in the growing season only, but long enough to allow perennial herbs to reproduce. Dry meadows are generally located adjacent to wet meadows supported by groundwater and where snowmelt is slow at higher elevations and on shady slopes. In the study area, dry meadow is found primarily in the Martis Creek Recreation Area in association with wet montane meadow.
Mule Ears Meadow	A type of dry meadow community characterized by near monotypic stands of mule ears. Occurs on dry, rocky slopes within openings in red fir forest along the existing and proposed 625 Lines in Segment 625-5.
Barren Habitats	
Rock Outcrop/ Barren	Barren habitat is defined by the absence of dominant vegetation (less than 2% cover). In the study area, small patches of barren habitat are best characterized as rock outcrops or talus slopes with minimal vegetative cover. Rock outcrops are located along ridgelines at high elevations along the existing and proposed 625 Lines.
Anthropogenic (Human-Made) Habitats	
Disturbed or Developed	Consists of highways, paved roads, dirt roads, dirt tracks/trails, and road shoulders, as well as housing and commercial developments, which are primarily concentrated around Kings Beach, Tahoe City, Truckee, and the Northstar-at-Tahoe Resort.

Table 5 Permanent and Temporary Effects on Native Vegetation Communities/ CWHR Types on NFS Lands

Vegetation Community/Habitat Type	Alternative 1: PEA		Alternative 2: Modified		Alternative 3: Road Focused		Alternative 3A: Road Focused with Double Circuit Option		Alternative 4: Proposed	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Red Fir Forest	59.93	29.83	58.58	26.72	25.98	28.51	25.98	28.51	25.98	28.51
White Fir-Red Fir Forest	5.64	1.76	3.11	0.50	2.30	1.90	2.30	1.90	2.30	1.90
Jeffrey Pine-White Fir Forest	15.70	4.14	9.71	0.29	8.98	0.84	8.98	0.84	8.98	0.84
Jeffrey Pine Forest	2.14	1.62	2.61	1.14	1.41	0.53	1.41	0.53	1.41	0.53
Sierran Mixed Conifer Forest	13.42	8.88	13.74	7.78	12.55	8.83	11.93	8.21	12.55	8.83

Table 5 Permanent and Temporary Effects on Native Vegetation Communities/ CWHR Types on NFS Lands

Vegetation Community/Habitat Type	Alternative 1: PEA		Alternative 2: Modified		Alternative 3: Road Focused		Alternative 3A: Road Focused with Double Circuit Option		Alternative 4: Proposed	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
Total Coniferous Forest	***96.83***	***46.23***	***87.75***	***36.43***	***51.22***	***40.61***	***50.60***	***39.99***	***51.22***	***40.61***
Montane Chaparral	10.20	4.15	9.07	3.63	5.66	5.29	5.66	5.29	5.66	5.29
Montane Riparian	0.69	0.27	0.78	0.18	0.46	0.24	0.34	0.24	0.46	0.27
Wet Meadow	0.24	0.14	0.08	0.05	-	-	-	-	0.16	-
Dry Montane Meadow	1.07	0.68	-	-	-	-	-	-	1.07	0.68
Mule Ears Meadow	0.38	0.10	0.38	0.10	0.13	0.19	0.13	0.19	0.13	0.19
Open Water	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05
Rock Outcrop/Barren	0.36	0.33	0.36	0.33	0.45	0.54	0.45	0.54	0.45	0.54
Total	**109.81**	**51.95**	**98.46**	**40.77**	**57.96**	**46.92**	**57.22**	**46.30**	**59.19**	**47.63**

5.C LACUSTRINE/RIVERINE HABITAT (AQUATIC MACROINVERTEBRATES)

5.C.1 SPECIES RELATIONSHIP

Aquatic or Benthic Macroinvertebrates (BMI) were selected as the MIS for riverine and lacustrine habitat in the Sierra Nevada. They have been demonstrated to be very useful as indicators of water quality and aquatic habitat condition (Resh and Price 1984; Karr et al. 1986; Hughes and Larsen 1987; Resh and Rosenberg 1989). They are sensitive to changes in water chemistry, temperature, and physical habitat; aquatic factors of particular importance are: flow, sedimentation, and water surface shade.

5.C.2 PROJECT-LEVEL EFFECTS ANALYSIS – LACUSTRINE/RIVERINE HABITAT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on lacustrine/riverine habitat: (1) flow (2) sedimentation (3) and water surface shade.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared spaces that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the Forest Service parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE HABITAT FACTOR(S) IN THE PROJECT AREA

Aquatic resources within the project area include streams, rivers, drainages, ponds, seeps, and seasonally flooded areas. Approximately 45 perennial and intermittent aquatic features, including Griff Creek, Truckee River, Middle Martis Creek, Martis Creek, wet meadows, ponds, and other drainages, were identified and described within the full project area (Sierra Pacific 2010). Five streams are located in the analysis area on NFS lands: the Truckee River, which is located in Tahoe City and the Town of Truckee; Griff Creek, which flows through Kings Beach into Lake Tahoe; and Burton Creek, Snow Creek, and a tributary to Watson Creek, which would be crossed in some locations by the project alternatives. These stream habitats are summarized below.

The Truckee River is crossed in Segment 625-1 near the Tahoe City substation and in Segment 650-6 near Truckee. The Truckee River is a perennial river that flows southwest from Lake Tahoe receiving some regulated flow year around, though the levels can vary significantly depending on downstream usage. Aquatic habitat varies along this reach but includes slow-moving sections with sandy/muddy substrate as well as riffle and pool sections that contain medium-sized gravels with larger boulders interspersed. In the slower-moving sections, aquatic vegetation, such as milfoil, is established in the channel. Riparian vegetation along the Truckee River is comprised of mountain alder, black cottonwood, and willow, with an understory of several herbaceous species.

Segment 625-1 is located near the upper reach of the lower Truckee River, immediately below the dam controlling flow out of Lake Tahoe. The area surrounding this reach of the Truckee River is highly disturbed by roads, recreation, and commercial development. Much of the northern bank is disturbed and/or developed with limited natural vegetation. The southern bank is also disturbed, primarily from recreational access and use, though some natural vegetation is present. A narrow strip of montane riparian vegetation is present along the southern bank and is adjacent open-canopy mixed conifer forest.

Griff Creek is located along Segment 625-10 in the eastern portion of the analysis area. The creek runs parallel to the existing and proposed alignments in this segment of the project. Griff Creek drains Martis Peak and primarily flows southward into Lake Tahoe. Until the late 1990's, the North Tahoe Public Utility District managed a reservoir for drinking water upstream of the analysis area; however, in 1995 the dam creating the reservoir was removed and the stream was restored. Currently, Griff Creek is unregulated and generally maintains some level of flow throughout most of the year in years with normal precipitation. Except for the Truckee River, Griff Creek was the only stream in the analysis area on NFS lands that exhibited flow during the reconnaissance surveys in 2012. Griff Creek is a shallow, low-gradient stream; its channel substrate is comprised primarily of sand and fine gravel, with some larger cobbles dispersed along its course. Habitat along the creek section at Segment 625-10 consists of dense riparian and herbaceous vegetation immediately adjacent to the channel, with coniferous forest interspersed within the riparian zone. Conifer trees are located along the creek bank, but woody riparian vegetation creates the majority of the dense water surface shade along this reach.

The upper reaches of Burton Creek are located in Segment 625-3. Burton Creek flows south/southeast through Burton Creek State Park and downslope into Lake Tahoe. Burton Creek is a perennial stream that will generally maintain some level of flow throughout most of the year in years with normal precipitation. Flows within Burton Creek are regulated downstream of the analysis area where it is impounded in Antone Meadows and diverted to the Tahoe City Golf Course (California State Parks 2005, pg. 20). In addition, barriers exist at the confluence with Lake Tahoe making it unsuitable for passage by migratory fish or other aquatic species. However, within the analysis area the creek flows freely, except in areas where it is bisected by the Fiberboard Freeway. In these locations, the creek is routed under the road through culverts. Burton Creek flows through a variety of substrates along its path ranging from steeper boulder lined channel to low gradient fine sand and gravel bedded channel. Vegetation along the creek also varies, though riparian vegetation is generally limited and water surface shade is generated by taller trees. Habitat located along the sections of Burton Creek within the analysis area is primarily conifer forest with limited montane riparian and wet meadow habitat present in isolated locations immediately adjacent to the creek.

Watson Creek is located in Segment 625-5. Its headwaters begin just south of the area that would be affected by construction of the new 625 Line. The creek drains the northeastern slope of Mount Watson as well as some of Mount Pluto. Watson Creek is also a perennial creek that flows east/southeast to its confluence with Lake Tahoe. Habitat within and adjacent to Watson Creek was not evaluated during reconnaissance surveys due to its distance from the primary area of ground disturbing activities.

The upper reaches of Snow Creek are located in Segment 625-9; downstream it also passes through Segment 650-2. Snow Creek flows through steep terrain down the southwest slope of Martis Peak. It primarily flows southward crossing SR 267 just south of National Avenue, then continues south/southwest through national forest lands and residential areas to its confluence with Lake Tahoe just west of Kings Beach. Along the upper reaches located within the analysis area, habitat is exclusively red fir forest with no riparian habitat present.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Project components of Alternative 1 (PEA Alternative) would cross, or be implemented near, several waterways that provide aquatic habitats for fish, amphibians, birds, invertebrates, and other species, including the Truckee River, Burton Creek, Snow Creek, Griff Creek, Trout Creek, Martis Creek, and Middle Martis Creek. The Truckee River would be crossed in the location of the existing alignment in Segment 625-1 and 650-6, and would be paralleled by the electric line for a short distance west of the Tahoe City Substation. In Segment 625-3, the southern tributary of Burton Creek would be crossed just east of the Fiberboard Freeway. Snow Creek would be crossed in the same location as it is currently along the existing alignment in the eastern portion of Segment 625-9 and again downstream by the 650 Line in Segment 650-2; and Griff Creek would be crossed in a similar way along the existing alignment in Segment 625-10. Construction activities such as vegetation clearing, pole installation, pole removal, creation of access ways, and staging near aquatic habitats could temporarily result in adverse impacts to aquatic resources, including removal of riparian vegetation, which provides shade, cover, and bank stability; accidental spill and contamination from construction chemicals, fuels, or other hazardous materials; increased erosion, downstream sedimentation, and turbidity; small amounts of fill placed in aquatic habitats; and direct mortality or injury of fish and other aquatic species caused by vehicles or equipment passing through aquatic habitats.

Some clearing of trees and woody riparian vegetation along stream channels may be required to provide adequate clearance for construction activities. Although no construction is planned within stream channels, work adjacent to these areas could result in minor, short-term water quality impacts (increased turbidity, sedimentation) if sediment is inadvertently transported into aquatic habitats during pole foundation construction, pole placement, corridor clearing, or other construction activity; and, the crossing of small stream channels by vehicles and equipment for construction access may be unavoidable in some cases. Additionally, dewatering could occur during work near aquatic resources, including the Truckee River and Griff Creek. Along the Truckee River, work is planned to occur in two locations—in Tahoe City near the Tahoe City Substation and in Truckee where the 650/132 double-circuit line spans the river. In Tahoe City, construction crews would need to access the bank of the Truckee River to remove poles along the existing 625 Line. CalPeco would attempt to construct poles for the new 625 Line further away from the river; however, new poles may be required below the ordinary high water mark.

Overhead conductors would span streams and riparian zones, and most power poles would be placed outside of and at a sufficient distance from stream channels to avoid excavation, pouring of pole foundations, or other ground disturbing activities within the stream channels. Because only a small number of poles would be placed within wet meadows or below the ordinary high water mark of the Truckee River, impacts to aquatic resources, riparian areas, and wet meadows are anticipated to be minor; and potential effects of any pole replacement along the Truckee River on invertebrates or fish and their movements would be minimal.

The following APMs (see Section 3.7, Applicant Proposed Measures, of the EIS/EIS/EIR for a description of all APMs) designed to further protect aquatic resources have been incorporated into the project design to minimize, avoid, and partially compensate for potential impacts to aquatic habitats:

- **APM BIO-28:** CalPeco will minimize vegetation and tree removal to only the areas necessary for construction, with particular attention given to minimizing effects on riparian areas and preserving trees greater than 30 inches diameter at breast height (dbh).
- **APM BIO-29:** Skidding of trees will not be permitted in waters of the United States or waters of the State, including wetlands. Within these waters tree removal may be conducted by hand, use of cable systems, helicopter yarding, or use of ground based equipment when determined suitable for ground based mechanical harvest. Any work conducted in the vicinity of waters of the United States, waters of the State, and wetlands will have an environmental monitor present, consistent with the requirements of APM WQ-4. Other APMs applicable to the protection of aquatic resources will also be implemented.
- **APM BIO-30:** Prior to commencing construction in any area containing aquatic resources or potential wetlands, a qualified biologist will conduct a delineation of waters of the United States according to methods established in the USACE wetlands delineation manual (Environmental Laboratories 1987) and Western Mountains, Valleys, and Coast Region Supplement (Environmental Laboratories 2010). The delineation will map and quantify the acreage of all aquatic habitats on the project site and will be submitted to USACE for verification. CalPeco will determine, based on the verified wetland delineation and the project design plan, the acreage of impacts on waters of the United States and waters of the state that will result from project implementation. Impacts will be avoided to the extent practicable through the siting of poles and other facilities outside of delineated waters of the United States and waters of the state. Work in wetlands or wet meadow habitats with saturated soil conditions will be scheduled when soils are dry to the extent possible. If soils become saturated, timber mats will be installed along all vehicle and equipment access routes to minimize rutting. Prior to disturbance of waters of the United States or waters of the state, an environmental monitor will record via photographs and field notes the pre-disturbance condition of the water. Disturbed waters will be restored to preconstruction conditions and seeded with a native species, consistent with the vegetation community present prior to disturbance, to stabilize the soils and minimize the introduction of invasive plants, as specified by the USACE and RWQCB. In accordance with the USACE "no net loss" policy, all permanent wetland impacts will be mitigated at a minimum of a 1:1 ratio. This mitigation will come in the form of either contributions to a USACE-approved wetland mitigation bank or through the development of a Compensatory Mitigation and Monitoring Plan aimed at creating or restoring wetlands in the surrounding area (although creation is not authorized by TRPA in their jurisdiction).
- **APM WQ-4:** When working near aquatic resources, poles and trees will be cut by hand and felled away from such features (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding coarse woody debris to a stream to enhance fish habitat). The skidding of poles and trees through aquatic resources will not be permitted. Within Stream Environment Zones (SEZs) poles and trees will be removed by hand, by cable system, or by helicopter. No mastication will occur in SEZs and no chip material will be left in SEZs unless approved for erosion control. Vehicles and equipment will be staged away from aquatic features, along designated access routes or within staging areas. If there are circumstances where disturbance to the bank or channel of an aquatic feature is unavoidable, CalPeco will restore the banks and channels to preconstruction conditions immediately afterwards. An environmental monitor will be present in all instances where disturbance to an aquatic feature may occur to ensure conditions of this APM and any other applicable APMs, permit conditions, and mitigation measures are complied with.
- **APM WQ-5:** When construction activities are required adjacent to flowing streams or rivers, work will be conducted during low-flow conditions (i.e., when surface flow is restricted to the low-flow channel, as confirmed by the environmental monitor).
- **APM WQ-7:** CalPeco will minimize vehicle and equipment usage within and crossing of stream channels and other aquatic resources consistent with the requirements of other APMs. If vehicles and equipment must cross

stream channels or other aquatic resources, CalPeco will construct shoo-fly access roads, install culvert crossings, or use other methods to access either side of the resource or utilize existing bridges, where feasible, in order to minimize the need to install temporary bridges. Limit crossings to no more than one for every 800 feet of channel. If there are no existing crossings and the construction of shoo-fly roads or other crossing methods may cause greater resource impact, CalPeco will install timber mats, slash mats, or other materials suitable for a temporary bridge. If bridges are installed over streams with discernible flow, all attempts will be made to span the channel. Temporary crossings on ephemeral or intermittent drainages will be constructed and removed, to the maximum extent feasible, when the channels are dry and will be removed before the winter season begins. These crossings will be designed to not obstruct water flow and fish passage and to accommodate flows from a 1 inch or greater precipitation event.

- **APM WQ-8:** CalPeco will obtain permits from appropriate regulatory agencies prior to commencing work in waters of the United States or waters of the state. Following construction, CalPeco will restore any impacted waterbodies and wetlands to pre-project conditions and compensate for any permanent wetland impacts in accordance with the US Army Corps of Engineer's "no net loss" policy.

Additionally, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented as part of the project. This plan would detail the BMPs that would be implemented to minimize erosion, reduce sediment transport, control stormwater flow from the project area, and prevent construction materials from entering or otherwise affecting waterways. In addition, the SWPPP would generally describe the terrain type and slope at temporary construction areas, and would address grading and slope stabilization methods, as well as construction waste disposal methods.

The project design and incorporation of applicable APMs would reduce project impacts to aquatic resources, and most potential residual impacts to aquatic habitat functions would not be considered substantial. However, even with incorporation of APMs into project design, project construction could result in loss or degradation of stream or riparian habitat protected under Section 1602 of the California Fish and Game Code. For example, equipment operation is not anticipated within stream channels, implementation of APM WQ-7 and other APMs would minimize equipment use and crossing through the bed and bank of a channel, and APM WQ-8 requires CalPeco to obtain permits that would provide compensatory mitigation prior to commencing work in waters of the United States or waters of the state. However, the crossing of small stream channels by vehicles and equipment for construction access, and associated disturbances to riparian and stream habitats protected by CDFW, may be unavoidable in some cases. Although the project design and implementation of APMs would prevent most impacts to aquatic macroinvertebrates and other resources from being substantial, any unavoidable disturbance to the bed and bank of a waterway that provides habitat functions would require a Streambed Alteration Agreement from CDFW. Therefore, Mitigation Measure 4.7-7 (Compensate for Unavoidable Loss of Stream and Riparian Habitat) was developed and proposed for Alternatives 1, 2, 3, and 4 in the project EIS/EIS/EIR.

Implementation of Mitigation Measure 4.7-7, along with the applicable APMs, would reduce and compensate for potential impacts to aquatic habitats for aquatic macroinvertebrates because it would require that: 1) aquatic habitat is avoided to the extent feasible, 2) aquatic habitats that cannot be avoided are restored following construction, 3) any unavoidable losses would be compensated for in a manner that results in no net loss of aquatic habitats, and 4) project implementation is consistent with the aquatic and riparian habitat protection provisions of Fish and Game Code Section 1602.

Cumulative Effects on Habitat in the Analysis Area

The spatial scale for the cumulative effects of the CalPeco 625 and 650 Line Upgrade Project on MIS habitat is the north shore of Lake Tahoe, from lake level to the north rim of the Lake Tahoe Basin, and lands extending from the north rim to the town of Truckee across NFS, other federal, and private lands. The temporal scale for the analysis is the date of the LRMPs to five years from the present, which is the period of time the direct effects

of the project should occur and for which there is information on reasonably foreseeable future actions in the analysis area.

This cumulative analysis uses the "list" approach to identify the cumulative setting. The effects of past and present projects on the environment are reflected by the existing conditions in the project area. Probable future projects are those in the project vicinity that have the possibility of interacting with the proposed project to generate a cumulative impact (based on proximity and construction schedule) and either:

- are partially occupied or under construction,
- have received final discretionary approvals,
- have applications accepted as complete by local agencies and are currently undergoing environmental review, or
- are proposed projects that have been discussed publicly by an applicant or that otherwise become known to a local agency and have provided sufficient information about the project to allow at least a general analysis of environmental impacts.

Appendix B provides the list of probable future projects that meet the requirements stated above; Appendix B also includes a map showing the locations of these projects relative to the project area. Projects that are listed are in the project vicinity and have the possibility of interacting with the proposed project to generate a cumulative impact. Past and current projects in the project vicinity were also considered as part of the cumulative setting, as they contribute to the existing conditions/baseline upon which the proposed project and each probable future project's environmental effects are compared, but are not listed in Appendix B.

Past, present, and foreseeable future activities that have affected or may affect biological resources, including MIS habitats, in the Tahoe-Truckee Region include logging, grazing, fuels management, recreational development and activities, urban and commercial development, ROW maintenance and operation activities, and habitat restoration and enhancement projects. Some present and future projects expected to improve habitats for aquatic macroinvertebrates through restoration or enhancement include the SR 89/Fanny Bridge Improvement Project and Truckee River Corridor Access Plan.

Cumulative Effects Conclusion

Some past and current projects in the Tahoe-Truckee region have contributed to an adverse cumulative effect on aquatic habitats. Reasonably foreseeable future projects that encompass, or are near aquatic habitats (see Appendix B), could further contribute to this cumulative effect, although various laws and regulations (e.g., CWA, TRPA Code, Fish and Game Code Section 1602) would minimize these effects.

