

## 3.4 Biological Resources

This section evaluates potential impacts on biological resources associated with construction and operation of the proposed project. Mitigation measures are recommended for those impacts that were determined to be significant.

This biological resources section is based primarily on information and analyses presented in the *Ecological Baseline Studies for the Hatchet Ridge Wind Energy Project*, prepared by WEST Inc. (WEST). These studies were conducted between November 15, 2005, and November 9, 2006, and included surveys and mapping of the vegetation communities in the project area and vicinity, surveys for special-status plants, weekly point count surveys of bird use of the project area for a period of 1 year, and a breeding season search of the project area and vicinity for diurnal raptor nests. Bat surveys using passive acoustic ultrasonic detectors were conducted to identify bat species and assess overall bat use of the area. Additional analyses are presented in the *Biological Assessment of Endangered, Threatened, Proposed, and Candidate Species* and the *Wetlands and Other Surface Waters Report*, also prepared by WEST. These reports are hereinafter referred to as the baseline ecological studies and are included in Appendices C-1, C-2, and C-3, respectively, of this Draft EIR.

### 3.4.1 Existing Conditions

#### Environmental Setting

This section describes the regional and local setting of the proposed project. Two levels of analysis are used: the project area and the broader project vicinity. The project area comprises the entirety of the leased area (Figure 2-1). The project vicinity comprises the project area and surrounding land to a distance of 2 miles from the project area boundary (Figure 3.4-1).

#### Regional Setting

The project area is located on the primary ridgeline of Hatchet Mountain in the Lower Pit River watershed, which encompasses approximately 1,708,590 acres and drains to the Sacramento River. Surface waters in the watershed near the project area include Little Hatchet Creek, Hatchet Creek, Roaring Creek, Carberry Creek, Lake Margaret, and Goose Creek (Figure 3.8-1). The regional climate is subhumid Mediterranean with hot, dry summers and wet, cool winters. Most of the rainfall occurs from November through March, with an average annual precipitation of 28 inches. The dominant vegetation of the region is Sierran mixed conifer (Mayer and Laudenslayer 1988) consisting of white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), incense cedar (*Calocedrus decurrens*), and California black oak (*Quercus kelloggii*). The structure and composition of this community type varies greatly with slope, aspect, elevation, and level of disturbance (e.g., fire, commercial timber management).

#### Local Setting

The project area is located on a long, broad, north–south trending ridgeline leading to the summit of Hatchet Mountain (Figure 2-1). The project area boundary extends approximately 6 miles along the ridge and is 0.5–1 mile wide. Elevations of the project area range from

approximately 4,300 feet in the southern portion to 5,470 feet near the radio tower facility in the northwestern portion. The topography ranges from relatively flat on top of the ridge to steep (30–50% slope) along the sides of the ridge. The majority of the project area is underlain with moderately deep to deep, well drained gravelly, sandy loam soils of the Obie-Mounthat Complex derived from weathered andesite and ash. Vegetation in the project area is predominantly mixed conifer forest that has been either burned or logged; the mixed conifer type in this area consists primarily of ponderosa pine and white fir, with a smaller component of incense cedar, red fir (*Abies magnifica*), sugar pine, and Douglas-fir.

## Baseline Biological Conditions

This section describes the existing conditions of biological resources in the project area and vicinity. The following resources are described: vegetation communities and wildlife habitats, representative wildlife potentially occurring in these communities, special-status plant and wildlife species that occur or could potentially occur in the project area and project vicinity, wildlife movement corridors, and waters of the United States.

## Methods

### Review of Existing Information

The following literature and database sources were used to obtain information on the existing baseline conditions of the biological resources in the project area and vicinity.

- WEST, Inc. 2007a. *Ecological Baseline Studies for the Hatchet Ridge Wind Energy Project, Shasta County, California*. Report prepared for Hatchet Ridge Wind, LLC by West, Inc., August. (Appendix C-1.)
- WEST, Inc. 2007b. *Biological Assessment of Endangered, Threatened, Proposed and Candidate Species (Draft)*. June. Report prepared for Hatchet Ridge Wind, LLC. (Appendix C-2.)
- WEST, Inc. 2007c. *Wetlands and Other Surface Waters Report*. September. Report prepared for Hatchet Ridge Wind, LLC. (Appendix C-3.)
- California Natural Diversity Database search of the U.S. Geological Survey (USGS) quadrangles (2007) that encompass the project area and a 10-mile radius from the project area boundary. (Appendix C-4.)
- The California Department of Fish and Game's (DFG's) California Spotted Owl database (December 20, 2006; <http://bios.dfg.ca.gov/>).
- The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California*—on-line edition (2006).
- Threatened and endangered species lists provided by the U.S. Fish and Wildlife Service (Appendix C-5.)
- DFG's Special Animals List (2006).
- Jones & Stokes file information.

## Field Surveys

A Jones & Stokes wildlife biologist and a botanist/wetland ecologist conducted reconnaissance-level surveys of the project area on April 25 and June 22, 2007, to verify and augment information collected during the baseline ecological studies (Appendix C-1). A Jones & Stokes wetland ecologist conducted a wetland investigation of the project area on August 20, 2007, to map and characterize aquatic resources. Subsequent to Jones & Stokes' field investigation, WEST provided additional and revised reports were received from.