As described previously, under Alternative 1 (PEA Alternative), construction activities such as vegetation clearing, pole installation, pole removal, creation of access ways, and staging near aquatic habitats could temporarily result in adverse impacts to invertebrates and aquatic habitat, including removal of riparian vegetation; accidental spill and contamination from construction chemicals, fuels, or other hazardous materials; increased erosion, downstream sedimentation, and turbidity; small amounts of fill placed in aquatic habitats; and direct mortality or injury of fish and other aquatic species caused by equipment passing through aquatic habitat. However, the project's design, construction methods, incorporation of several APMs designed to protect aquatic resources, and implementation of Mitigation Measure 4.7-7 (Compensate for Unavoidable Loss of Stream and Riparian Habitat) would minimize, avoid, and compensate for these potential impacts to aquatic habitats. Specifically, these measures require that: 1) aquatic habitat is avoided to the extent feasible; 2) aquatic habitats that cannot be avoided are restored following construction; 3) any unavoidable losses would be compensated for in a manner that results in no net loss of aquatic habitats; and 4) project implementation is consistent with the aquatic and riparian habitat protection provisions of Fish and Game Code Section 1602. Because any residual effects on aquatic habitats would be minor, temporary, and mitigated; the no net loss standard would be implemented; and there would be no permanent impacts to the quality, amount, or function

of aquatic habitats, implementation of Alternative 1 (PEA Alternative) would not make a considerable contribution to any cumulative impact related to aquatic macroinvertebrate habitat. In addition, habitat enhancements that could occur as a result of other projects in the analysis area may also improve the condition of aquatic macroinvertebrate habitat in the analysis area.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 2 (Modified Alternative), potential impacts to aquatic habitats would be similar to those described for Alternative 1 (PEA Alternative), except that Alternative 2 (Modified Alternative) would be routed farther away from aquatic habitat in the Truckee River near Tahoe City in Segment 625-1A. Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on aquatic habitats under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 2 (Modified Alternative), potential cumulative effects on aquatic habitats would be the same as those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 3 (Road Focused Alternative), potential impacts to aquatic habitats would be similar to those described for Alternative 1 (PEA Alternative). Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on aquatic habitats under Alternative 1 (PEA Alternative). However, the Alternative 3 (Road Focused Alternative) alignment would be located mostly within existing road corridors that are already subject to higher disturbance levels, provide existing construction access, and require fewer new stream crossings for equipment. Therefore, the amount and quality of aquatic habitats potentially affected under Alternative 3 (Road Focused Alternative) are generally lower than that under Alternative 1 (PEA Alternative) or Alternative 2 (Modified Alternative).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 3 (Road Focused Alternative), potential cumulative effects on aquatic habitats for past, present, and foreseeable future projects would be the same as those described for Alternative 1 (PEA Alternative); however, as discussed above, Alternative 3 (Road Focused Alternative) would make a smaller contribution to any cumulative impact related to aquatic macroinvertebrate habitat.

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 4 (Proposed Alternative), potential impacts to aquatic habitats would be similar to those described for Alternative 1 (PEA Alternative). However, in many locations, the Alternative 4 (Proposed Alternative) alignment would be located within existing road corridors that are already subject to higher disturbance levels, provide existing construction access, and require fewer new stream crossings for equipment. Therefore, the amount and quality of aquatic habitats potentially affected under Alternative 4 (Proposed Alternative) are generally lower than that under Alternative 1 (PEA Alternative) or Alternative 2 (Modified Alternative), and similar to that under Alternative 3 (Road Focused Alternative).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 4 (Proposed Alternative), potential cumulative effects on aquatic habitats for past, present, and foreseeable future projects would be the same as those described for Alternative 1 (PEA Alternative); however, as discussed above, Alternative 4 (Proposed Alternative) would make a smaller contribution to any cumulative impact related to aquatic macroinvertebrate habitat.

5.C.3 SUMMARY OF HABITAT AND POPULATION STATUS AND TREND AT THE FOREST/BIOREGIONAL SCALE

The Lake Tahoe Basin Management Unit and Tahoe National Forest LRMPs (as amended by the SNF MIS Amendment) require bioregional-scale Index of Biological Integrity and Habitat monitoring for aquatic macroinvertebrates; hence, the lacustrine and riverine effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by these monitoring data. The sections below summarize the Biological Integrity and Habitat status and trend data for aquatic macroinvertebrates. This information is drawn from the detailed information on habitat and population trends in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference.

HABITAT AND INDEX OF BIOLOGICAL INTEGRITY STATUS AND TREND

Aquatic habitat has been assessed using Stream Condition Inventory (SCI) data collected since 1994 (Frasier et al. 2005) and habitat status information from the Sierra Nevada Ecosystem Project (SNEP) (Moyle and Randall 1996). Moyle and Randall (1996) developed a watershed IBI based on distributions and abundance of native fish and amphibian species, as well as extent of roads and water diversions. According to this analysis, seven percent of the watersheds were in excellent condition, 36 percent were in good condition, 47 percent were in fair condition and nine percent were in poor condition.

Sierra Nevada MIS monitoring for aquatic (benthic) macroinvertebrates (BMI) was conducted in 2009 and 2010 (Furnish 2010). Benthic macroinvertebrates were collected from stream sites during both the 2009 and 2010 field seasons according to the Reachwide Benthos (Multihabitat) Procedure (Ode 2007). The initial BMI data from 2009 and 2010 found 46 percent (6 of 13) of the surveyed streams indicate an impaired condition and 54 percent (7 of 13) indicate a non-impaired condition (see USDA Forest Service 2010a, Table BMI-1). This is similar

to the IBI conditions estimated by Moyle and Randall (1996). Therefore, current data from the Sierra Nevada indicate that status and trend in the RIVPACS scores appears to be stable.

5.C.4 RELATIONSHIP OF PROJECT-LEVEL IMPACTS TO BIOREGIONAL-SCALE AQUATIC MACROINVERTEBRATES HABITAT TREND

Construction activities such as vegetation clearing, pole installation, pole removal, creation of access ways, and staging near aquatic habitats could temporarily result in adverse impacts to invertebrates and aquatic habitat, including removal of riparian vegetation; accidental spill and contamination from construction chemicals, fuels, or other hazardous materials; increased erosion, downstream sedimentation, and turbidity; small amounts of fill placed in aquatic habitats; and direct mortality or injury of fish and other aquatic species caused by equipment passing through aquatic habitat. However, the project's design, construction methods, incorporation of several APMs designed to protect aquatic resources, and implementation of Mitigation Measure 4.7-7 (Compensate for Unavoidable Loss of Stream and Riparian Habitat) would minimize, avoid, and compensate for these potential impacts to aquatic habitats. Specifically, these measures require that: 1) aquatic habitat is avoided to the extent feasible; 2) aquatic habitats that cannot be avoided are restored following construction; 3) any unavoidable losses would be compensated for in a manner that results in no net loss of aquatic habitats; and 4) project implementation is consistent with the aquatic and riparian habitat protection provisions of Fish and Game Code Section 1602. Because any residual effects on aquatic habitats would be minor (potentially too small to be measured), temporary, and mitigated; the no net loss standard would be implemented; and there would be no permanent impacts to the quality, amount, or function of aquatic habitats, implementation of Alternatives 1, 2, 3, or 4 would not alter the existing trend in the habitat or aquatic macroinvertebrates across the Sierra Nevada bioregion.

5.D RIPARIAN HABITAT (YELLOW WARBLER)

5.D.1 HABITAT/SPECIES RELATIONSHIP

The yellow warbler was selected as the MIS for riparian habitat in the Sierra Nevada. This species is usually found in riparian deciduous habitats in summer (cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland) (CDFG 2005). Yellow warbler is dependent on both meadow and non-meadow riparian habitat in the Sierra Nevada (Siegel and DeSante 1999).

5.D.2 PROJECT-LEVEL EFFECTS ANALYSIS – RIPARIAN HABITAT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on riparian habitat, to the extent feasible based on best available data: (1) Acres of riparian habitat (CWHR montane riparian (MRI) and valley foothill riparian (VRI)). (2) Acres with changes in deciduous canopy cover (Sparse=10-24%; Open=25-39%; Moderate=40-59%; Dense=60-100%). (3) Acres with changes in total canopy cover (Sparse=10-24%; Open=25-39%; Moderate=40-59%; Dense=60-100%). (4) Acres with changes in CWHR size class [1/2 (Seedling/Sapling) (<6"" dbh); 3 (Pole) (6"-10.9" dbh); 4 (Small tree) (11"-23.9" dbh); 5 (Medium/Large tree) (>24" dbh)].

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 Lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and

stringing sites as well as any other cleared areas that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the FS parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Montane riparian habitat within the analysis area varies greatly in vegetative structure and species composition. Many of the montane riparian areas consist of extremely dense, shrub-like mountain alder and willow with no standing or flowing water. Along the Truckee River, large mountain alder, black cottonwood, and willows are the dominant species, with an extensive understory of a wide variety of herbaceous vegetation. Along Burton Creek, montane riparian habitat consists of small isolated patches of willows with limited herbaceous vegetation and conifer species encroaching up to the stream channel. Several montane riparian communities in the analysis area are not associated with perennial flowing streams or seasonal channels, but instead with wet seeps or small ravines. Overall, riparian habitat across the analysis area is fairly limited and exists primarily as small isolated patches. This habitat is located within the following segments in the analysis area: Segments 625-1, 625-3, 625-4, 625-5, 625-9 and 625-10, 650-1, 650-2, and 650-6.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Approximately 0.69 acres of montane riparian habitat on NFS lands occurs in the permanent ROW for Alternative 1 (PEA Alternative); an additional 0.27 acre is present in the temporary ROW (Table 5). The vegetation maps provided in Appendix A show the detailed extent of montane riparian and other vegetation communities and habitat types in the analysis area. Because the construction corridor would be reduced in sensitive habitat areas and measures would be implemented to avoid and minimize impacts in these areas, the amounts of habitat within the permanent and temporary ROWs presented in Table 5 are considered a maximum and overestimate the area of actual impacts. For example, montane riparian is present where the 625 and 650 Lines cross several streams, but the actual impact acreage there would be minimal or none because the electric line would span the riparian habitat and no construction would occur within the stream channels.

Implementation of Alternative 1 (PEA Alternative) would not cause a substantial loss of montane riparian habitat for yellow warbler because vegetation treatment within riparian areas would typically not be required due to the shorter height of riparian vegetation; overhead lines would span most or all riparian zones. As part of the project, APM-BIO-28, as described above for Lacustrine/Riverine Habitat (Aquatic Macroinvertebrates), will be implemented to minimize the removal of riparian habitat by limiting vegetation removal to only those areas necessary for construction, particularly in riparian zones. (Full descriptions of all APMs are provided in Section 3.7, Applicant Proposed Measures, of the EIS/EIS/EIR). In some or all of these locations, power poles would be placed outside of montane riparian habitat where it is associated with a stream, to provide sufficient distance from the stream channel to minimize effects on aquatic habitats. In addition, existing poles to be abandoned in the locations where the new line would follow the existing alignment would be cut off at the base and the upper portion removed in order to avoid unnecessary ground disturbance, especially near streams. Although some montane riparian habitat suitable for yellow warbler may still be disturbed or removed during project construction, very little, if any, is expected to be permanently removed.

Potential impacts to montane riparian and yellow warbler habitat as a result of operation and maintenance are anticipated to be minimal because vegetation management of willows, alders, and dogwood along the ROW is not anticipated in the same manner as for conifer species, because these species rarely grow above the

minimum clearance for the line—approximately 20 feet—and would not differ substantially from existing operation and maintenance activities.

Because any long-term loss of riparian and other sensitive habitats was considered significant in the project EIS/EIS/EIR, Mitigation Measures 4.7-2a (Compensate for Unavoidable Loss of Stream and Riparian Habitat) and 4.7-2b (Compensate for Unavoidable Loss of SEZ [Stream Environment Zone]) were developed and proposed for Alternatives 1, 2, 3, and 4 in the EIS/EIS/EIR. Implementation of these mitigation measures, along with the APMs, would ensure that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for riparian habitat are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Cumulative Effects Conclusion

The loss and disturbance of montane riparian habitat as a result of Alternative 1 (PEA Alternative) may initially result in a slight reduction of yellow warbler habitat. When considered in combination with other projects, this could contribute to a cumulative adverse effect on yellow warbler habitat. However, because the amount of habitat disturbance and loss would be small at both the project and regional scales, and other foreseeable future projects could result in an increase in montane riparian habitat extent and quality (e.g., habitat restoration projects), any potential cumulative effects are expected to be minor.

Additionally, the project's design, construction methods, incorporation of several APMs designed to protect aquatic and riparian resources, and implementation of Mitigation Measures 4.7-2a (Compensate for Unavoidable Loss of Stream and Riparian Habitat) and 4.7-2b (Compensate for Unavoidable Loss of SEZ) would minimize, avoid, and compensate for these potential impacts to riparian habitats. Because any residual effects on riparian habitats would be minor, temporary, and mitigated, and the no net loss standard would be implemented, implementation of Alternative 1 (PEA Alternative) would not make a considerable contribution to any cumulative impact related to montane riparian habitat.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 2 (Modified Alternative), potential impacts to montane riparian habitat would be similar to those described for Alternative 1 (PEA Alternative). Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on riparian habitat under Alternative 1 (PEA Alternative). However, under Alternative 2 (Modified Alternative), the amount of montane riparian habitat within the permanent (0.78 acre) ROW is slightly greater than under Alternative 1 (PEA Alternative), and the amount in the temporary (0.18) ROW is less (Table 5).

As described for Alternative 1 (PEA Alternative), implementation of applicable APMs and mitigation measures would require that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 2 (Modified Alternative), potential cumulative effects on montane riparian habitat would be the same as those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 3 (Road Focused Alternative), potential impacts to montane riparian habitat would be similar to those described for Alternative 1 (PEA Alternative). Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on riparian habitat under Alternative 1 (PEA Alternative). However, under Alternative 3 (Road Focused Alternative), the amount of montane riparian habitat within the permanent (0.34–0.46 acre, depending on option) and temporary (0.24) ROWs is less than under Alternative 1 (PEA Alternative) or Alternative 2 (Modified Alternative) (Table 5). Alternative 3 (Road Focused Alternative) has two options in Segments 625-9, 625-10, and 650-1. Both of these options include a double circuit of the 625 and 650 Line out of the Kings Beach Substation; however, they differ in where they tie into SR 267, which in turn affects the amount of montane riparian habitat that may be affected by the project. The original double circuit option (Alternative 3) follows the existing alignment along Segment 625-10 north from the substation, then heads west toward SR 267 near Canterbury Drive. The alternate double circuit option (Alternative 3A) heads west from the Kings Beach substation, following surface streets to SR 267 and then heads north adjacent to the highway. Because Alternative 3A follows existing disturbed road corridors, it would affect slightly less riparian habitat than Alternative 3 (Road Focused Alternative).

As described for Alternative 1 (PEA Alternative), implementation of applicable APMs and mitigation measures would ensure that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 3 (Road Focused Alternative), the project's contribution to potential cumulative effects on montane riparian habitat would be slightly less than those described for Alternatives 1 and 2.

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 4 (Proposed Alternative), potential impacts to montane riparian habitat would be the same as those described for Alternative 3 (Road Focused Alternative), because the alignments on NFS lands would be the same. Approximately 0.46 acres of montane riparian habitat on NFS lands occurs in the permanent ROW for Alternative 4 (Proposed Alternative); an additional 0.27 acre is present in the temporary ROW (Table 5). As described for Alternative 1 (PEA Alternative), implementation of applicable APMs and mitigation measures would ensure that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 4 (Proposed Alternative), the project's contribution to potential cumulative effects on montane riparian habitat would be the same as those described for Alternative 3 (Road Focused Alternative) and slightly less than those described for Alternatives 1 and 2.

5.D.3 SUMMARY OF YELLOW WARBLER STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the yellow warbler; hence, the riparian habitat effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the yellow warbler. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference.

HABITAT STATUS AND TREND

There are currently 38,140 acres of riparian habitat on NFS lands in the Sierra Nevada. Over the last two decades, the trend is stable.

POPULATION STATUS AND TREND

Monitoring of the yellow warbler across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, hairy woodpecker, and fox sparrow (USDA Forest Service 2010, http://data.prbo.org/partners/usfs/snmis/). Yellow warblers were detected on 13.7 percent of 160 riparian point counts in 2009 and 19.4 percent of 397 riparian point counts in 2010; additional detections were documented on upland point counts. The average abundance (number of individuals recorded on riparian passive point count surveys) was 0.166 in 2009 and 0.309 in 2010. In addition, the yellow warblers continue to

be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count, spot mapping, mist-net, and breeding bird survey protocols. These are summarized in the 2010 Bioregional Monitoring Report (USDA Forest Service 2010). Current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of yellow warbler populations in the Sierra Nevada is stable.

5.D.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE YELLOW WARBLER TREND

The loss and disturbance of montane riparian habitat as a result of Alternatives 1, 2, 3, or 4 may initially result in a slight reduction of yellow warbler habitat. However, very little, if any, montane riparian habitat is expected to be permanently removed. The project's design, construction methods, incorporation of several APMs designed to protect aquatic and riparian resources, and implementation of Mitigation Measures 4.7-2a (Compensate for Unavoidable Loss of Stream and Riparian Habitat) and 4.7-2b (Compensate for Unavoidable Loss of SEZ) would minimize, avoid, and compensate for potential impacts to riparian habitats. Because any residual effects on riparian habitats would be minor, temporary, and mitigated, and the no net loss standard would be implemented, none of the action alternatives would alter existing trends in riparian habitat, nor would construction of these electric line alternatives lead to a change in distribution of yellow warbler across the Sierra Nevada bioregion.

5.E WET MEADOW HABITAT (PACIFIC TREE FROG)

5.E.1 HABITAT/SPECIES RELATIONSHIP

The Pacific tree frog was selected as an MIS for wet meadow habitat in the Sierra Nevada. This broadly distributed species requires standing water for breeding; tadpoles require standing water for periods long enough to complete aquatic development, which can be as long as 3 or more months at high elevations in the Sierra Nevada (CDFG 2005). During the day throughout the breeding season, adults take cover under clumps of vegetation and surface objects near water; during the remainder of the year, they leave their breeding sites and seek cover in moist niches in buildings, wells, rotting logs, or burrows (ibid).

5.E.2 PROJECT-LEVEL EFFECTS ANALYSIS – WET MEADOW HABITAT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on wet meadow habitat, to the extent feasible based on best available data: (1) Acres of wet meadow habitat [CWHR wet meadow (WTM) and freshwater emergent wetland (FEW)]. (2) Acres with changes in CWHR herbaceous height classes [short herb (<12"), tall herb (>12")]. (3) Acres with changes in CWHR herbaceous ground cover classes (Sparse=2-9%; Open=10-39%; Moderate=40-59%; Dense=60-100%). (4) Changes in meadow hydrology.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 Lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared areas that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-

NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the FS parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Wet meadow habitats were identified in only a few isolated places on NFS lands within the analysis area: in the Martis Valley in Segment 650-4, along Burton Creek in Segment 625-3, and in an isolated area of Segment 625-7. However, additional habitat occurs within the analysis area, particularly areas mapped as dry montane meadow within Martis Valley that may function as wet meadow habitat during the wet season in some years. In addition, pacific tree frog may also use slow moving portions of Griff Creek, Burton Creek, and the Truckee River, as well as inundated areas of Martis Valley within the analysis area for all of their life history stages.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Approximately 0.24 acre of wet meadow habitat on NFS lands occurs in the permanent ROW for Alternative 1 (PEA Alternative); an additional 0.14 acre is present in the temporary ROW. Table 6 summarizes the acreage of wet meadow habitat present in the permanent and temporary impact zone by segment for each action alternative (only those segments that contain wet meadow habitat are listed). Table 6 also summarizes the acreage of areas mapped as dry montane meadow that could function as wet meadow habitat (and suitable for Pacific tree frog) during the wet season in some years; these areas are located in Martis Valley adjacent to mapped wet meadow habitat. Because the construction corridor would be reduced in sensitive habitat areas and measures would be implemented to avoid and minimize impacts in these areas, the amounts of habitat within the permanent and temporary ROWs presented in Table 6 are considered a maximum and overestimate the area of actual impacts. For example, the actual permanent impact acreage within montane meadows would be minimal because the electric line would span these areas and require minimal vegetation removal or hydrologic disturbances.

Table 6 Potential Effects on Potential Habitat for Pacific Tree Frog on NFS Lands

Segment	Habitat Type	Alternative 1: PEA		Alternative 2: Modified		Alternative 3: Road Focused		Alternative 3A: Road Focused with Double Circuit Option		Alternative 4: Proposed	
		Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
625-3	Wet Meadow	0.08	0.05	0.08	0.05	-	-	-	-	-	-
	Dry Montane Meadow[1]	-	-	-	-	-	-	-	-	-	-
650-4	Wet Meadow	0.16	0.09	-	-	-	-	-	-	0.16	-
	Dry Montane Meadow[1]	1.07	0.68	-	-	-	-	-	-	1.07	0.68
Total Suitable Habitat		**1.31**	**0.82**	**0.08**	**0.05**	**-**	**-**	**-**	**-**	**1.23**	**0.68**

[1]Includes areas mapped as dry montane meadow that could function as wet meadow habitat (and suitable for Pacific tree frog) during the wet season in some years.

Some clearing of meadow vegetation would occur to provide adequate clearance/access for construction activities. In addition, holes may be dug in meadow habitats during placement of transmission poles and/or

supports for guy wires. In general, transmission poles would be placed outside of wet areas to the extent feasible; however, in some locations such as Martis Valley, this may not be feasible and poles would be placed in meadow habitats with preference for areas that tend to remain dry more frequently.

Overall, implementation of Alternative 1 (PEA Alternative) would not cause a substantial permanent loss of wet meadow habitat for Pacific tree frog because vegetation treatment within these areas would typically not be required due to the short height of meadow vegetation; overhead lines would span most or all of these areas. As part of the project, APMs described above for Lacustrine/Riverine Habitat (Aquatic Macroinvertebrates) will be implemented to minimize impacts to aquatic habitats. Although some meadow habitat suitable for Pacific tree frog may still be disturbed or removed during project construction, very little is expected to be permanently removed.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for wet meadow habitat are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Cumulative Effects Conclusion

Minor construction disturbance and alteration to a small amount of wet meadow habitat on NFS lands would occur as a result of Alternative 1 (PEA Alternative). However, because the amount of unavoidable habitat disturbance and loss would be very small relative to the total amount available in the area, any potential contribution to cumulative effects is expected to be minor.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 2 (Modified Alternative), potential impacts to wet meadow habitat would be similar to those described for Alternative 1 (PEA Alternative). Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on wet meadow habitat under Alternative 1 (PEA Alternative). However, under Alternative 2 (Modified Alternative), the amount of wet meadow habitat within the permanent (0.08 acre) and temporary (0.05) ROWs is less than under Alternative 1 (PEA Alternative) (Table 6). Under Alternative 2 (Modified Alternative), the 650 Line in Martis Valley would shift off of NFS lands. Thus, no permanent or temporary disturbance to habitats for pacific tree frog would occur on NFS lands along the 650 Line in Martis Valley.

As described for Alternative 1 (PEA Alternative), implementation of applicable APMs and mitigation measures would ensure that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 2 (Modified Alternative), potential contributions to cumulative effects on wet meadow habitat would be less than those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Alternative 3 (Road Focused Alternative) would result in no effect on designated wet meadow habitats on NFS lands. Alternative 3 (Road Focused Alternative) would avoid meadow habitat by following along existing roadways.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Because no wet meadow habitat would be affected, implementation of Alternative 3 (Road Focused Alternative) would not contribute to a cumulative effect on wet meadow habitat.

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Where implementation of Alternative 4 (Proposed Alternative) would result in potential impacts to wet meadow habitat, these impacts would be similar to those described for Alternative 1 (PEA Alternative). (Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on wet meadow habitat under Alternative 1.) However, under Alternative 4 (Proposed Alternative), there would be no wet meadow habitat in the temporary ROW and less wet meadow habitat (0.16 acre) within the permanent ROW (see Table 6). Under Alternative 4, unlike Alternative 1, no wet meadow habitat is within the ROW on NFS lands in Segment 625-3; mapped wet meadow habitat on NFS lands is limited to Segment 650-4.

As described for Alternative 1 (PEA Alternative), implementation of applicable APMs and mitigation measures would ensure that riparian habitat is avoided to the extent feasible and that riparian habitat that cannot be avoided is restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of riparian and other sensitive habitats.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

Cumulative Effects Conclusion

Under Alternative 4 (Proposed Alternative), potential cumulative effects on wet meadow habitat would be less than those described for Alternative 1 (PEA Alternative).

5.E.3 SUMMARY OF PACIFIC TREE FROG STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the Pacific tree frog; hence, the wet meadow effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the Pacific tree frog. This information is drawn from the detailed information on habitat and population trends in the *SNF Bioregional MIS Report* (USDA Forest Service 2010), which is hereby incorporated by reference.

HABITAT STATUS AND TREND

There are currently 61,247 acres of wet meadow habitat on NFS lands in the Sierra Nevada. Within the last decade, the trend is stable (USDA Forest Service 2008: 8-10).

POPULATION STATUS AND TREND

Since 2002, the Pacific tree frog has been monitored on the Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2006, 2007b, 2009, 2010; Brown 2008). These data indicate that Pacific tree frog continues to be present at these sample sites, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of Pacific tree frog populations in the Sierra Nevada is stable.

5.E.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE PACIFIC TREE FROG TREND

Because the amount of unavoidable disturbance and loss of wet meadow habitat would be very small relative to the total amount available in the area, none of the action alternatives would alter existing trends in wet meadow or freshwater emergent wetland habitat, nor would it lead to a change in distribution of pacific tree frog across the Sierra Nevada bioregion.

5.F EARLY AND MID SERAL CONIFEROUS FOREST HABITAT (MOUNTAIN QUAIL)

5.F.1 HABITAT/SPECIES RELATIONSHIP

The mountain quail was selected as the MIS for early and mid seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. Early seral coniferous forest habitat is comprised primarily of seedlings (<1" dbh), saplings (1"–5.9" dbh), and pole-sized trees (6"–10.9" dbh). Mid seral coniferous forest habitat is comprised primarily of small-sized trees (11"–23.9" dbh). The mountain quail is found particularly on steep slopes, in open, brushy stands of conifer and deciduous forest and woodland, and chaparral; it may gather at water sources in the summer, and broods are seldom found more that 0.8 km (0.5 mi) from water (CDFG 2005).

5.F.2 PROJECT-LEVEL EFFECTS ANALYSIS – EARLY AND MID SERAL CONIFEROUS FOREST HABITAT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on early and mid seral coniferous forest habitat, to the extent feasible based on best available data: (1) Acres of early (CWHR tree sizes 1, 2, and 3) and mid seral (CWHR tree size 4) coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, 3, and 4, all canopy closures]. (2) Acres with changes in CWHR tree size class. (3) Acres with changes in tree canopy closure. (4) Acres with changes in understory shrub canopy closure.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 Lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared areas that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the FS parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Several coniferous forest types are present on NFS lands throughout the analysis area. Table 4 provides a brief description of each habitat type mapped in the analysis area for each alternative. Appendix A shows the location and extent of forest habitat types in the analysis area. Table 7 summarizes the early and mid seral coniferous forest habitat factors within the temporary and permanent ROWs on NFS lands for each action alternative, based on existing CWHR GIS data. Many of the stands are even aged due to forest management practices throughout the years, but overall the analysis area consists of a mosaic of forest types and tree sizes. In general, much of the forest habitat throughout the analysis area is mid seral with patches of large trees.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Early and mid seral coniferous forest habitat would be removed and/or disturbed to construct the new 625 and 650 Lines, and access roads and staging areas for use during and after construction. Table 7 summarizes permanent and temporary effects on early and mid seral coniferous forest habitat on NFS lands for each action alternative.

Table 7 Effects on Early and Mid Seral Coniferous Habitat Factors (Mountain Quail) on USFS Lands[1]

WHR Type	WHR Size	Alt. 1		Alt. 2		Alt. 3		Alt. 3A		Alt. 4	
		Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)
SMC	1	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-
	4	61.6	25.2	56.1	19.0	39.7	27.5	39.7	27.5	39.6	27.6
WFR	1	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-
	4	0.1	1.1	0.1	0.7	0.2	1.0	0.2	1.0	0.2	1.0
RFR	1	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-
	4	12.1	4.7	9.2	3.4	5.1	4.9	5.1	4.9	5.1	4.9
EPN	1	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-
Total		**73.8**	**31.0**	**65.4**	**23.1**	**45.0**	**33.4**	**45.0**	**33.4**	**44.9**	**33.5**

[1] Based on existing CWHR GIS data provided by LTBMU.

Permanent effect is based on the 40-foot-wide permanent electric line ROW that would remain following project completion for single-circuit segments and the 65-foot-wide permanent ROW for double-circuit segments, plus new and improved access roads. Additional temporary effect is the maximum amount, in addition to what would remain as a permanent ROW or access way following project construction, assumed for temporary construction. This is based on a 65-foot-wide construction corridor along the entire length of the electric line alignments, minus the 40-foot-wide permanent maintenance ROW for single-circuit segments. Additional acreage of temporary habitat effects result from vegetation removal at staging. These impacts are considered temporary because these areas would be restored and revegetated following construction. Following construction, the 40-foot-wide (single-circuit) or 65-foot-wide (double-circuit) permanent ROW would be cleared periodically to allow overland travel by line and inspection trucks, but low-growing native plants, such as mule ears, pinemat manzanita and mahala mat would be allowed to establish and the ROW would not be maintained in a barren state or covered by an impervious surface; however, trees and taller shrubs would not be allowed to establish under the electric lines. Overall, implementation of Alternative 1 (PEA Alternative) would initially result in the permanent loss or disturbance of up to 73.8 acres of early and mid seral coniferous forest habitat, and temporary disturbance of 31 acres. However, where the existing 625 Line would be decommissioned, native vegetation would be allowed to regenerate within the approximately 20-foot wide corridor that is currently managed to limit vegetation height. Therefore, over the long term, some early and mid seral forest habitat would be gained or enhanced where the existing 625 Line would be removed and revegetated, and the long-term net change in the amount of early and mid seral habitat when considering both disturbances/losses and enhancements/gains would be less than the maximum values shown in Table 7.

The following APMs have been incorporated into the project design to minimize, avoid, and reduce potential adverse effects from loss and disturbance of common vegetation communities, including coniferous forest.

- **APM BIO-21:** Qualified environmental monitors will be present with each crew during all vegetation-removal activities to help ensure that impacts to biological resources are minimized to the extent possible. For all other construction activities, monitors will be allowed to cover up to 5 miles of the project area at once to allow multiple crews to work in close proximity to each other at the same time. Environmental monitors will have the authority to stop work or direct work in order to help ensure the protection of resources and compliance with all permits.
- **APM BIO-23:** Topsoil, where present, will be salvaged in areas that will be graded or excavated. Topsoil will be segregated, stockpiled separately from subsoil, and covered. These soil stockpiles, as well as any others created by the proposed project, shall have the proper erosion control measures applied until they are removed. The topsoil will then be replaced to the approximate location of its removal after project construction has been completed to facilitate revegetation of disturbed areas. Top soil will not be salvaged from areas infested with invasive plants.
- **APM BIO-26:** Work areas will be clearly marked with fencing, staking, flagging, or another appropriate material. All project personnel and equipment will be confined to delineated work areas. In the event that work must occur outside of the work area, approval from lead and other agencies with jurisdiction over the property will be obtained prior to the commencement of activities.
- **APM BIO-28:** CalPeco will minimize vegetation and tree removal to only the areas necessary for construction, with particular attention given to minimizing effects on riparian areas and preserving trees greater than 30 inches diameter at breast height (dbh).
- **APM BIO-36:** Prior to construction, CalPeco will develop a Restoration Plan that will address final clean-up, stabilization, and revegetation procedures for areas disturbed by the project. The plan will be consistent with, and implement related commitments and requirements included in the EIS/EIS/EIR project description, other APMs, mitigation measures, and agency permit requirements. The Restoration Plan will address loosening of any compacted soil, restoration of surface residue, and reseeding. If existing unpaved roads require modification to temporarily allow passage of construction equipment during the construction period, these roads will be returned to their original footprint after construction is complete. On NFS lands, restoration activities will be designed and implemented to meet invasive plant management guidelines and Visual Quality Objectives (VQO) for the area. Areas temporarily disturbed by cut and fill activities will be re-graded to blend with the natural topography. On public land, CalPeco will coordinate with the land management agency to determine an appropriate seed mix or tree planting plan as well as other elements of the plan applicable to lands managed by the agency. On private land, CalPeco will coordinate with the landowner and/or provide the landowner with a suggested seed mix based on consultation with the agency of jurisdiction. The plan will include approved seed mixes, application rates, application methods, methods to record pre-disturbance conditions, success criteria for vegetation growth, monitoring and reporting protocols, and remedial measures if success criteria are not met. If broadcast seeding is determined to be the most feasible application method, seeding rates will be doubled relative to the standard seeding rate and the seeding method rationale will be explained. The plan will also include long-term erosion and sediment control measures, slope stabilization measures, criteria to determine the success of these measures, remedial actions if success criteria are not met, and monitoring and reporting procedures. As part of normal equipment inspections during project operation, an evaluation of access ways will be conducted to confirm that use has not resulted in compaction that will result in “coverage” per TRPA standards.
- **APM BIO-37:** Decommissioning the existing 625 Line ROW and allowing natural regeneration of coniferous forest and other native vegetation types will assist in offsetting or reducing the permanent loss of trees and other vegetation along the new 625 Line ROW. Prior to the removal of poles and conductor, a qualified biologist or soil scientist will identify areas of the abandoned ROW that contain unnaturally compacted soil (resulting from unauthorized public use, development of user-created trails, or other factors) that could

limit the natural reestablishment of vegetation and assess whether local treatments will be needed to facilitate native vegetation recruitment and development. CalPeco will consult with the applicable land owner/manager to verify that areas identified for treatments are appropriate (e.g., not part of a system road, authorized trail network, or other desired use) and secure approval for restoration. Restoration of these sites will be overseen by a qualified biologist and will likely consist of a combination of the following.

- Barricade existing access points and post appropriate signage to discourage use. Also incorporate into restoration actions minimizing the visibility of potential access points from intersecting roadways.
- Loosen compacted soil to a depth of 6 to 8 inches.
- Incorporate logs, boulders, mulch and other materials into the disturbed area to discourage use.
- Apply appropriate erosion control BMPs (e.g., installation of check dams, mulch, log and/or rock stabilization) in areas where evidence of sheet, rill, or gully erosion exists.
- Seed with a certified weed-free seed mix, approved by the applicable land owner/manager, containing native, site-appropriate species.
- Apply 1 to 2 inches of locally obtained mulch such as pine needles, wood chips, or tub grindings.
- Monitor for new invasive plant invasions and expansion of existing weed populations following treatments, and implement weed control measures where needed. Post-treatment monitoring for invasive plants will be conducted annually for up to three years, similar to the frequency and duration specified for USFS land in the USFS Invasive Plant Risk Assessment prepared for the project.
- Conduct post-treatment monitoring and reporting every two years for up to 10 years, to evaluate success of restoration treatments. The details of the monitoring and reporting program, including identification and implementation of potential adaptive management actions based on monitoring results, will be developed jointly by CalPeco, TRPA, and the land owner/manager.

While up to 73.8 acres of early and mid seral coniferous forest would be permanently affected during construction of Alternative 1 (PEA Alternative), the loss of this amount of common habitat from the Tahoe-Truckee region would not substantially reduce the quantity or quality of these common habitats in the region and would not change the distribution or viability of any MIS. Some of the loss of conifer forest vegetation would be compensated for over time through natural regeneration along the decommissioned 625 Line (see APM BIO-37). Integration of the APMs into project design would require that vegetation removal is minimized to the extent feasible and that habitat is restored to pre-project conditions in temporary construction areas.

Cumulative Effects on Habitat in the Analysis Area

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for early and mid seral conifer forest are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Past, present, and foreseeable future activities that have affected or may affect biological resources, including MIS habitats, in the Tahoe-Truckee Region include logging, grazing, fuels management, habitat restoration, recreational development and activities, urban and commercial development, and ROW maintenance and operation activities. Other projects that may interact with the proposed project on a cumulative basis are listed and shown in Appendix B. Some development and recreation projects planned in the analysis area (including Northstar Overall Mountain Master Plan and Northstar-at-Tahoe Ski Trail Widening) could contribute to an adverse cumulative effect on early and mid seral forest habitat. The Carnelian Fuels Reduction and Healthy Forest Restoration Project and the Incline Fuels Reduction and Healthy Forest Restoration Project are expected to beneficially affect early and mid seral forest habitat.

CUMULATIVE EFFECTS CONCLUSION

Comstock-era logging and forest clearing for development, combined with past vegetation management practices and fire suppression, has resulted in a preponderance of even-aged, early and mid seral forest in the Truckee Tahoe Region. Therefore, these past activities may have resulted in a beneficial cumulative effect on these forest stand types over the last several decades. Implementing Alternative 1 (PEA Alternative) would result in disturbances or removal of early and mid seral conifer forest habitat for mountain quail. However, the tree species and stand types that would be removed are common locally and regionally and occur within common coniferous forest types that are abundant in the region. APMs have been incorporated into the project design to avoid and minimize tree removal to the extent feasible and project tree removal would not result in substantial changes in stand structure or composition or in the distribution or abundance of tree species or forest communities in the region. Furthermore, the recolonization of trees within the decommissioned 625 Line would partially offset losses in the new alignment. Because the loss of early and mid seral coniferous forest would occur along a narrow linear corridor and would be small relative to the total available in the analysis area, implementation of Alternative 1 (PEA Alternative) would not result in a substantial contribution to an adverse cumulative effect on common forest communities, including early and mid seral coniferous forest.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 2 (Modified Alternative), potential impacts to early and mid seral coniferous forest would be similar to those described for Alternative 1 (PEA Alternative). Please see the discussion of potential impact mechanisms and anticipated magnitude of effect on these habitats under Alternative 1 (PEA Alternative). However, under Alternative 2 (Modified Alternative), the amount of coniferous forest habitat within the permanent (65.4 acre) and temporary (23.1 acres) ROWs is less than under Alternative 1 (PEA Alternative). As described for Alternative 1 (PEA Alternative), the loss of this amount of common habitat from the Tahoe-Truckee region would not substantially reduce the quantity or quality of these common habitats in the region and would not change the distribution or viability of any MIS. Some of the loss of conifer forest vegetation would be compensated for over time through natural regeneration along the decommissioned 625 Line (see APM BIO-37). Integration of the APMs into project design would require that vegetation removal is minimized to the extent feasible and that habitat is restored to pre-project conditions in temporary construction areas.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 2 (Modified Alternative), the project's contribution to potential cumulative effects on early and mid seral coniferous forest habitat would be slightly less than those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Because Alternative 3 (Road Focused Alternative) would eliminate Segments 625-9 and 625-10 and place them into a double-circuit line in Segments 650-1 and 650-2, and much of the impact footprint of Alternative 3 (Road Focused Alternative) is within existing roadways that do not contain native vegetation, implementation of Alternative 3 (Road Focused Alternative) would result in substantially less removal of conifer forest compared to Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative) (see Table 7). Furthermore, the quality of habitat that would be removed under Alternative 3 (Road Focused Alternative) is generally lower than that under Alternative 1 (PEA Alternative) or Alternative 2 (Modified Alternative), because the Alternative 3 (Road Focused Alternative) alignment is located within existing road corridors that are already subject to higher disturbance levels. Overall, implementation of Alternative 3 (Road Focused Alternative) would initially result in the permanent loss or disturbance of up to 45 acres of early and mid seral coniferous forest habitat, and temporary disturbance of 33.4 acres (Table 7). Where the existing 625 Line would be decommissioned, native vegetation would be allowed to regenerate within the approximately 20-foot wide corridor that is currently managed to limit vegetation height. Therefore, over the long term, some early and mid seral forest habitat would be gained or enhanced where the existing 625 Line would be removed and revegetated, and the long-term net change in the amount of early and mid seral habitat when considering both disturbances/losses and enhancements/gains would be less than the maximum values shown in Table 7.

As described for Alternative 1 (PEA Alternative), the loss of this amount of common habitat from the Tahoe-Truckee region would not substantially reduce the quantity or quality of these common habitats in the region and would not change the distribution or viability of any MIS. Some of the loss of conifer forest vegetation would be compensated for over time through natural regeneration along the decommissioned 625 Line (see APM BIO-37). Integration of the APMs into project design would require that vegetation removal is minimized to the extent feasible and that habitat is restored to pre-project conditions in temporary construction areas.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 3, the project's potential contribution to cumulative effects on early and mid seral coniferous forest habitat would be similar to, but less than those described for Alternatives 1 and 2.

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Similar to Alternative 3 (Road Focused Alternative), because Alternative 4 (Proposed Alternative) would eliminate Segments 625-9 and 625-10 and place them into a double-circuit line in Segments 650-1 and 650-2, and much of the impact footprint of Alternative 4 (Proposed Alternative) is within existing roadways that do not contain native vegetation, implementation of Alternative 4 (Proposed Alternative) would result in substantially less removal of conifer forest compared to Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), and the same amount as Alternative 3 (Road Focused Alternative) (see Table 7). Furthermore, the quality of habitat that would be removed under Alternative 4 (Proposed Alternative) is generally lower than that

under Alternative 1 (PEA Alternative) or Alternative 2 (Modified Alternative), because much of the Alternative 4 (Proposed Alternative) alignment is located within existing road corridors that are already subject to higher disturbance levels. Overall, implementation of Alternative 4 (Proposed Alternative) would initially result in the permanent loss or disturbance of up to 44.9 acres of early and mid seral coniferous habitat, and temporary disturbance of 33.5 acres (Table 7). Where the existing 625 Line would be decommissioned, native vegetation would be allowed to regenerate within the approximately 20-foot wide corridor that is currently managed to limit vegetation height. Therefore, over the long term, some early and mid seral forest habitat would be gained or enhanced where the existing 625 Line would be removed and revegetated, and the long-term net change in the amount of early and mid seral habitat when considering both disturbances/losses and enhancements/gains would be less than the maximum values shown in Table 7.

As described for Alternative 1 (PEA Alternative), the loss of this amount of common habitat from the Tahoe-Truckee region would not substantially reduce the quantity or quality of these common habitats in the region and would not change the distribution or viability of any MIS. Some of the loss of conifer forest vegetation would be compensated for over time through natural regeneration along the decommissioned 625 Line (see APM BIO-37). Integration of the APMs into project design would require that vegetation removal is minimized to the extent feasible and that habitat is restored to pre-project conditions in temporary construction areas.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 4 (Proposed Alternative), the project's contribution to potential cumulative effects on early and mid seral coniferous forest habitat would be similar to, but less than, those described for Alternatives 1 and 2.

5.F.3 SUMMARY OF MOUNTAIN QUAIL STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the mountain quail; hence, the early and mid seral coniferous forest effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mountain quail. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference.

HABITAT STATUS AND TREND

There is an estimated 530,851 acres of early seral and 2,766,022 acres of mid seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on NFS lands in the Sierra Nevada. Within the last decade, the trend for early seral is slightly decreasing (from 9 percent to 5 percent of the acres on NFS lands) and the trend for mid seral is slightly increasing (from 21 percent to 25 percent of the acres on NFS lands) (USDA Forest Service 2008: 8-10).

POPULATION STATUS AND TREND

Monitoring of the mountain quail across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes fox sparrow, hairy woodpecker, and yellow warbler (USDA Forest Service 2010, http://data.prbo.org/partners/usfs/snmis/). Mountain quail were detected on 40.3 percent of 1659 point counts (and 48.6 percent of 424 playback points) in 2009 and 47.4 percent of 2266 point counts (and 55.3 percent of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.103 in 2009 and 0.081 in 2010. In addition, the mountain quail has been monitored in the Sierra Nevada at various sample locations by hunter survey, modeling, and breeding bird survey protocols. These are summarized in the 2010 Bioregional Monitoring Report (USDA Forest Service 2010). These data indicate that mountain quail continue to be present across the Sierra Nevada, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of mountain quail populations in the Sierra Nevada is stable.

5.F.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE MOUNTAIN QUAIL TREND

As discussed previously for Alternatives 1, 2, 3, and 4 and summarized in Table 7, implementing any of the action alternatives would result in disturbances and removal of early and mid seral conifer forest habitat for mountain quail. However, the tree species and stand types that would be removed are common locally and regionally and occur within common coniferous forest types that are abundant in the region. APMs have been incorporated into the project design to avoid and minimize tree removal to the extent feasible and project tree removal would not result in substantial changes in stand structure or composition or in the distribution or abundance of tree species or forest communities in the region. Furthermore, the recolonization of trees within the decommissioned 625 Line would partially offset losses in the new alignment. Because the loss of early and mid seral coniferous forest would occur along a narrow linear corridor and would be small relative to the total available in the analysis area, none of the action alternatives for the CalPeco 625 and 650 Electrical Line Upgrade Project would alter existing trends in early and mid seral coniferous forest habitat, nor would implementation of any action alternative lead to a change in distribution of mountain quail across the Sierra Nevada bioregion.

5.G LATE SERAL OPEN CANOPY CONIFEROUS FOREST HABITAT (SOOTY (BLUE) GROUSE)

5.G.1 HABITAT/SPECIES RELATIONSHIP

The sooty grouse was selected as the MIS for late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures less than 40 percent. Sooty grouse occurs in open, medium to mature-aged stands of fir, Douglas-fir, and other conifer habitats, interspersed with medium to large openings, and available water, and occupies a mixture of mature habitat types, shrubs, forbs, grasses, and conifer stands (CDFG 2005). Empirical data from the Sierra Nevada indicate that Sooty Grouse hooting sites are located in open, mature, fir-dominated forest, where particularly large trees are present (Bland 2006).

5.G.2 PROJECT-LEVEL EFFECTS ANALYSIS- LATE SERAL OPEN CANOPY CONIFEROUS FOREST COMPONENT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on late seral open canopy coniferous forest, to the extent feasible based on best available data: (1) Acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P]. (2) Acres with changes in tree canopy closure class. (3) Acres with changes in understory shrub canopy closure class.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared spaces that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the Forest Service parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Late seral coniferous forest in the analysis area is limited. In general, forest communities in the analysis area do not exhibit multi-layered canopy structure and are fairly even aged due to a history of logging. However, forest stands in the analysis area are mature and some contain a high proportion of large trees. While patches of old-growth forest are present in the analysis area, they are not large, contiguous stands of forest that have not been previously logged and therefore do not exhibit many of the ecological characteristics of late seral forest communities. Several coniferous forest types are present on NFS lands throughout the analysis area. Table 4 provides a brief description of each habitat type mapped in the analysis area for each alternative. Appendix A shows the location and extent of forest habitat types in the analysis area. Table 8 summarizes the late seral open canopy coniferous forest habitat factors within the temporary and permanent ROWs on NFS lands for each action alternative, based on existing CWHR GIS data.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Relatively little of the forest habitat in the study area exhibits structural characteristics that are generally thought to typify late seral forest communities. However, implementing Alternative 1 (PEA Alternative) would result in permanent loss of approximately 5.1 acre of late seral open canopy coniferous forest on NFS lands (Table 8); another 3.9 acres is within the temporary construction corridor.

Table 8 Effects on Late Seral Open Canopy Coniferous Forest Habitat Factors (Sooty Grouse) on USFS Lands[1]

WHR Type	WHR Size	WHR Density	Alt. 1		Alt. 2		Alt. 3		Alt. 3A		Alt. 4	
			Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)
SMC	5	S	-	-	-	-	-	-	-	-	-	-
	5	P	1.3	1.1	1.3	1.1	1.4	0.9	1.4	0.9	1.4	0.9
WFR	5	S	-	-	-	-	-	-	-	-	-	-
	5	P	-	-	-	-	0.2	0.1	0.2	0.1	0.2	0.1
RFR	5	S	-	-	-	-	-	-	-	-	-	-
	5	P	3.8	2.8	3.2	1.8	1.5	1.7	1.5	1.7	1.5	1.7
EPN	5	S	-	-	-	-	-	-	-	-	-	-
	5	P	-	-	-	-	-	-	-	-	-	-
Total			**5.1**	**3.9**	**4.5**	**2.9**	**3.1**	**2.7**	**3.1**	**2.7**	**3.1**	**2.7**

[1] Based on existing CWHR GIS data provided by LTBMU.

Mitigation Measure 4.7-7 (Conduct a Tree Survey; Avoid Late Seral/Old-Growth Forest; Compensate for Loss of Trees) was developed and included as part of Alternatives 1, 2, 3, and 4 in the project EIS/EIS/EIR. This measure requires CalPeco to avoid loss of old growth forest to the extent feasible. If loss of late seral/old growth forest is unavoidable, CalPeco will compensate for the loss of late seral/old growth forest through the development and implementation of a forest management plan, prepared by a Registered Professional Forester (RPF), to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. The forest management plan will include management actions, such as fuels and vegetation treatments, to facilitate and enhance old-growth development within the existing 625 Line to be removed and/or other potential treatment areas. The forest management plan will identify priority locations where enhancement actions could be implemented to achieve the plan's objectives, and include a funding component for late seral/old growth forest enhancement projects.

Cumulative Effects on Habitat in the Analysis Area

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for riparian habitat are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Past, present, and foreseeable future activities that have affected or may affect biological resources, including MIS habitats, in the Tahoe-Truckee Region include logging, grazing, fuels management, habitat restoration, recreational development and activities, urban and commercial development, and ROW maintenance and operation activities. Other projects that may interact with the proposed project on a cumulative basis are listed and shown in Appendix B. Some development and recreation projects planned in the analysis area (including Northstar Overall Mountain Master Plan and Northstar-at-Tahoe Ski Trail Widening) could contribute to an adverse cumulative effect on late seral forest habitat. The Carnelian Fuels Reduction and Healthy Forest Restoration Project and the Incline Fuels Reduction and Healthy Forest Restoration Project are expected to beneficially affect late seral forest habitat over the long term.

Cumulative Effects Conclusion

Comstock-era logging and forest clearing for development, combined with past vegetation management practices and fire suppression, has resulted in a preponderance of even-aged forest and substantially reduced the amount of late seral/old growth forest in the Truckee Tahoe Region. Therefore, there has been an overall

significant cumulative effect on this particular forest resource. Present and future fuels reduction projects are expected to have a beneficial effect on late seral/old growth forest development.

Implementing Alternative 1 (PEA Alternative) could result in removal of a small amount (5.1 acre) of late seral forest. The loss and degradation of late seral coniferous habitat may reduce the amount of habitat for sooty grouse. Because the amount of late seral forest affected under Alternative 1 (PEA Alternative) would be small, and fuels and vegetation projects planned in the analysis area are expected to promote late-seral habitat structure in the region and contribute beneficially to a cumulative effect, the potential for Alternative 1 (PEA Alternative) to contribute to a cumulative adverse effect on late seral forest would minor. Additionally, as specified in Mitigation Measure 4.7-4, CalPeco would compensate for any unavoidable losses of late seral/old growth forest through development and implementation of a forest management plan to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. After mitigation, the project's impacts would be eliminated over time. Accordingly, the project's small contribution to a cumulative impact in the near term would diminish to no impact over time.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

As described for Alternative 1 (PEA Alternative), relatively little of the forest habitat in the study area exhibits structural characteristics that are generally thought to typify late seral forest communities. However, implementing Alternative 2 (Modified Alternative) would result in permanent loss of approximately 4.5 acre of late seral open canopy forest on NFS lands (Table 8). Mitigation Measure 4.7-7 (Conduct a Tree Survey; Avoid Late Seral/Old-Growth Forest; Compensate for Loss of Trees) was developed and included as part of Alternatives 1, 2, 3, and 4 in the project EIS/EIS/EIR. This measure requires CalPeco to avoid loss of old growth forest to the extent feasible. If loss of late seral/old growth forest is unavoidable, CalPeco will compensate for the loss of late seral/old growth forest through the development and implementation of a forest management plan, prepared by a RPF, to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. The forest management plan will include management actions, such as fuels and vegetation treatments, to facilitate and enhance old-growth development within the existing 625 Line to be removed and/or other potential treatment areas. The forest management plan will identify priority locations where enhancement actions could be implemented to achieve the plan's objectives, and include a funding component for late seral/old growth forest enhancement projects.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 2 (Modified Alternative), the project's contribution to loss of late seral forest would approximately triple. However, the total loss of habitat would be small and the potential cumulative effects on late seral coniferous forest habitat would be similar to those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 3 (Road Focused Alternative), potential effects of project implementation on mapped late seral forest would be similar to but slightly less than those described for Alternative 2 (Modified Alternative) (3.1 acre of disturbance or loss; Table 8).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 3 (Road Focused Alternative), potential cumulative effects on late seral coniferous forest habitat would be similar to those described for Alternative 2 (Modified Alternative).

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 4, potential effects of project implementation on mapped late seral forest would be the same as those described for Alternative 3 (Road Focused Alternative) (3.1 acre of disturbance or loss; Table 8).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 4 (Proposed Alternative), potential cumulative effects on late seral coniferous forest habitat would be similar to those described for Alternatives 2 and 3.

5.G.3 SUMMARY OF SOOTY (BLUE) GROUSE STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the sooty grouse; hence, the late seral open canopy coniferous forest effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the sooty grouse. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

ECOSYSTEM COMPONENT STATUS AND TREND

There are currently 63,795 acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat on NFS lands in the Sierra Nevada. Over the last two decades, the trend is decreasing (changing from 3 percent to 1 percent of the acres on NFS lands).

POPULATION STATUS AND TREND

The sooty grouse has been monitored in the Sierra Nevada at various sample locations by hunter survey, modeling, point counts, and breeding bird survey protocols, including California Department of Fish and Wildlife Sooty (Blue) Grouse Surveys (Bland 1993, 1997, 2002, 2006); California Department of Fish and Wildlife hunter survey, modeling, and hunting regulations assessment (CDFG 2004a, CDFG 2004b); Multi-species inventory and monitoring on the Lake Tahoe Basin Management Unit (LTBMU 2007); and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that sooty grouse continue to be present across the Sierra Nevada, except in the area south of the Kern Gap, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of sooty grouse populations in the Sierra Nevada north of the Kern Gap is stable.

5.G.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE SOOTY (BLUE) GROUSE TREND

Implementation of the CalPeco 625 and 650 Electrical Line Upgrade Project would result in the loss or disturbance of small amount of late seral open canopy coniferous forest habitat on NFS lands. However, because the habitat loss would occur in isolated, small patches along a narrow linear corridor and the overall habitat loss would be minor (3.1–5.1 acre, depending on alternative; Table 8), none of the action alternatives for the CalPeco 625 and 650 Electrical Line Upgrade Project would alter existing trends in late seral open canopy coniferous forest habitat, nor would construction of any of the alternatives lead to a change in distribution of sooty grouse across the Sierra Nevada bioregion. Additionally, as specified in Mitigation Measure 4.7-4, CalPeco would compensate for any unavoidable losses of late seral/old growth forest through development and implementation of a forest management plan to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. After mitigation, the project's impacts would be eliminated over time.

5.H LATE SERAL CLOSED CANOPY CONIFEROUS FOREST HABITAT (CALIFORNIA SPOTTED OWL, AMERICAN MARTEN, AND NORTHERN FLYING SQUIRREL)

5.H.1 HABITAT/SPECIES RELATIONSHIP

CALIFORNIA SPOTTED OWL

The California spotted owl was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40 percent within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The California spotted owl is strongly associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure (CDFG 2005, USFWS 2006). It uses dense, multi-layered canopy cover for roost seclusion; roost selection appears to be

related closely to thermoregulatory needs, and the species appears to be intolerant of high temperatures (CDFG 2005). Mature, multi-layered forest stands are required for breeding (Ibid). The mixed-conifer forest type is the predominant type used by spotted owls in the Sierra Nevada: about 80 percent of known sites are found in mixed-conifer forest, with 10 percent in red fir forest (USDA Forest Service 2001).

AMERICAN MARTEN

The American marten was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40 percent within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. Martens prefer coniferous forest habitat with large diameter trees and snags, large down logs, moderate-to-high canopy closure, and an interspersion of riparian areas and meadows. Important habitat attributes are: vegetative diversity, with predominately mature forest; snags; dispersal cover; and large woody debris (Allen 1982). Key components for westside and eastside marten habitat can be found in the Sierra Nevada Forest Plan Amendment FEIS (USDA Forest Service 2001), Volume 3, Chapter 3, part 4.4, pages 20-21.

NORTHERN FLYING SQUIRREL

The northern flying squirrel was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40 percent within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The northern flying squirrel occurs primarily in mature, dense conifer habitats intermixed with various riparian habitats, using cavities in mature trees, snags, or logs for cover (CDFG 2005).

5.H.2 PROJECT-LEVEL EFFECTS ANALYSIS- LATE SERAL CLOSED CANOPY CONIFEROUS FOREST COMPONENT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on late seral closed canopy coniferous forest: (1) Acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6]. (2) Acres with changes in canopy closure (D to M). (3) Acres with changes in large down logs per acre or large snags per acre.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 Lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared spaces that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the Forest Service parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Late seral coniferous forest in the analysis area is limited. In general, forest communities in the analysis area do not exhibit multi-layered canopy structure and are fairly even aged due to a history of logging. However, forest stands in the analysis area are mature and some contain a high proportion of large trees. While patches of old-growth forest are present in the analysis area, they are not large, contiguous stands of forest that have not been previously logged and therefore do not exhibit many of the ecological characteristics of late seral forest communities. Several coniferous forest types are present on NFS lands throughout the analysis area. Table 4 provides a brief description of each habitat type mapped in the analysis area for each alternative. Appendix A shows the location and extent of forest habitat types in the analysis area. Table 9 summarizes the late seral closed canopy coniferous forest habitat factors within the temporary and permanent ROWs on NFS lands for each action alternative, based on existing CWHR GIS data.

The project area has not been inventoried for snags as part of this analysis, but some snags within the medium to large category exist within forested habitats that could be affected by project construction.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Relatively little of the forest habitat in the study area exhibits structural characteristics that are generally thought to typify late seral forest communities. However, implementing Alternative 1 (PEA Alternative) would result in permanent loss of approximately 16.9 acres of late seral closed canopy coniferous forest on NFS lands (Table 9); another 5.7 acres is within the temporary construction corridor; however, temporary construction disturbances would be avoided in any areas containing late seral/old growth forest.

Table 9 Effects on Late Seral Closed Canopy Coniferous Forest Habitat Factors (California Spotted Owl, American Marten, Northern Flying Squirrel) on USFS Lands[1]

WHR Type	WHR Size	WHR Density	Alt. 1		Alt. 2		Alt. 3		Alt. 3A		Alt. 4	
			Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)	Perm (acres)	Temp (acres)
SMC	5	M	2.3	1.3	2.7	2.5	2.8	3.0	2.8	3.0	2.8	3.0
	5	D	0.1	0.7	0.3	0.7	-	-	-	-	-	-
	6		-	-	-	-	-	-	-	-	-	-
WFR	5	M	7.3	2.1	4.6	0.9	2.3	1.4	2.3	1.4	2.3	1.4
	5	D	-	-	-	-	-	-	-	-	-	-
	6		-	-	-	-	-	-	-	-	-	-
RFR	5	M	6.6	1.4	7.4	1.6	4.1	3.4	4.1	3.4	4.1	3.4
	5	D	0.6	0.2	0.6	0.2	0.5	0.3	0.5	0.3	0.5	0.3
	6		-	-	-	-	-	-	-	-	-	-
Total			**16.9**	**5.7**	**15.6**	**5.9**	**9.7**	**8.1**	**9.7**	**8.1**	**9.7**	**8.1**

[1] Based on existing CWHR GIS data provided by LTBMU.

Mitigation Measure 4.7-7 (Conduct a Tree Survey; Avoid Late Seral/Old-Growth Forest; Compensate for Loss of Trees) was developed and included as part of Alternatives 1, 2, 3, and 4 in the project EIS/EIS/EIR. This measure requires CalPeco to avoid loss of old growth forest to the extent feasible. If loss of late seral/old growth forest is unavoidable, CalPeco will compensate for the loss of late seral/old growth forest through the development and implementation of a forest management plan, prepared by a RPF, to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. The forest management plan will include management actions, such as fuels and vegetation treatments, to facilitate and enhance old-growth development within the existing 625 Line to be removed and/or other potential treatment areas. The forest management plan will identify priority locations where enhancement actions could be implemented to achieve the plan's objectives, and include a funding component for late seral/old growth forest enhancement projects.

Cumulative Effects on Habitat in the Analysis Area

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for late seral closed canopy coniferous forest are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Past, present, and foreseeable future activities that have affected or may affect biological resources, including MIS habitats, in the Tahoe-Truckee Region include logging, grazing, fuels management, habitat restoration, recreational development and activities, urban and commercial development, and ROW maintenance and operation activities. Other projects that may interact with the proposed project on a cumulative basis are listed and shown in Appendix B. Some development and recreation projects planned in the analysis area (including Northstar Overall Mountain Master Plan and Northstar-at-Tahoe Ski Trail Widening) could contribute to an adverse cumulative effect on late seral forest habitat. The Carnelian Fuels Reduction and Healthy Forest Restoration Project and the Incline Fuels Reduction and Healthy Forest Restoration Project are expected to beneficially affect late seral forest habitat over the long term.

Cumulative Effects Conclusion

Comstock-era logging and forest clearing for development, combined with past vegetation management practices and fire suppression, has resulted in a preponderance of even-aged forest and substantially reduced the amount of late seral/old growth forest in the Truckee Tahoe Region. Therefore, there has been an overall significant cumulative effect on this particular forest resource. Present and future fuels reduction projects are expected to have a beneficial effect on late seral/old growth forest development.

Implementing Alternative 1 (PEA Alternative) could result in removal of up to 16.9 acres of late seral closed canopy coniferous forest. The loss and degradation of late seral coniferous habitat may reduce the amount of habitat for California spotted owl, American marten, and northern flying squirrel. Because the amount of late seral forest affected under Alternative 1 (PEA Alternative) would be relatively small, and fuels and vegetation projects planned in the analysis area are expected to promote late-seral habitat structure in the region and contribute beneficially to a cumulative effect, the potential for Alternative 1 (PEA Alternative) to contribute to a cumulative adverse effect on late seral forest would minor. Additionally, as specified in Mitigation Measure 4.7-4, CalPeco would compensate for any unavoidable losses of late seral/old growth forest through development and implementation of a forest management plan to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. After mitigation, the project's impacts would be eliminated over time. Accordingly, the project's small contribution to a cumulative impact in the near term would diminish to no impact over time.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

As described for Alternative 1 (PEA Alternative), relatively little of the forest habitat in the study area exhibits structural characteristics that are generally thought to typify late seral forest communities. However, implementing Alternative 2 would result in permanent loss of up to 15.6 acres of late seral closed canopy coniferous forest on NFS lands (Table 9). Mitigation Measure 4.7-7 (Conduct a Tree Survey; Avoid Late Seral/Old-Growth Forest; Compensate for Loss of Trees) was developed and included as part of Alternatives 1, 2, 3, and 4 in the project EIS/EIS/EIR. This measure requires CalPeco to avoid loss of old growth forest to the extent feasible. If loss of late seral/old growth forest is unavoidable, CalPeco will compensate for the loss of late seral/old growth forest through the development and implementation of a forest management plan, prepared by a RPF, to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. The forest management plan will include management actions, such as fuels and vegetation treatments, to facilitate and enhance old-growth development within the existing 625 Line to be removed and/or other potential treatment areas. The forest management plan will identify priority locations where enhancement actions could be implemented to achieve the plan's objectives, and include a funding component for late seral/old growth forest enhancement projects.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 2 (Modified Alternative), potential cumulative effects on late seral coniferous forest habitat would be similar to those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 3 (Road Focused Alternative), potential effects of project implementation on mapped late seral closed canopy coniferous forest would be similar to but less than those described for Alternative 2 (Modified Alternative) (9.7 acres of disturbance or loss; Table 9).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 3 (Road Focused Alternative), potential cumulative effects on late seral coniferous forest habitat would be similar to those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Under Alternative 4 (Proposed Alternative), potential effects of project implementation on mapped late seral closed canopy coniferous forest would be the same as those described for Alternative 3 (Road Focused Alternative) (9.7 acres of disturbance or loss; Table 9).

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 4 (Proposed Alternative), potential cumulative effects on late seral coniferous forest habitat would be to the same as those described for Alternatives 2 and 3.

5.H.3 SUMMARY OF CALIFORNIA SPOTTED OWL, AMERICAN MARTEN, AND NORTHERN FLYING SQUIRREL STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the California spotted owl, American marten, and northern flying squirrel; hence, the late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference.

ECOSYSTEM COMPONENT STATUS AND TREND

There is an estimated 1,006,923 acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on NFS lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 7 percent to 9 percent of the acres on NFS lands); since the early 2000s, the trend has been stable at 9 percent.

POPULATION STATUS AND TREND

CALIFORNIA SPOTTED OWL

California spotted owl has been monitored in California and throughout the Sierra Nevada through general surveys, monitoring of nests and territorial birds, and demography studies (Verner et al. 1992; Gutierrez et al. 2008, 2009, 2010; USDA Forest Service 2001, 2004, 2006b; USFWS 2006; Sierra Nevada Research Center 2007, 2008, 2009, 2010). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in population trend [e.g., localized decreases in “lambda” (estimated annual rate of population change)], the distribution of California spotted owl populations in the Sierra Nevada is stable.

AMERICAN MARTEN

American marten has been monitored throughout the Sierra Nevada as part of general surveys and studies since 1996 (e.g., Zielinski et al. 2005, Moriarty 2009). Since 2002, the American marten has been monitored on the Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2005, 2006b, 2007b, 2009, 2010b). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although marten appear to be distributed throughout their historic range, their distribution has become fragmented in the southern Cascades and northern Sierra Nevada, particularly in Plumas County. The distribution appears to be continuous across high-elevation forests from Placer County south through the southern end of the Sierra Nevada, although detection rates have decreased in at least some localized areas (e.g., Sagehen Basin area of Nevada County).

NORTHERN FLYING SQUIRREL

The northern flying squirrel has been monitored in the Sierra Nevada at various sample locations by live-trapping, ear-tagging, camera surveys, snap-trapping, and radiotelemetry: 2002-present on the Plumas and Lassen National Forests (Sierra Nevada Research Center 2007, 2008, 2009, 2010), and 1958-2004 throughout the Sierra Nevada in various monitoring efforts and studies (see USDA Forest Service 2008, Table NOFLS-IV-1). These data indicate that northern flying squirrels continue to be present at these sample sites, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of northern flying squirrel populations in the Sierra Nevada is stable.

5.H.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE CALIFORNIA SPOTTED OWL, AMERICAN MARTEN, AND NORTHERN FLYING SQUIRREL TREND

Implementation of the CalPeco 625 and 650 Electrical Line Upgrade Project would result in the loss or disturbance of small amount of late-seral coniferous forest habitat on NFS lands, as mapped by TRPA, which could provide suitable habitat for sooty grouse. However, because the habitat loss would occur in isolated, small patches along a narrow linear corridor and the overall habitat loss would be relatively minor (up to 9.7–16.9 acres, depending on alternative; Table 9), none of the action alternatives for the CalPeco 625 and 650 Electrical Line Upgrade Project would alter existing trends in late seral coniferous forest habitat, nor would construction of any of the alternatives lead to a change in distribution of California spotted owl, American marten, and northern flying squirrel across the Sierra Nevada bioregion. Additionally, as specified in Mitigation Measure 4.7-4, CalPeco would compensate for any unavoidable losses of late seral/old growth forest through development and implementation of a forest management plan to facilitate establishment of late seral/old growth forest stands and enhance existing late seral/old growth forest stands. After mitigation, the project's impacts would be eliminated over time.

5.I SNAGS IN GREEN FOREST ECOSYSTEM COMPONENT (HAIRY WOODPECKER)

5.I.1 HABITAT/SPECIES RELATIONSHIP

The hairy woodpecker was selected as the MIS for the ecosystem component of snags in green forests. Medium (dbh between 15 and 30 inches) and large (dbh greater than 30 inches) snags are most important. The hairy woodpecker uses stands of large, mature trees and snags of sparse to intermediate density; cover is also

provided by tree cavities (CDFG 2005). Mature timber and dead snags or trees of moderate to large size are apparently more important than tree species (Siegel and DeSante 1999).

5.I.2 PROJECT-LEVEL EFFECTS ANALYSIS – SNAGS IN GREEN FOREST ECOSYSTEM COMPONENT

HABITAT FACTOR(S) FOR THE ANALYSIS

The following factors are used to assess the effects of the project on snags in green forests: medium (15–30 inches dbh) and large (greater than 30 inches dbh) snags per acre.

ANALYSIS AREA FOR PROJECT-LEVEL EFFECTS ANALYSIS

The analysis area for project-level effects includes the 65-foot construction corridor along the 625 and 650 Lines on NFS lands where upgrades would be made (i.e., along existing alignment and/or new alignment routes), areas along the existing alignment that would be abandoned, new and/or improved access roads, staging areas, and stringing sites as well as any other cleared spaces that may be needed for construction and fall outside the 65 foot construction corridor (e.g., location of crossing structures or stringing sites). Habitat disturbance, loss, and/or alteration as a result of implementing the full project would also occur within the construction corridor on non-NFS lands. However, because these areas are outside the jurisdiction of the LTBMU and TNF, and MIS management does not apply there, this MIS analysis focuses only on the Forest Service parcels in the project area (Exhibit 2).

CURRENT CONDITION OF THE KEY HABITAT FACTOR(S) IN THE ANALYSIS AREA

Several coniferous forest types are present on NFS lands throughout the analysis area. The dominant forest habitat type is Sierra mixed conifer, but stands of white fir, Jeffrey pine, and red fir are also common. Table 4 provides a brief description of each forest habitat type mapped in the analysis area for each alternative. The acreages of each forest type mapped within the permanent and temporary ROWs of each alternative are summarized in Table 5. The analysis area has not been inventoried for snags as part of this analysis; however, medium and large snags exist within forested habitats that could be affected by project implementation. Based on observations during reconnaissance-level biological surveys, medium and large snags are not uncommon in the analysis area and vicinity.

ALTERNATIVE 1: PEA ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Construction of the new electric line under Alternative 1 (PEA Alternative) would remove snags in association with vegetation clearance necessary for project construction, including clearance of the 65-foot construction corridor, improved and new access roads, staging areas, and other areas outside of the 65-foot construction corridor that would require clearing for project construction (e.g., stringing sites). As part of the vegetation management activities associated with maintenance of the ROW, hazard trees (dead, dying, diseased, decaying, or infested) would also be removed. Hazard tree removal may extend beyond the 65-foot construction corridor more distant trees are tall enough to fall and damage the electrical lines. Under Alternative 1 (PEA Alternative), a total of 96.8 acres of coniferous forest occurs within the permanent ROW on NFS lands (Table 5). However, the number and quality of medium and large snags that may require removal within this area are unknown. Snag retention needs for wildlife would be taken into consideration in areas where temporary vegetation removal associated with project construction would occur, but generally snags that are also considered hazard trees that have potential to fall onto and damage the electric lines or any component of the project would be removed.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale, past and present activities, foreseeable future activities, and approach used in the cumulative effects analysis for early and mid seral conifer forest are the same as those described above for lacustrine/riverine (aquatic macroinvertebrate) habitat.

Past, present, and foreseeable future activities that have affected or may affect biological resources, including MIS habitats, in the Tahoe-Truckee Region include logging, grazing, fuels management, habitat restoration, recreational development and activities, urban and commercial development, and ROW maintenance and operation activities. Other projects that may interact with the proposed project on a cumulative basis are listed and shown in Appendix B. Some development and recreation projects planned in the analysis area (including Northstar Overall Mountain Master Plan and Northstar-at-Tahoe Ski Trail Widening) could contribute to an adverse cumulative effect on forest habitats, including snags. The Carnelian Fuels Reduction and Healthy Forest Restoration Project and the Incline Fuels Reduction and Healthy Forest Restoration Project are expected to benefit mid to late seral forest habitat, including a possible increase in snag recruitment and abundance over time by promoting development of large trees.

CUMULATIVE EFFECTS CONCLUSION

An unknown number of medium to large snags would likely be removed as a result of project implementation. However, due to the narrow and linear distribution of the project, and the overall abundance of snags in the analysis area and vicinity, the number of medium to large snags removed relative to the amount available in the Tahoe-Truckee region is not expected to be substantial. Therefore, the project's contribution to a cumulative effect on the abundance, distribution, and availability of medium and large snags in the region is considered minor.

ALTERNATIVE 2: MODIFIED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Construction of the new electric line under Alternative 2 (Modified Alternative) would remove snags in association with vegetation clearance necessary for project construction, including clearance of the 65-foot construction corridor, improved and new access roads, staging areas, and other areas outside of the 65-foot construction corridor that would require clearing for project construction (e.g., stringing sites). As part of the vegetation management activities associated with maintenance of the ROW, hazard trees (dead, dying, diseased, decaying, or infested) would also be removed. Under Alternative 2 (Modified Alternative), a total of 87.8 acres of coniferous forest occurs within the permanent ROW on NFS lands (Table 5). However, the number and quality of medium and large snags that may require removal within this area are unknown. Snag retention needs for wildlife would be taken into consideration in areas where temporary vegetation removal associated with project construction would occur, but generally snags that are also considered hazard trees that have potential to fall onto and damage the electric lines or any component of the project would be removed.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 2 (Modified Alternative), potential cumulative effects on medium and large snags would be similar to those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Construction of the new electric line under Alternative 3 (Road Focused Alternative) would remove snags in association with vegetation clearance necessary for project construction, including clearance of the 65-foot construction corridor, improved and new access roads, staging areas, and other areas outside of the 65-foot construction corridor that would require clearing for project construction (e.g., stringing sites). As part of the vegetation management activities associated with maintenance of the ROW, hazard trees (dead, dying, diseased, decaying, or infested) would also be removed. Under Alternative 3 (Road Focused Alternative), a total of 50.6–51.2 acres (depending on option) of coniferous forest occurs within the permanent ROW on NFS lands (Table 5). However, the number and quality of medium and large snags that may require removal within this area are unknown. Snag retention needs for wildlife would be taken into consideration in areas where temporary vegetation removal associated with project construction would occur, but generally snags that are also considered hazard trees that have potential to fall onto and damage the electric lines or any component of the project would be removed.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 3 (Road Focused Alternative), potential cumulative effects on medium and large snags would be similar to those described for Alternative 1 (PEA Alternative).

ALTERNATIVE 4: PROPOSED ALTERNATIVE

DIRECT AND INDIRECT EFFECTS ON HABITAT

Construction of the new electric line under Alternative 4 (Proposed Alternative) would remove snags in association with vegetation clearance necessary for project construction, including clearance of the 65-foot construction corridor, improved and new access roads, staging areas, and other areas outside of the 65-foot construction corridor that would require clearing for project construction (e.g., stringing sites). As part of the vegetation management activities associated with maintenance of the ROW, hazard trees (dead, dying, diseased, decaying, or infested) would also be removed. Under Alternative 4 (Proposed Alternative), a total of 51.2 acres of coniferous forest occurs within the permanent ROW on NFS lands (Table 5). However, the number and quality of medium and large snags that may require removal within this area are unknown. Snag retention needs for wildlife would be taken into consideration in areas where temporary vegetation removal associated with project construction would occur, but generally snags that are also considered hazard trees that have potential to fall onto and damage the electric lines or any component of the project would be removed.

CUMULATIVE EFFECTS ON HABITAT IN THE ANALYSIS AREA

The spatial scale for the cumulative effects on MIS habitat is the same as that described above under Alternative 1 (PEA Alternative). In addition, the effects of past, present, and future actions are the same as those described above under Alternative 1 (PEA Alternative).

CUMULATIVE EFFECTS CONCLUSION

Under Alternative 4 (Proposed Alternative), potential cumulative effects on medium and large snags would be similar to those described for Alternative 1 (PEA Alternative).

5.I.3 SUMMARY OF HAIRY WOODPECKER STATUS AND TREND AT THE BIOREGIONAL SCALE

The LTBMU and TNF LRMPs (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the hairy woodpecker; hence, the snag effects analysis for the CalPeco 625 and 650 Electrical Line Upgrade Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the hairy woodpecker. This information is drawn from the detailed information on habitat and distribution population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010), which is hereby incorporated by reference.

ECOSYSTEM COMPONENT STATUS AND TREND

The current average number of medium-sized and large-sized snags (> 15" dbh, all decay classes) per acre across major coniferous and hardwood forest types (westside mixed conifer, ponderosa pine, white fir, productive hardwoods, red fir, eastside pine) in the Sierra Nevada ranges from 1.5 per acre in eastside pine to 9.1 per acre in white fir. In 2008, snags in these types ranged from 1.4 per acre in eastside pine to 8.3 per acre in white fir (USDA Forest Service 2008).

Data from the early-to-mid 2000s were compared with the current data to calculate the trend in total snags per acre by Regional forest type for the 10 Sierra Nevada national forests and indicate that, during this period, snags per acre increased within westside mixed conifer (+0.76), white fir (+2.66), productive hardwoods (+0.35), and red fir (+1.25) and decreased within ponderosa pine (-0.16) and eastside pine (-0.14). Detailed information by forest type, snag size, and snag decay class can be found in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010).

POPULATION STATUS AND TREND

Monitoring of the hairy woodpecker across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, fox sparrow, and yellow warbler (USDA Forest Service 2010, http://data.prbo.org/partners/usfs/snmis/). Hairy woodpeckers were detected on 15.1 percent of 1,659 point counts (and 25.2 percent of 424 playback points) in 2009 and 16.7 percent of 2,266 point counts (and 25.6 percent of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.116 in 2009 and 0.107 in 2010. These data indicate that hairy woodpeckers continue to be distributed across the 10 Sierra Nevada National Forests. In addition, the hairy woodpeckers continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count and breeding bird survey protocols. These are summarized in the 2010 Bioregional Monitoring Report (USDA Forest Service 2010). Current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of hairy woodpecker populations in the Sierra Nevada is stable.

5.I.4 RELATIONSHIP OF PROJECT-LEVEL HABITAT IMPACTS TO BIOREGIONAL-SCALE HAIRY WOODPECKER TREND

Hairy woodpecker is a common species in the analysis area and the Tahoe-Truckee region, and suitable habitat for this species is abundant. Construction of the new electric line under any of the action alternatives would remove snags in association with vegetation clearance necessary for project construction, including clearance of the 65-foot construction corridor, improved and new access roads, staging areas, and other areas outside of the 65-foot construction corridor that would require clearing for project construction (e.g., stringing sites). As part of the vegetation management activities associated with maintenance of the ROW, hazard trees (dead, dying, diseased, decaying, or infested) would also be removed. Depending on the action alternative, a total of 50.6–96.8 acres of coniferous forest occurs within the permanent ROW on NFS lands (Table 5). However, the number and quality of medium and large snags that may require removal within this area are unknown. Snag retention needs for wildlife would be taken into consideration in areas where temporary vegetation removal associated with project construction would occur, but generally snags that are also considered hazard trees that have potential to fall onto and damage the electric lines or any component of the project would be removed. However, due to the narrow and linear distribution of the project, and the overall abundance of snags in the analysis area and vicinity, the number of medium to large snags removed relative to the amount available in the Tahoe-Truckee region is not expected to be substantial. Therefore, implementation of the CalPeco 625 and 650 Electrical Line Upgrade Project would not alter the existing trend in the ecosystem component, nor would it lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.

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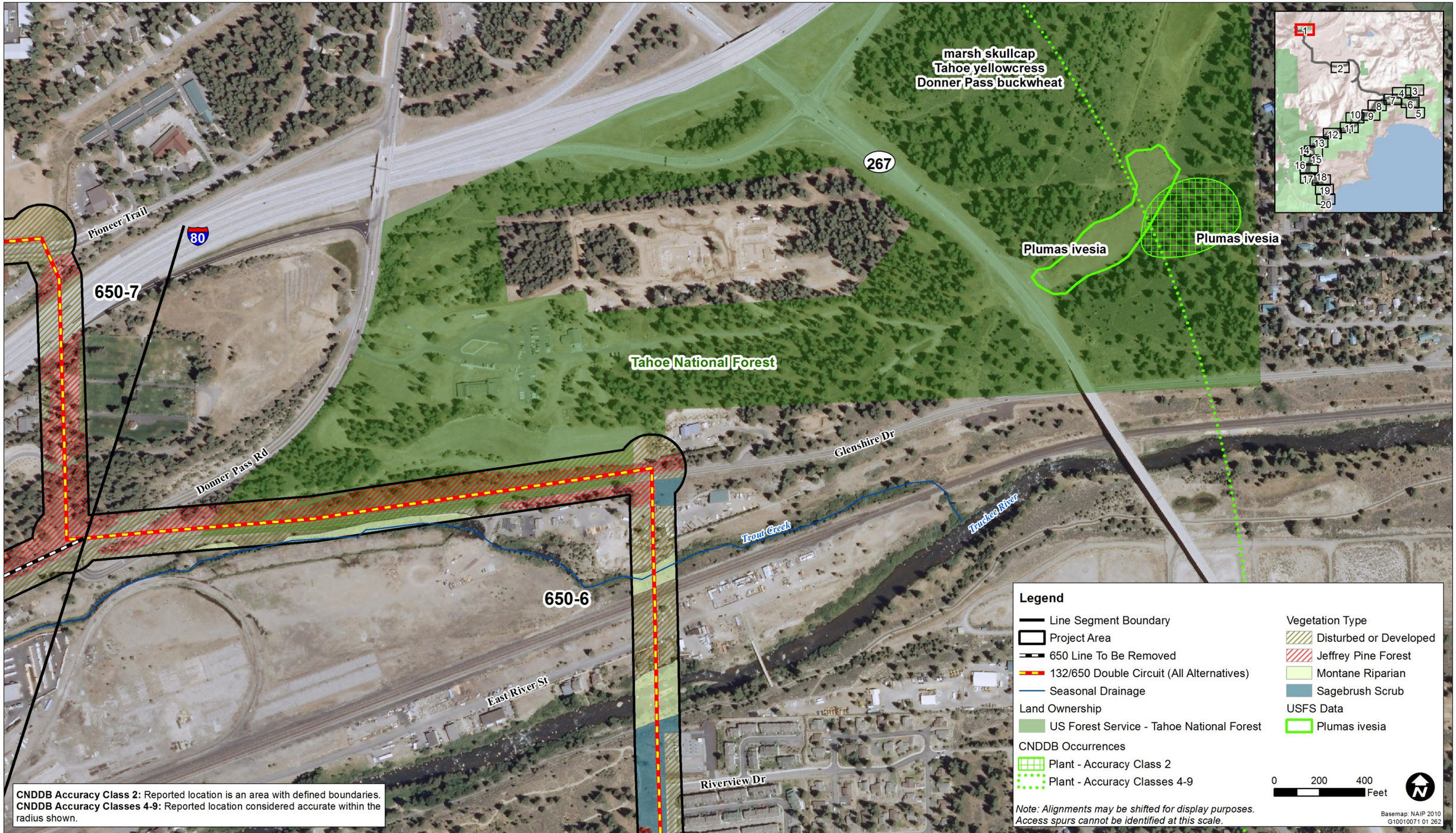
Appendix A

Vegetation Maps

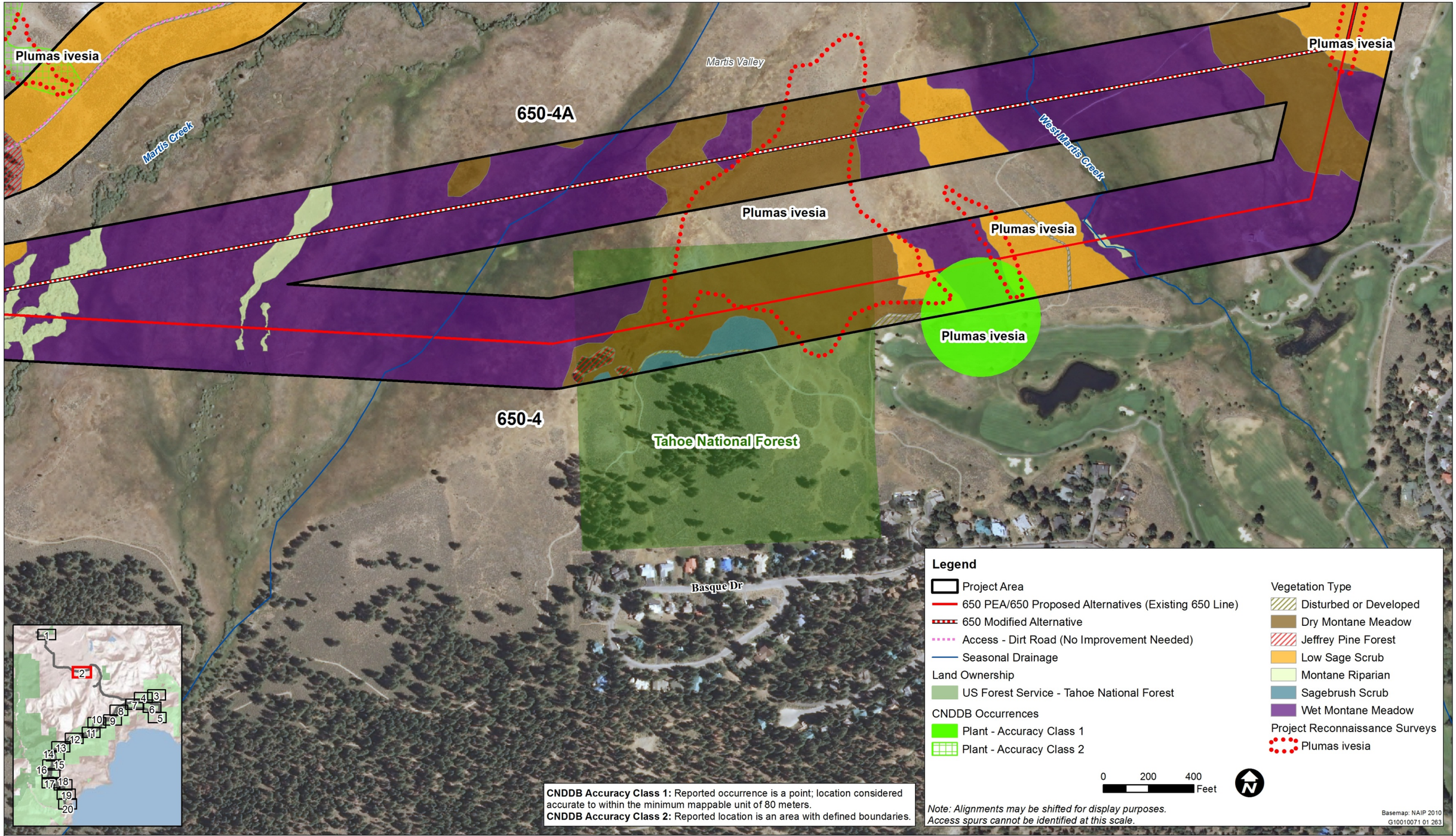


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA, and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A1

USFS Vegetation – Map 1

ASCENT ENVIRONMENTAL

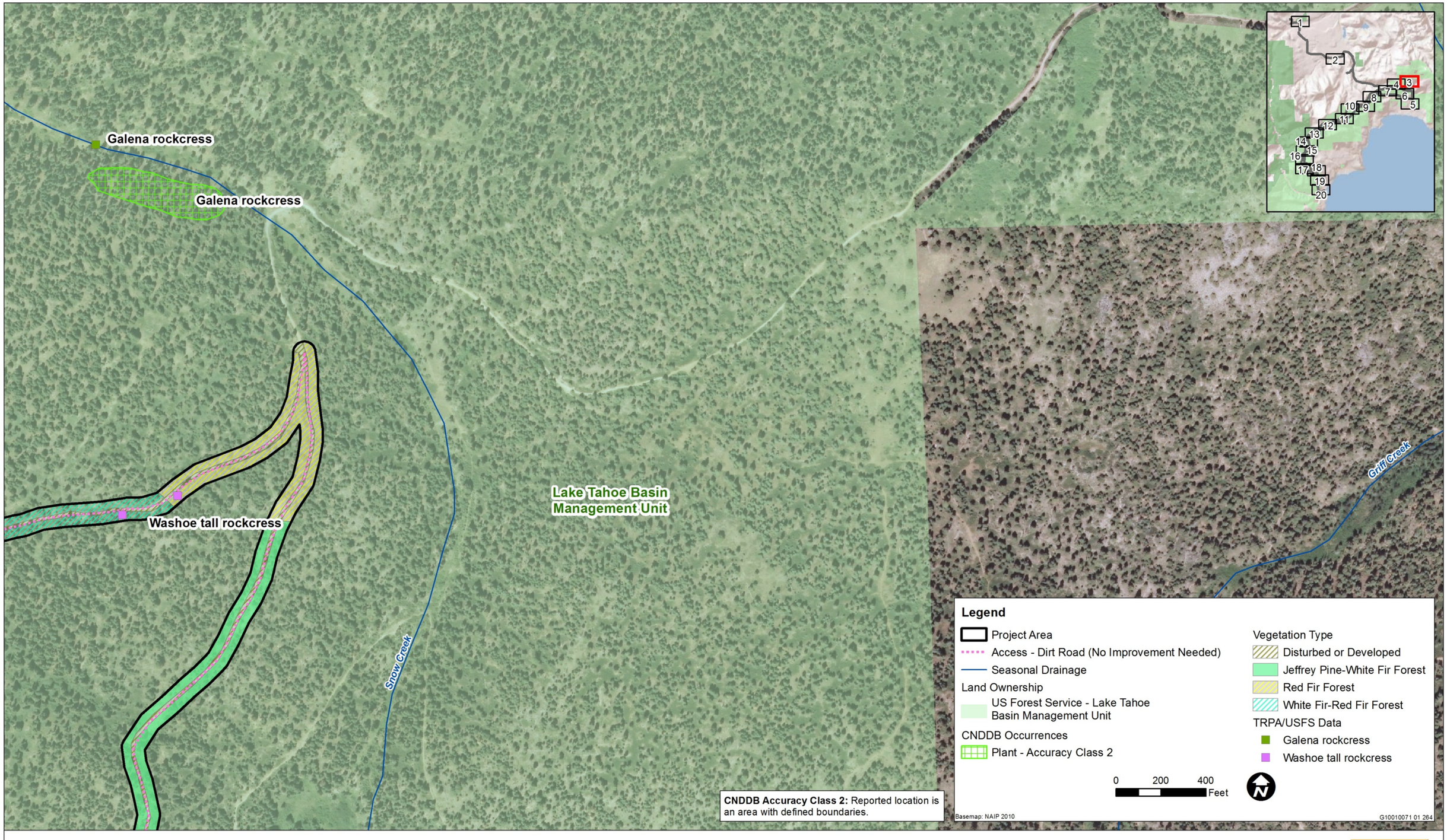


Source: Data provided by Ascent, CNDDB, POWER,TriSage, TRPA, and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A2

USFS Vegetation – Map 2

ASCENT ENVIRONMENTAL

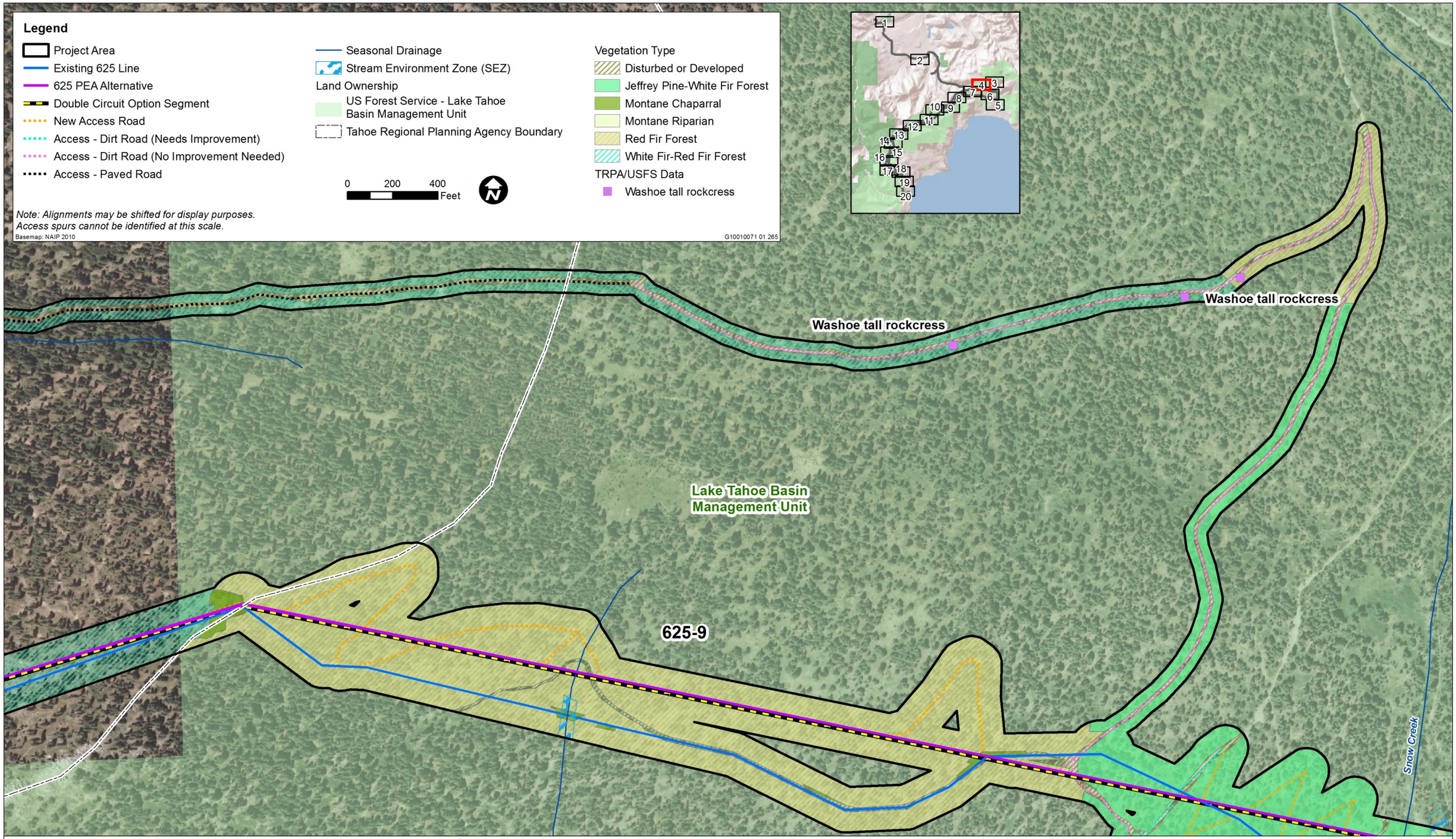


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A3

USFS Vegetation – Map 3

ASCENT ENVIRONMENTAL



Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A4

USFS Vegetation – Map 4

650-2
D-C OH-2

650-1
D-C OH-1

Mingan moonwort

625-10
D-C OH-3

267

Canterbury Dr

Kingswood Dr

Cambridge Dr

Lincoln Green Dr

Snow Creek

Lake Tahoe Basin
Management Unit

D-C OH-1A

Griff Creek

Kings Beach Staging Area

Lake Tahoe Basin
Management Unit

Tiger Ave

woolly-fruited sedge

Kings Beach Substation

Legend

- Line Segment Boundary
- Project Area
- Existing Substations
- Existing 625 Line
- 625 PEA Alternative
- 650 PEA/650 Proposed Alternatives (Existing 650 Line)
- Double Circuit Option Segment
- Double Circuit Option Alternative Segment
- New Access Road
- Access - Paved Road
- Staging Area
- Seasonal Drainage
- Stream Environment Zone (SEZ)

Land Ownership

- US Forest Service - Lake Tahoe Basin Management Unit

CNDDB Occurrences

- Plant - Accuracy Class 1
- Plant - Accuracy Classes 4-9

Vegetation Type

- Disturbed or Developed
- Sierran Mixed Conifer Forest
- Montane Chaparral
- Montane Riparian

TRPA/USFS Data

- Mingan moonwort

0 200 400 Feet

Note: Alignments may be shifted for display purposes.
Access spurs cannot be identified at this scale.

G10010071 01 266
Basemap: NAIP 2010

CNDDB Accuracy Class 1: Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.
CNDDB Accuracy Classes 4-9: Reported location considered accurate within the radius shown.

Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A5

USFS Vegetation – Map 5

ASCENT ENVIRONMENTAL

CNDDB Accuracy Class 1: Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.

0 200 400 Feet

Basemap: NAIP 2010 G10010071 01 267

625-9
D-C OH-4

625-10
D-C OH-3

650-2
D-C OH-2

650-1
D-C OH-1

Lake Tahoe Basin Management Unit

Lake Tahoe Basin Management Unit

Lake Tahoe Basin Management Unit

267

Snow Creek

Lake Vista Rd

Commonwealth Dr

Griff Creek

Regency Way

Allenby Way

Mingan moonwort

Legend

- Line Segment Boundary
- Project Area
- Existing 625 Line
- 625 PEA Alternative
- 650 PEA/650 Proposed Alternatives (Existing 650 Line)
- Double Circuit Option Segment
- Double Circuit Option Alternative Segment
- New Access Road
- Access - Dirt Road (No Improvement Needed)
- Access - Paved Road
- Seasonal Drainage
- Stream Environment Zone (SEZ)

Land Ownership

- US Forest Service - Lake Tahoe Basin Management Unit

Vegetation Type

- Disturbed or Developed
- Jeffrey Pine Forest
- Jeffrey Pine-White Fir Forest
- Sierran Mixed Conifer Forest
- Montane Chaparral
- Montane Riparian
- Red Fir Forest

CNDDB Occurrences

- Plant - Accuracy Class 1

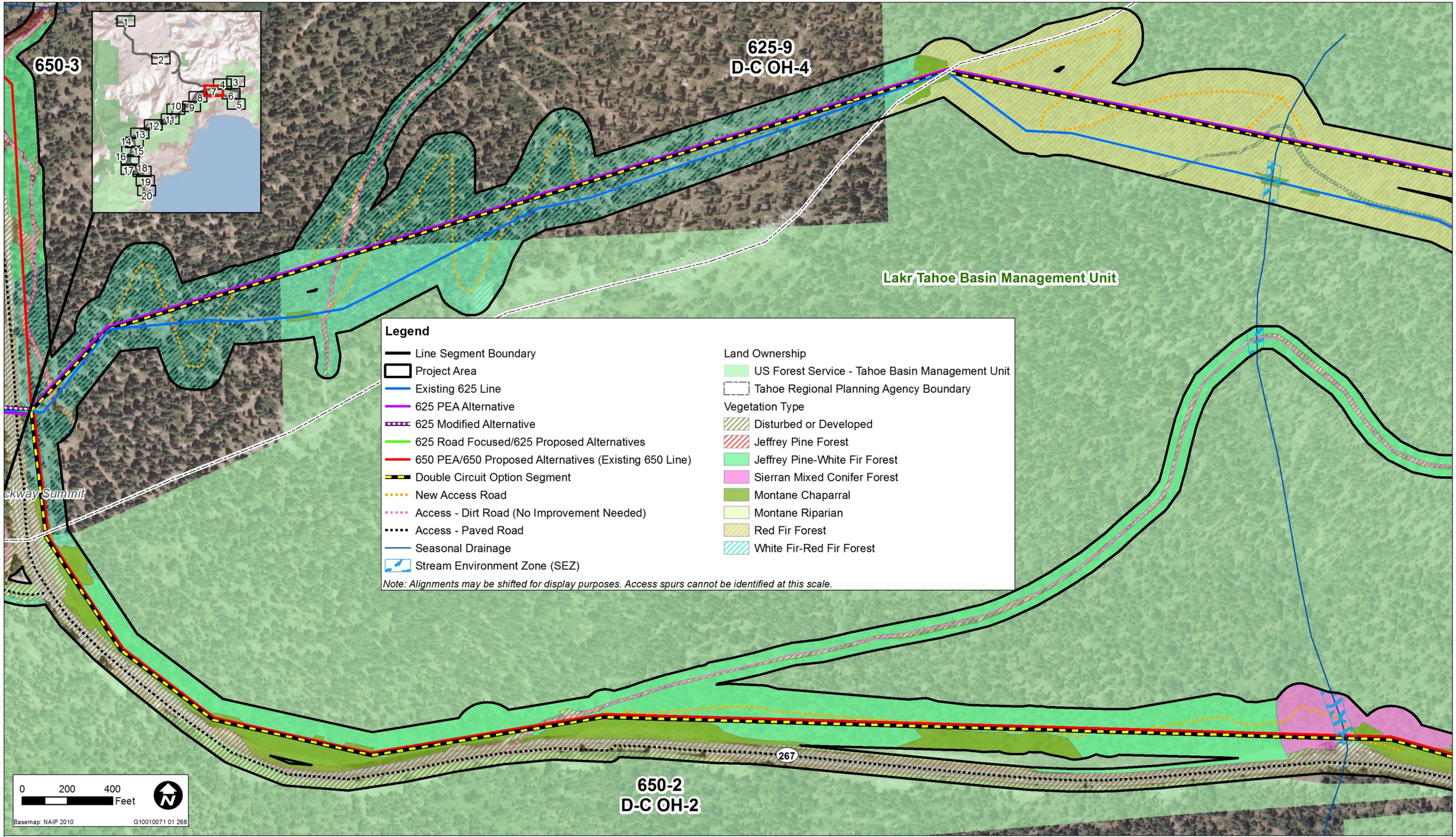
Note: Alignments may be shifted for display purposes. Access spurs cannot be identified at this scale.

Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A6

USFS Vegetation – Map 6

ASCENT ENVIRONMENTAL

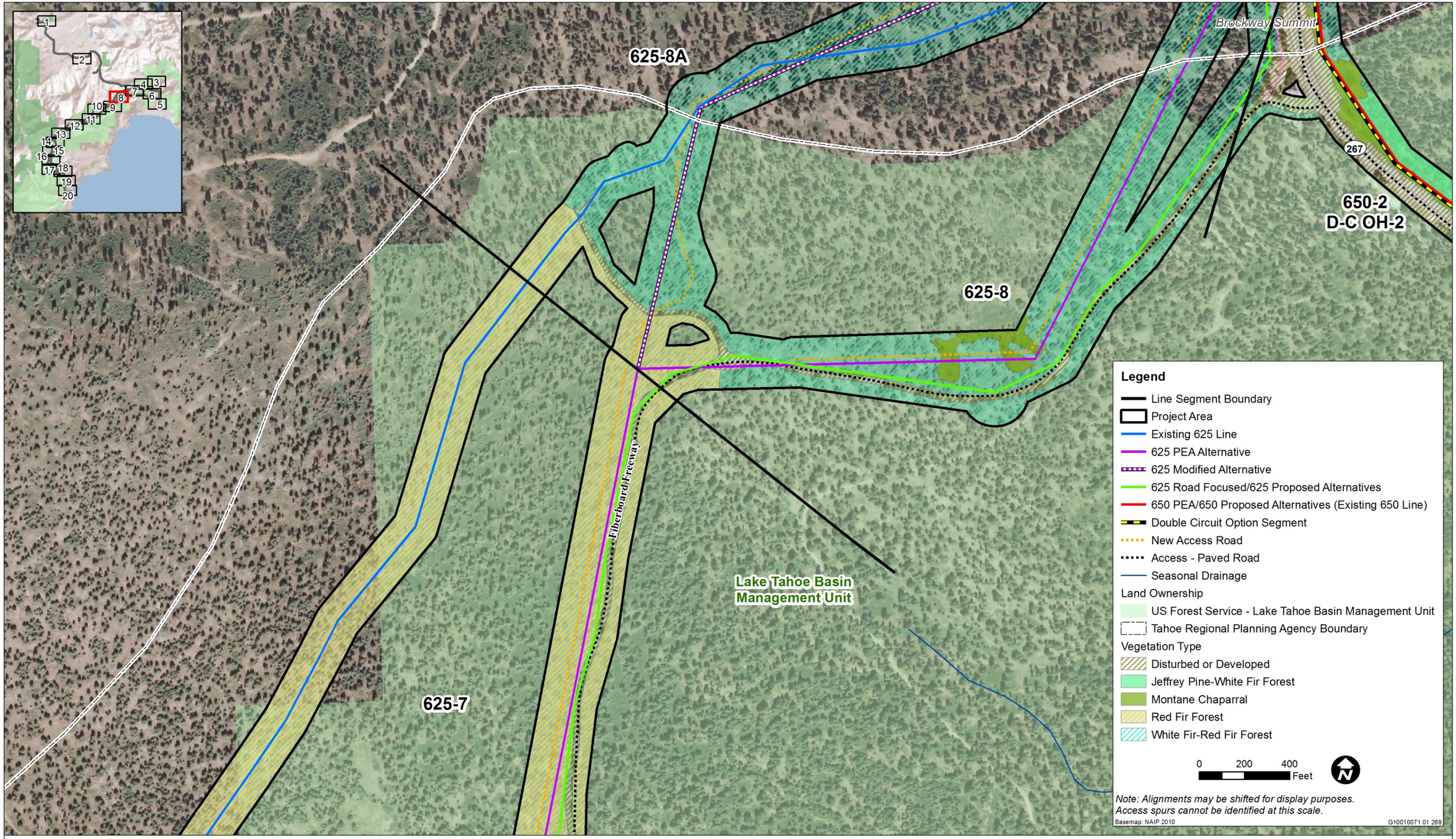


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A7

USFS Vegetation – Map 7

ASCENT ENVIRONMENTAL



Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A8

USFS Vegetation – Map 8

ASCENT ENVIRONMENTAL

Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A9

USFS Vegetation – Map 9

ASCENT ENVIRONMENTAL

Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A10

USFS Vegetation – Map 10

ASCENT ENVIRONMENTAL

Legend

- Line Segment Boundary
- Project Area
- Existing 625 Line
- 625 PEA Alternative
- 625 Modified Alternative
- 625 Road Focused/625 Proposed Alternatives
- New Access Road
- Access - Dirt Road (No Improvement Needed)
- Access - Paved Road
- Seasonal Drainage
- Stream Environment Zone (SEZ)

Land Ownership

- US Forest Service - Lake Tahoe Basin Management Unit
- Tahoe Regional Planning Agency

Vegetation Type

- Disturbed or Developed
- Sierran Mixed Conifer Forest
- Montane Chaparral
- Montane Riparian
- Mule Ears Meadow
- Red Fir Forest
- Rock Outcrop/Barren
- Wet Montane Meadow

0 200 400 Feet

Note: Alignments may be shifted for display purposes. Access spurs cannot be identified at this scale.

Basemap: NAIP 2010
G10010071 01 272

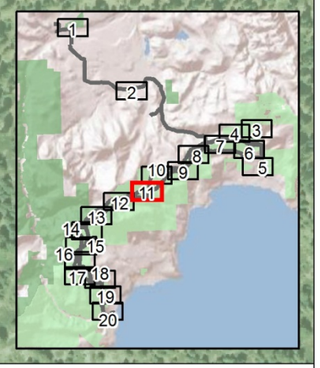
625-6

625-6A

Lake Tahoe Basin Management Unit

625-5

Fiberboard Freeway

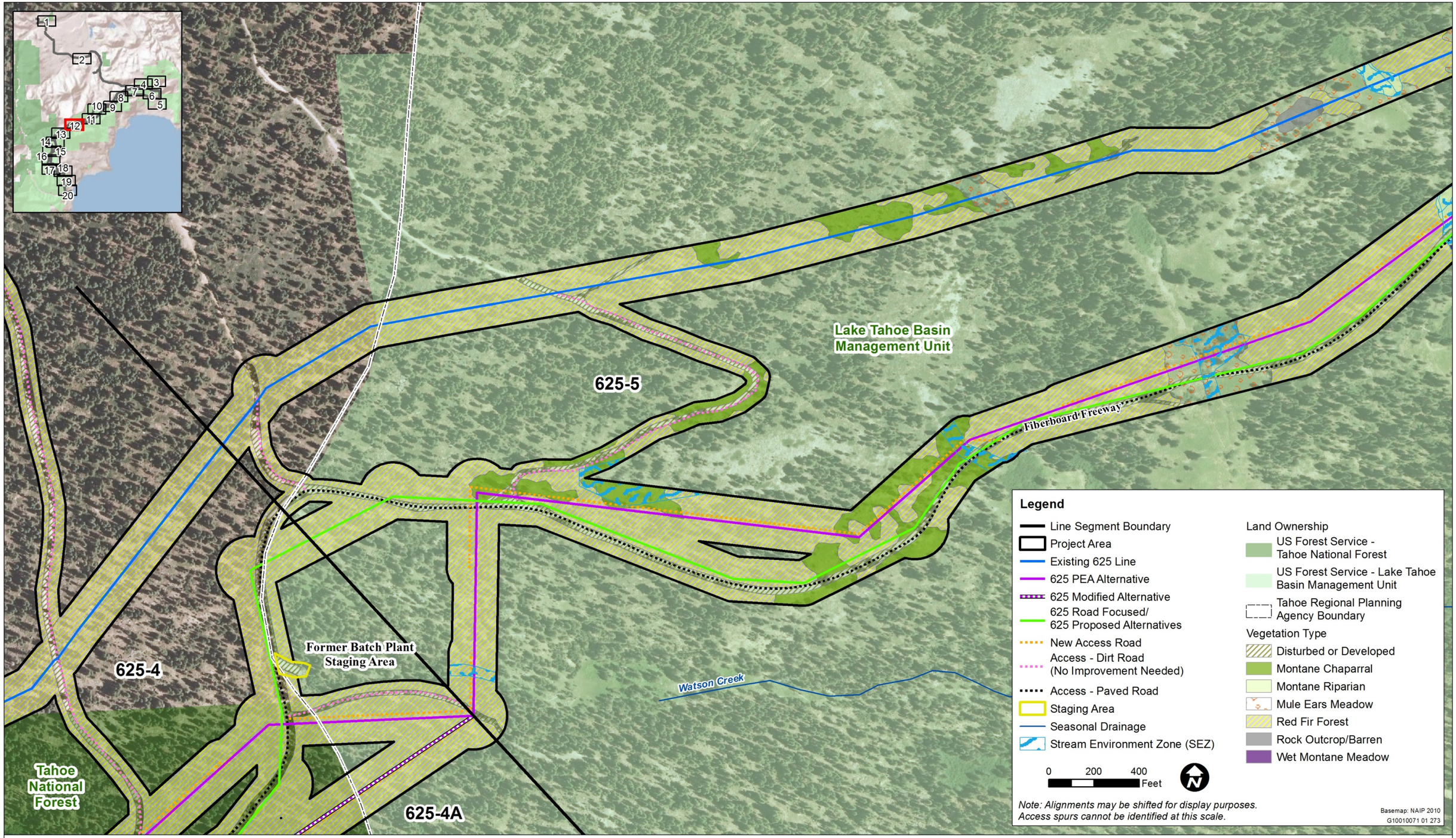


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A11

USFS Vegetation – Map 11

ASCENT ENVIRONMENTAL

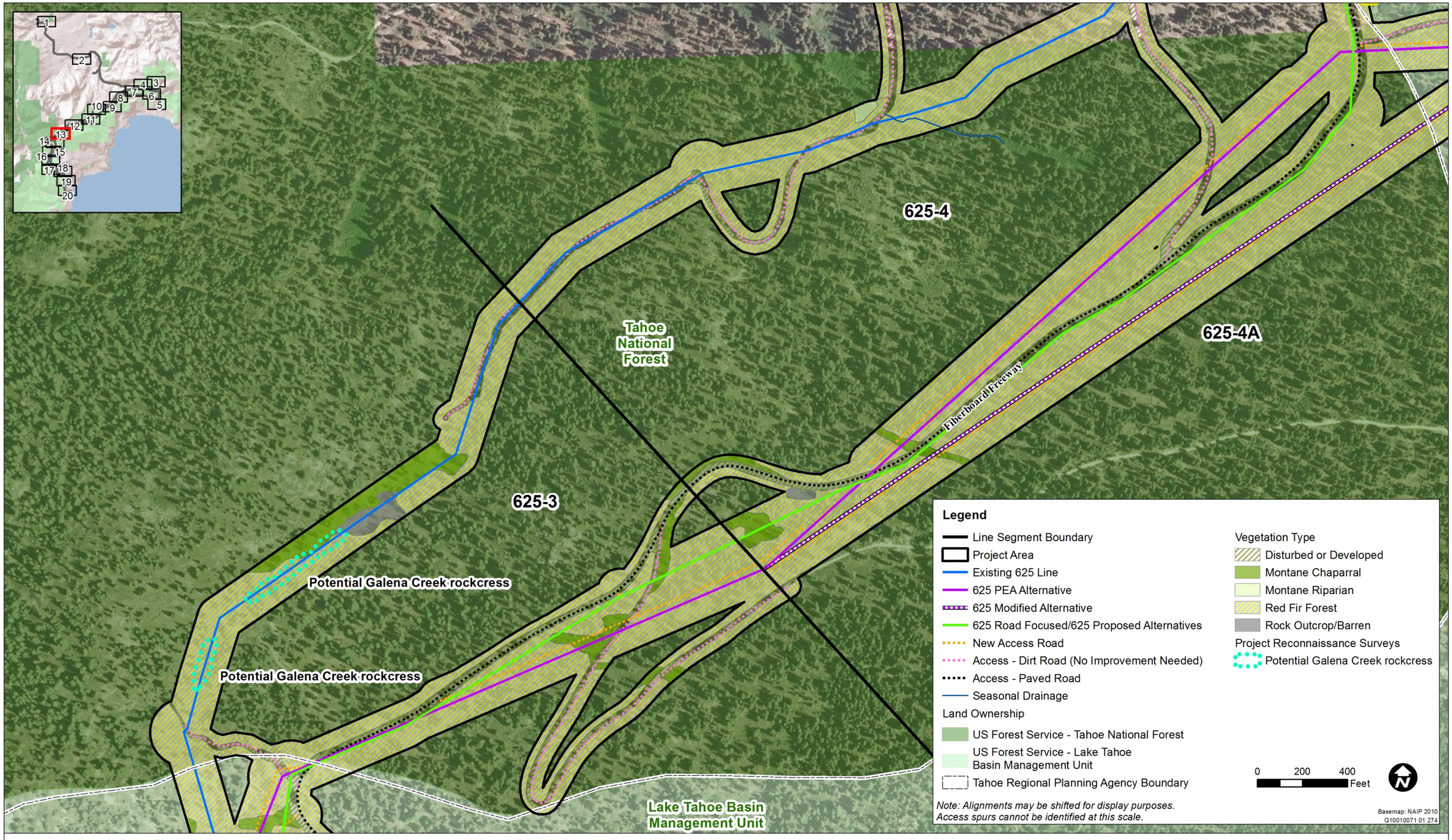


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A12

USFS Vegetation – Map 12

ASCENT ENVIRONMENTAL



Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A13

USFS Vegetation – Map 13

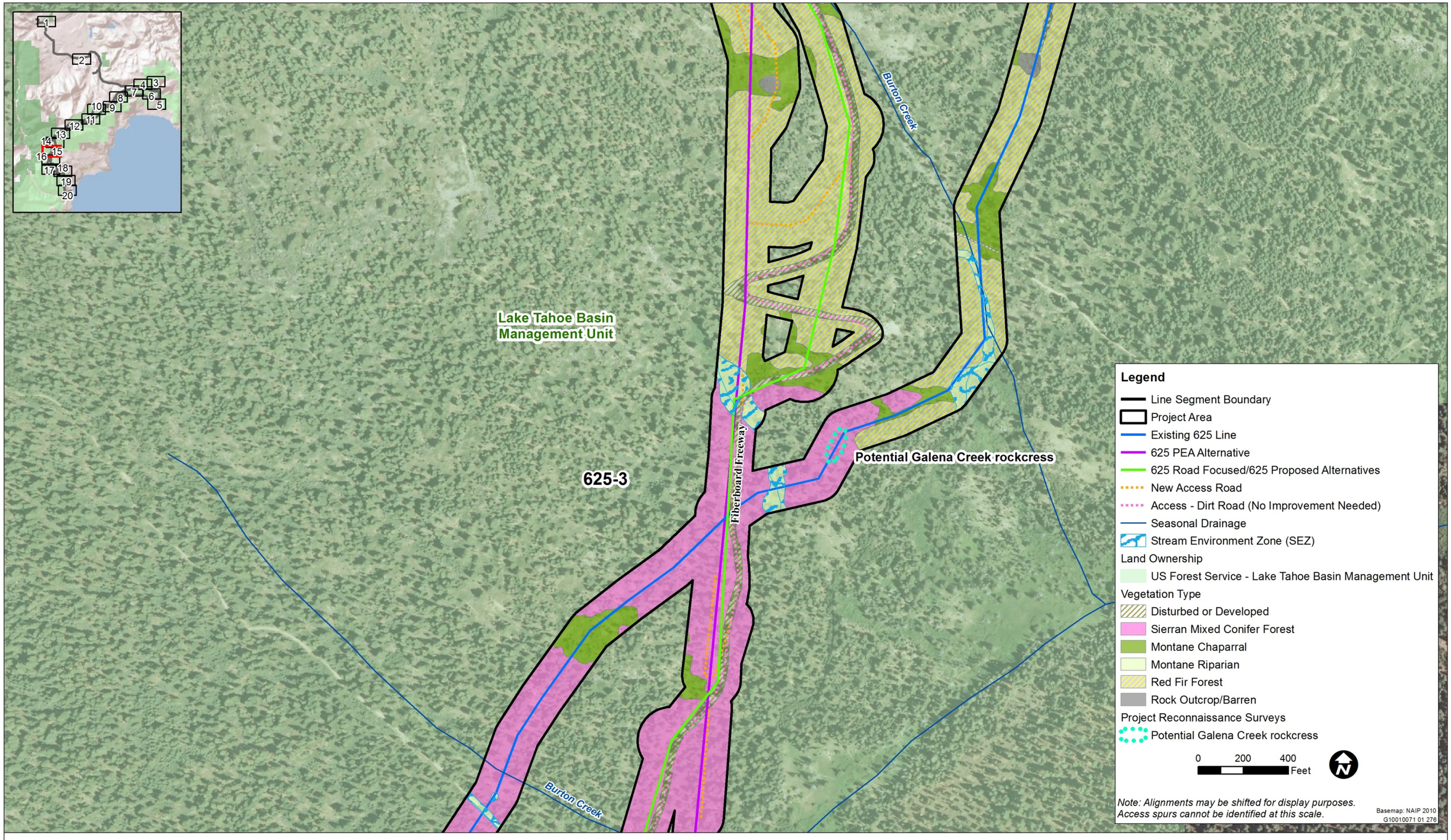
ASCENT ENVIRONMENTAL

Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A14

USFS Vegetation – Map 14

ASCENT ENVIRONMENTAL

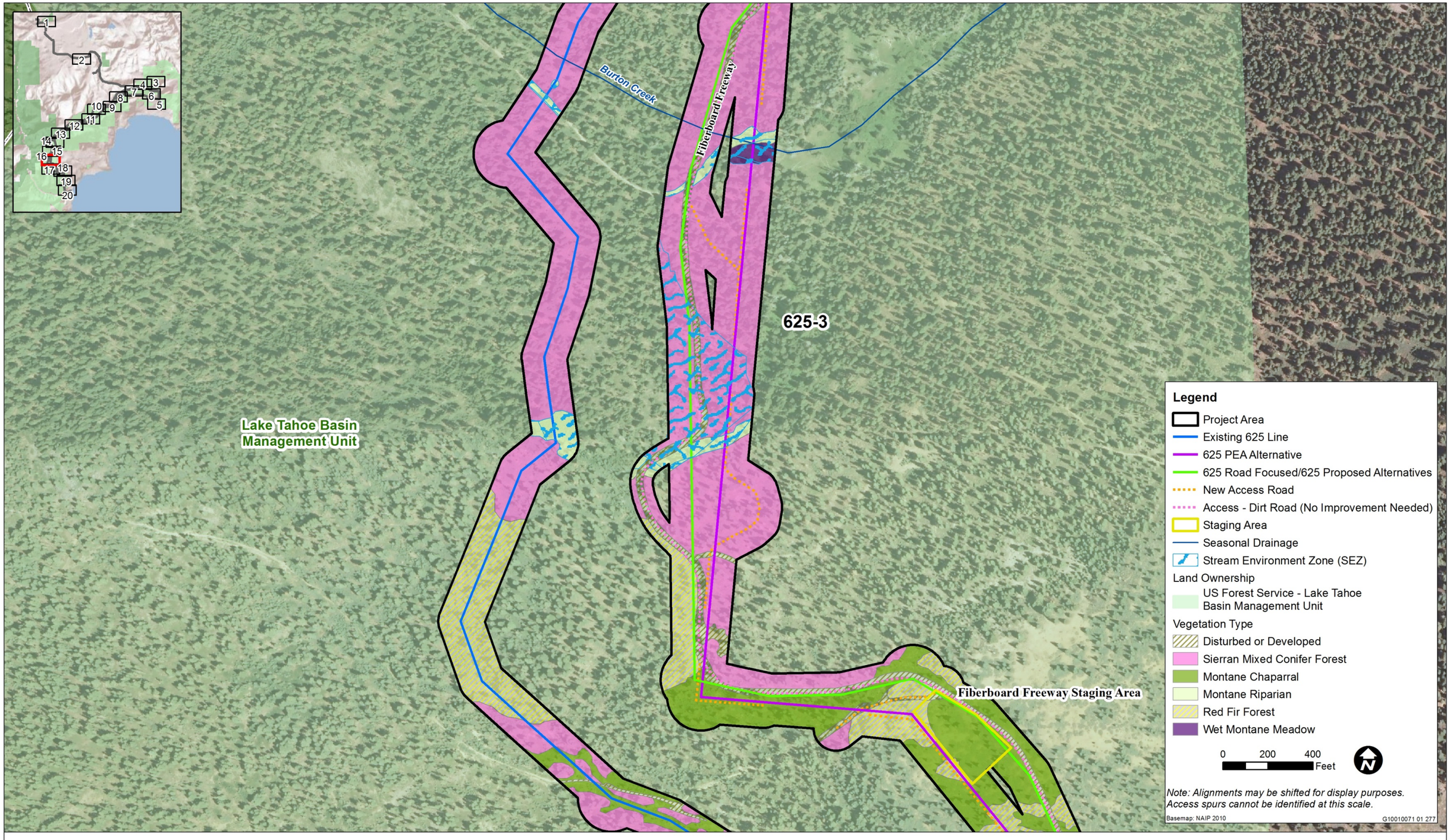


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A15

USFS Vegetation – Map 15

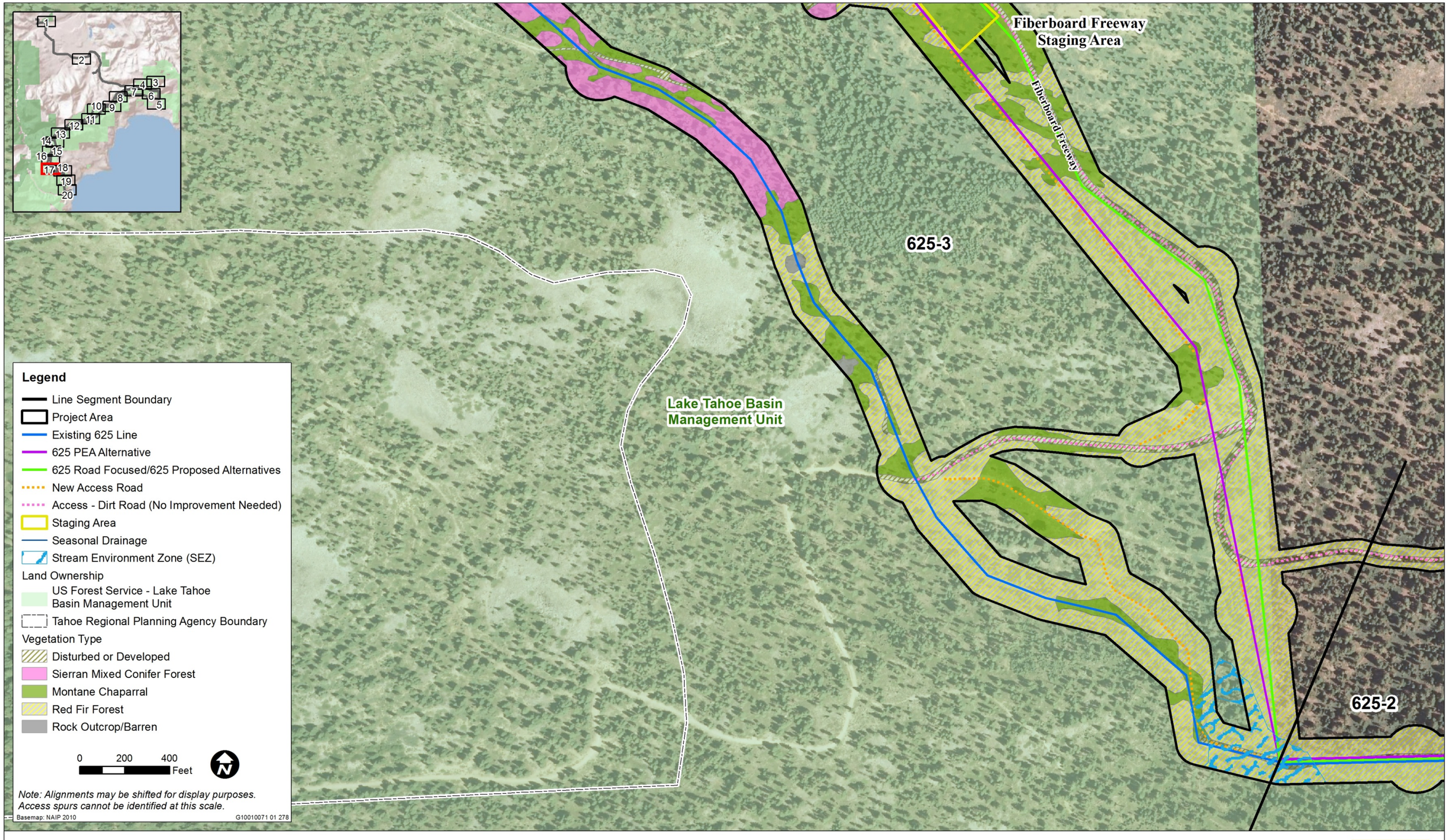
ASCENT ENVIRONMENTAL



Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A16

USFS Vegetation – Map 16

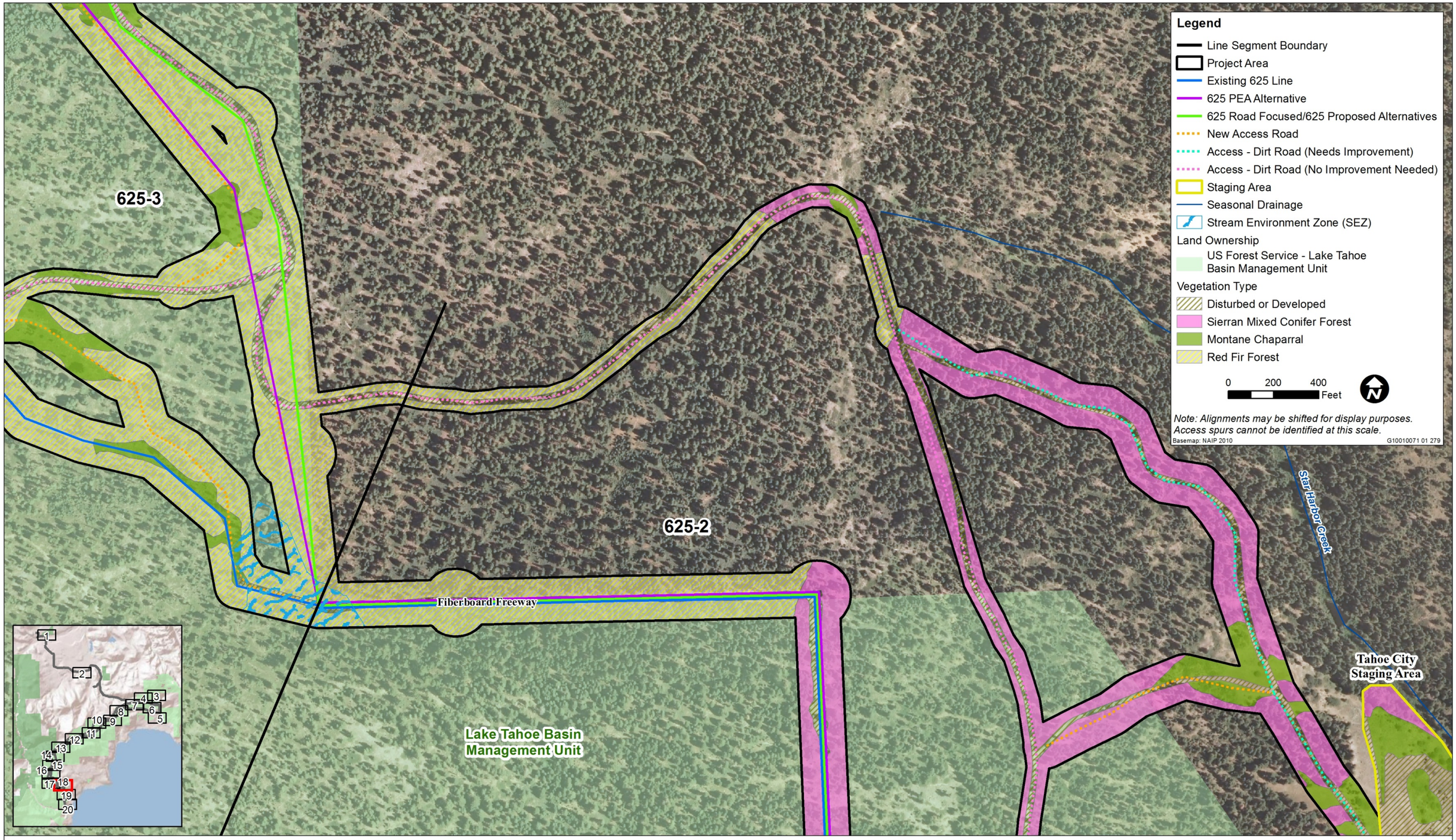


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A17

USFS Vegetation – Map 17

ASCENT ENVIRONMENTAL

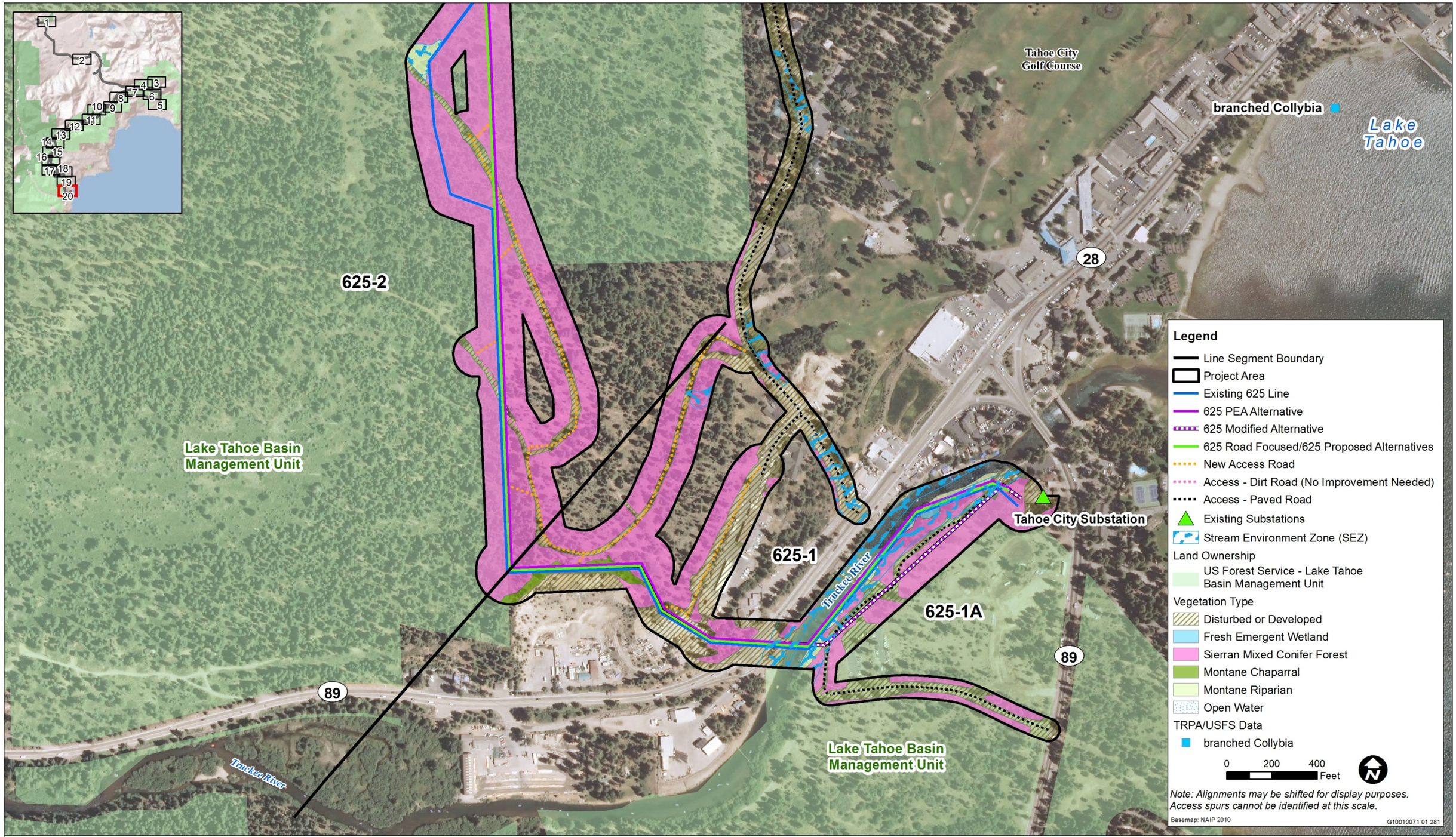


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A18

USFS Vegetation – Map 18

ASCENT ENVIRONMENTAL

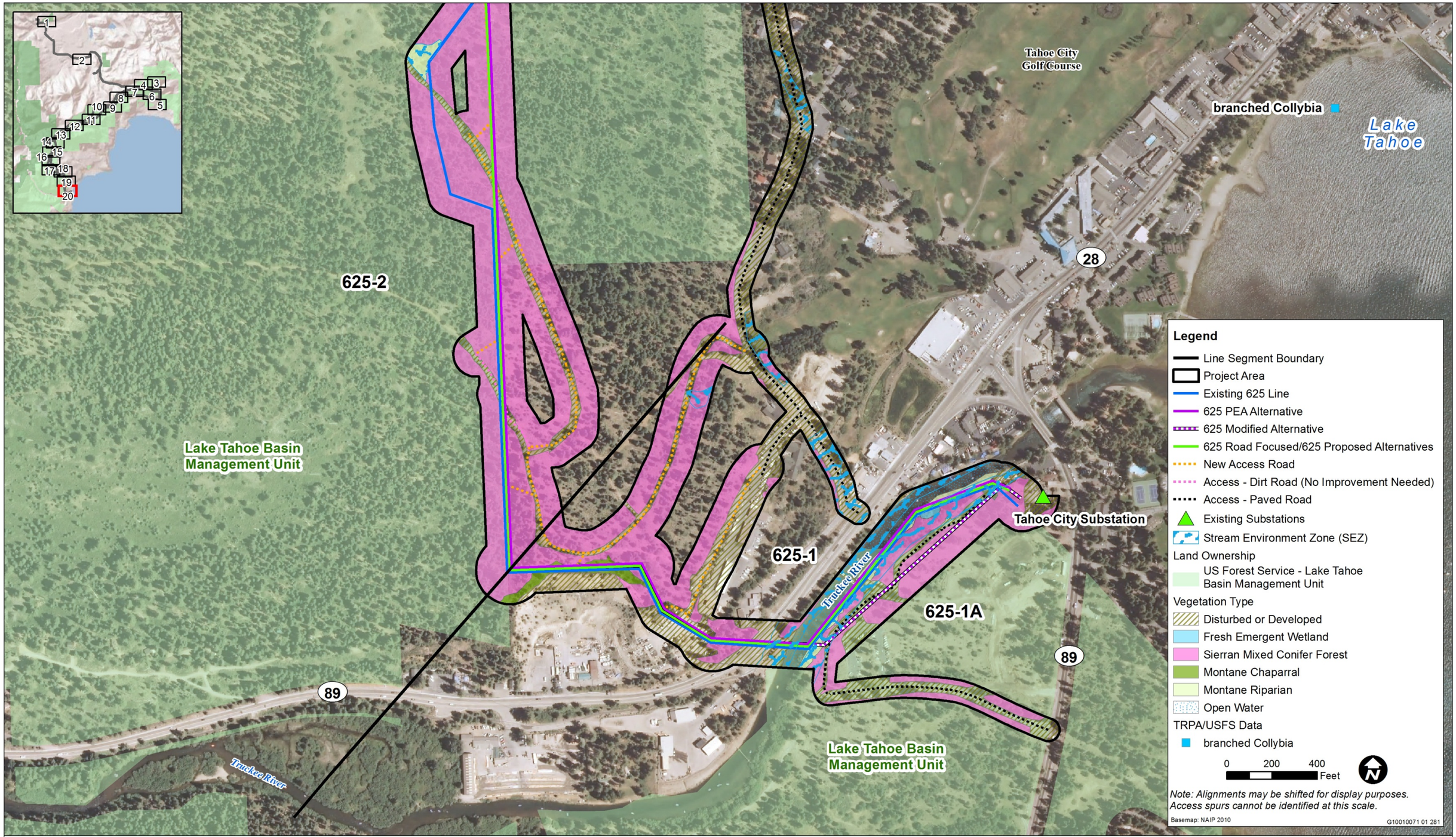


Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A19

USFS Vegetation – Map 19

ASCENT ENVIRONMENTAL



Source: Data provided by Ascent, CNDDB, POWER, TriSage, TRPA and USFS in 2012; adapted by Ascent Environmental in 2012

Exhibit A20

USFS Vegetation – Map 20

ASCENT ENVIRONMENTAL

Appendix B

Cumulative Projects List and Locations

Table B1 Cumulative Project List				
Project Name (Exhibit 4.1-1 Key)	**Location**	**Description**	**Residential Units and/or Non-Residential Area**	**Project Status**
Truckee Railyard Master Plan (1)	The eastern end of historic downtown Truckee	Mixed commercial and residential development. Includes Trout Creek District (6 acres of primarily mixed housing), Industrial Heritage District (8.5 acres of office, residential, and mixed use buildings), and Downtown Extension District (12 acres of commercial development).	75 acres	Adopted in 2009.
Coldstream Specific Plan (2)	Coldstream Road south of Interstate 80, Truckee	Planned community.	300 residential units; 30,000 square feet of commercial	Plan and EIR have been revised following 2011 release of a draft EIR. As of preparation of this document project has not been considered by the Town of Truckee and construction timing is uncertain.
Pollard Station – A Senior Neighborhood (3)	10335 Old Brockway Road, Truckee (West of Pine Cone Road terminus, at Hilltop)	Age-restricted senior neighborhood: lodge and condominiums (8-acres in the Hilltop Master Plan area).	86 unit senior lodge and 40 to bedroom condominium units	Revised application submitted January 2013.
Joerger Ranch Specific Plan (4)	Intersection of SR 267, Brockway Road, and Soaring Way, Truckee	70-acre mixed use planned community including industrial, office space, public facility, transportation, and apartment uses.	97 dwelling units	EIR in preparation.
Canyon Springs Subdivision (5)	West of Martis Peak Road and south of Glenshire Drive, Truckee	Clustered residential development including single family and affordable housing/multifamily units	177 single-family lots and 8 affordable housing lots, 204 total units; 171 acres of open space	Draft EIR comment period ended March 2013. The Final EIR is in preparation, Project development, if approved, would occur in phases starting no earlier than 2015.
Martis Valley Trail (6)	Town of Truckee to Brockway Summit	The proposed project is a paved, multi-use recreational trail extending from the southern limits of the Town of Truckee at the Nevada/Placer County line eastward to the ridgeline defining the Lake Tahoe Basin. A 5.4-mile section will run along SR 267 between Truckee and Northstar.	–	CEQA environmental review completed in 2012; project approved. Construction will be a multi-year effort. Construction of Phase 1 (Shaffer Mill Road to the wildlife viewing area along SR 267) to begin in 2014.
Northstar Mountain Master Plan (7)	5001 Northstar Drive, Truckee	Mountain Master Plan for the existing ski resort area. Various additions and changes to ski lifts, snowmaking, trails, bridges, access, ropes course, bike trails, and campsites.	–	Notice of Preparation public review ended December 2012. EIR in preparation. Final EIR expected at the end of 2013. Project build out would occur between 2024 and 2029.

Table B1 Cumulative Project List				
Project Name (Exhibit 4.1-1 Key)	**Location**	**Description**	**Residential Units and/or Non-Residential Area**	**Project Status**
Northstar Highlands Phase II (8)	Northstar Drive, Truckee	Modifications to the original subdivision approval, reducing the development area and number of housing units (from 576 units to 446 units).	50 townhomes, 10 single family lots, 386 condominiums, up to 147 commercial condominiums, 4,000 square feet of commercial space	Initial study checklist has been prepared.
Cabin Creek Biomass Facility Project (9)	900 Cabin Creek Road, Truckee	Develop a two megawatt wood-to-energy facility that would utilize a gasification technology. Would support fuels reduction and thinning activities within and outside of the Lake Tahoe Basin. Fueled by forest-sourced material only.	–	EIR certified by Planning Commission in December 2012. Construction could begin as early as 2014.
Truckee River Corridor Access Plan (10)	Truckee River Watershed, Placer and Nevada counties	Continuous and coordinated system of preserved lands and habitat, with a connecting corridor of walking, in-line skating, equestrian, bicycle trails, and angling and boating access from Lake Tahoe to the Martis Valley.	–	Application submitted; design and environmental review underway.
Squaw Valley Red Dog Lift Replacement (11)	Terminus of Squaw Valley Road, west of State Route 89, Squaw Valley	Replace the existing triple chairlift with a high-speed, detachable, 6-place chairlift.	–	Mitigated negative declaration prepared, public comment period closed February 2013.
Village at Squaw Valley Specific Plan (12)	Western end of Squaw Valley	Establishes the guiding principles for comprehensive development of approximately 100 acres of the previously developed Squaw Valley Olympic Village.	Up to 1,295 resort residential units and 454,000 square feet of commercial	NOP public review period ended November 2012. Draft EIR in preparation.
Squaw Valley Timberline Twister (13)	Squaw Valley	Construction of an alpine coaster attraction in a triangular stand of trees between the Lower Far East and lower Red Dog chairlift alignments.	–	Application submitted to Placer County in August 2012. Could be installed in the summer of 2013.
Alpine Sierra Subdivision (14)	Terminus of Alpine Meadows Road near Alpine Meadows Ski Resort	44-acre planned development to include single-family lots and commonly held parcels.	47 units	Environmental review complete. Construction schedule unknown.
Alpine Meadows Hot Wheels Lift Replacement (15)	Alpine Meadows Ski Resort, Alpine Meadows	Replace the existing triple chairlift with a detachable quad chairlift	–	Environmental review complete; project approved in December 2012. Implementation could begin in the summer of 2013.

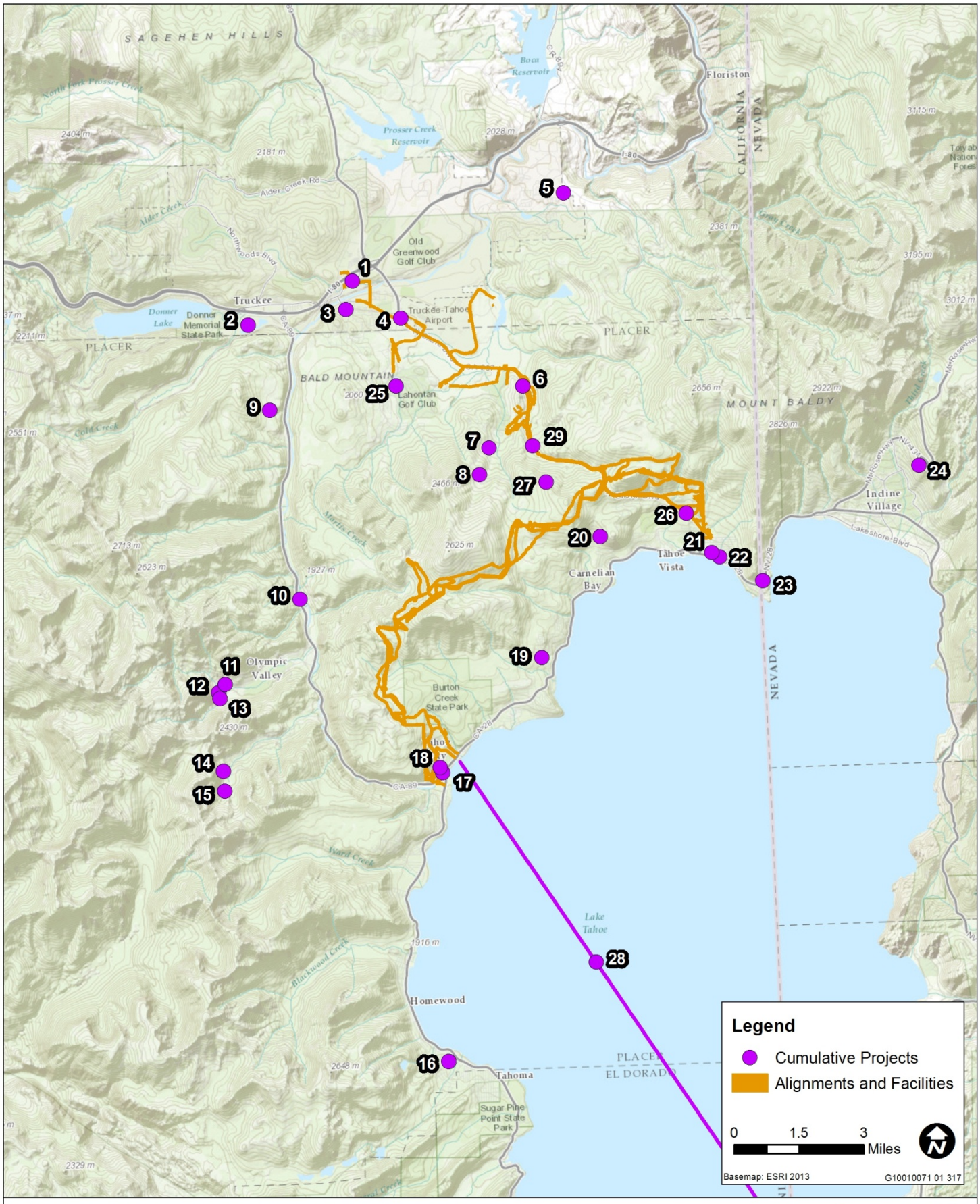
Table B1 Cumulative Project List				
Project Name (Exhibit 4.1-1 Key)	**Location**	**Description**	**Residential Units and/or Non-Residential Area**	**Project Status**
Homewood Mountain Resort Master Plan (16)	5145 Westlake Boulevard, Homewood	Redevelop mixed-uses at the North Base area, residential uses at the South Base area, a lodge at the Mid-Mountain Base area, and ski area.	299 units North Base: 36 residential condos; 20 whole ownership units; 75 traditional hotel rooms; 40 two-bedroom for sale condo/hotel units; 30 penthouse condos; 25,000 square feet of commercial floor area; 13 employee/ workforce housing units; 30,000 square feet of skier services Mid Mountain: 15,000 square foot day-use lodge	Litigation of 2011 EIR/EIS settled in early 2014. Construction anticipated 2015 to 2022.
SR 89/Fanny Bridge Community Revitalization Project (17)	State routes 89 and 28 at the Truckee River Crossing, Tahoe City	Construction of a new bridge over the Truckee River, repair or replacement of Fanny Bridge, and various other improvements.	–	Application complete. NOP released, scoping period ended January 30, 2012. EIR/EIS/Environmental Assessment under preparation. Construction target is 2014-2015.
Tahoe City Vision Plan (18)	Tahoe City (contiguous with Tahoe City Community Plan boundaries)	Visioning effort to guide Area Plan development.	–	Planning effort. Vision planning underway.
Dollar Creek Shared-Use Trail (19)	Between the existing trail at Dollar Hill and the Cedar Flats neighborhood on the North Shore	2.5 mile long shared-use trail.	–	Environmental review complete; project approved. Construction expected to occur between 2013 and 2015.
Carnelian Fuels Reduction and Healthy Forest Restoration Project (20)	Adjacent to Cedar Flat, Carnelian Bay, Tahoe Vista, and Kings Beach	Mechanical, hand, and prescribed burning treatments to reduce surface fuels and conifer density.	–	Decision notice signed on August 20, 2012. Implementation is expected to begin in 2013 and be completed within 7-10 years, depending on funding and contractor availability.
Rainbow Parking (21)	8334 Rainbow Avenue, Kings Beach	18-space public parking lot off of Rainbow Drive. Pervious concrete proposed for 16 spaces, with asphalt handicapped parking space, adjacent space, and drive aisle. Landscaping and wooden fencing proposed as a visual screen.	–	Initial study in progress.

Table B1 Cumulative Project List				
Project Name (Exhibit 4.1-1 Key)	**Location**	**Description**	**Residential Units and/or Non-Residential Area**	**Project Status**
Kings Beach Commercial Core Improvement Project (22)	Kings Beach	Project involves reducing SR 28 in Kings Beach from a 4-lane highway to a 3-lane highway with a roundabout. Project is a SR 28 beautification project, and includes off-highway and water quality improvement components.	–	Environmental review complete; project approved. Construction of off-highway and water quality improvements and neighborhood traffic calming measures underway in 2013. Construction will be a multi-year effort. County requires additional funding to complete project. Therefore, completion date is unknown at the time of writing of this document.
Boulder Bay Project (23)	Crystal Bay, Nevada	Redevelopment of Tahoe Biltmore on North Shore. Project includes a four-story, 275-room hotel with a 10,000 square-foot casino. Implementation of the project would reduce the total commercial floor area at the site from approximately 56,000 to 21,000 square feet.	275 tourist accommodation units; 59 whole ownership residential condos; 14 onsite affordable employee housing and 10 infill affordable housing units; 18,715 square feet of commercial floor area; 67,338 square feet hotel and accessory floor area; 10,000 square feet casino; 5.7 acres of open space and/parks	Environmental review complete; project was approved on April 27, 2010. Construction was planned for 2012, but applicant is still securing financing. Construction start date unknown at the time of writing of this document.
Incline Fuels Reduction and Healthy Forest Restoration Project (24)	Adjacent to Incline Village, Nevada	Mechanical, hand, and prescribed burning treatments. Tree thinning, biomass removal, prescribed burning, chipping, and mastication.	–	Decision notice signed on February 15, 2013. Implementation is expected to begin in 2014 and be completed within 10 years, depending on funding and contractor availability.
Martis Camp (25)	1200 Lodgetrail Drive, Truckee	A private golf and ski club community of upscale second homes.	663 lots (between 2.5 and 0.5 acres) on over 2,000 acres	Opened in 2006. Partially built-out. Many homes and community facilities are in place, but there are also lots available.
Kingswood Alternate Feed Project (26)	Hwy 267 at Kingswood Subdivision	5-pole distribution tap off of the existing 650 Line underbuild to be used as an alternate feed for the Kingswood Subdivision.	–	Construction scheduled for 2013 pending final permits.
Martis Valley Opportunity at Northstar (27)	Northstar	Mixed residential uses (including single family, town homes, cabins, condos) and commercial development (including resort services, fitness center, family entertainment, and community center).	760 residential units; approximately 7 acres of commercial development	Expected submittal of project application to Placer County in fall 2013.

Table B1 Cumulative Project List

Project Name (Exhibit 4.1-1 Key)	Location	Description	Residential Units and/or Non-Residential Area	Project Status
Lake Tahoe Passenger Ferry (28)	Cross-lake ferry service with a South Shore Ferry Terminal at the Ski Run Marina in South Lake Tahoe and a North Shore Ferry Terminal at the Grove Street Pier west of the Tahoe City Marina	Year-round waterborne transit between north and south shores of Lake Tahoe.	–	NOP/NOI released in November 2013. Draft EIS/EIS/EIR in preparation.
Caltrans' Highway Improvement Projects (29)	SR 267	Planned Improvements (those included in a long-term plan that can be funded) and Programmed Improvements (those included in a near-term programming document that identifies funding amounts by year) in the 2012 Transportation Corridor Concept Report for SR 267 include: widening to four lanes between the Placer County line and Northstar Drive, rehabilitating pavement and widening shoulders between Placer County line and Brockway Summit, plant establishment and protection from Northstar Drive to SR 28, class II bike lane from Brockway Summit to SR 28	–	Anticipated construction between 2014 and 2025

Sources: USDA Forest Service LTBMU 2013, Placer County 2013, Town of Truckee 2009, Town of Truckee 2012, Town of Truckee 2013, Tahoe Transportation District 2012, Endres 2013, Northstar 2012, Federal Transit Administration 2013, Caltrans 2012



Source: adapted by Ascent Environmental 2013

Exhibit B1 **Cumulative Projects**