## Land Cover Types

Ten vegetation/habitat types were identified in the baseline ecological studies as occurring in the project area and vicinity (Figure 3.4-1). These habitats and the extent of each in the project area are listed in Table 3.4-1. The typical plant species and community structure of each habitat are briefly described below.

**Table 3.4-1.** Land Cover Types in the Project Area and Vicinity (acres)

Land Cover Type	Project Vicinity	Project Area
Mixed Conifer	30,492.50	3,240.36
Clearcut	716.56	–
Burned/regenerating	18,090.55	3,017.93
Forest	11,685.39	222.43
Ceanothus scrub	716.56	–
Developed	83.91	–
Oak scrub	237.07	–
Open water	237.68	–
Pasture	498.55	–
Ephemeral snowmelt pool	0.04	0.04
Spring wetland	25.16	6.06
Riparian scrub	49.52	0.47
Total	32,103.9	3,246.9

### Mixed Conifer

Mixed conifer is one of the primary land cover types in the project area and vicinity. Three types of mixed conifer habitat were mapped, primarily on the basis of disturbance regime: clearcut, burned/regenerating, and forest. Each of these types is described briefly below.

#### Clearcut Mixed Conifer

Recently cleared stands of timber occur throughout the northern and southeastern portions of the project vicinity. These areas are in varying stages of growth, having been cut at different times over roughly the past 15 years. The vegetation in these patches consists primarily of herbaceous grasses and forbs, low shrubs, and scattered mixed conifer seedlings and saplings.

#### Burned/Regenerating Mixed Conifer

A large portion of the project area and vicinity burned in the 1992 Fountain Fire and was subsequently replanted. Across this habitat there is considerable variation in the composition, density, and size of both the saplings and understory vegetation, but most of the area currently

consists of mixed conifer tree species less than 12 feet tall. Common understory shrub species include mountain whitethorn (*Ceanothus cordulatus*), deer brush (*C. integerrimus*), buck brush (*C. cuneatus*), manzanita (*Arctostaphylos manzanita* ssp. *manzanita*), chinquapin (*Chrysolepis sempervirens*), barberry (*Berberis aquifolium* var. *aquifolium*), Sierra gooseberry (*Ribes roezlii*), and bitter cherry (*Prunus emarginata*), sometimes forming dense layers with very little tree growth. Dominant herbaceous vegetation in the understory includes bottlebrush (*Elymus elymoides*), needle-and-thread (*Hesperostipa comata* ssp. *intermedia*), penstemon (*Penstemon* sp.), bracken (*Pteridium aquilinum* var. *pubescens*), false Solomon's seal (*Smilacina racemosa*), sedge (*Carex* sp.), and balsam-root (*Balsamorhiza* sp.). Some areas in the northern portion of the project area consist of rocky soils and are characterized by wind-swept manzanita with scattered herbaceous grasses and forbs and very little tree cover.

### Forest

Large tracts of mixed conifer forest occur in the northern and southeastern portions of the project vicinity, as well as scattered patches in and adjacent to the project area that escaped the 1992 Fountain Fire. The vegetation in this habitat is dominated by multilayered, closed canopy stands of mixed sugar pine, incense cedar, Douglas-fir, white fir, and ponderosa pine. The understory vegetation includes ceanothus species, manzanita (*Arctostaphylos* spp.), chinquapin, gooseberry (*Ribes* spp.), wild rose (*Rosa* spp.), and dogwood (*Cornus* spp.). Patches of black oak are scattered throughout this habitat, typically in even-aged stands in areas that have undergone historical disturbance such as wildfire or logging.

### Ceanothus Scrub

Ceanothus scrub habitat occurs in a band several hundred feet wide along the northeast, north, and northwest shoreline of Lake Margaret on the eastern slope of Hatchet Mountain. The predominant plant species in this habitat include mountain whitethorn, buck brush, and deer brush. A mixed conifer community dominated by sugar pine borders the outer edge of this habitat.

### Developed

Two timber-related facilities—an SPI facility and the Burney Forest Power cogeneration plant—are located in the east-central portion of the project vicinity along SR 299.

### Oak Scrub

Two areas characterized by dense black oak saplings are located in the central and western portions of the project vicinity. Generally, these areas appear to have been mature black oak forest prior to the 1992 Fountain Fire, and are now regenerating. The understory of these stands is generally sparse due to the closed canopy of the oaks, but includes such species as snowberry (*Symphoricarpos* sp.), California brome (*Bromus carinatus*), and ripgut brome (*B. diandrus*).

### Open Water

Open water habitat in the project vicinity includes Lake Margaret, a small pond adjacent to an irrigated meadow on the southwest side of SR 299, and a larger pond in mixed conifer habitat in the southern portion of the project vicinity.

### Pasture

A large irrigated pasture is located in the eastern portion of the project vicinity adjacent to SR 299. In addition to common pasture grasses (smooth brome, timothy, orchard grass), cattail

(*Typha* spp.) and bulrush (*Scirpus* spp.) occur in a small impoundment/pond immediately adjacent to the highway.

## Ephemeral Snowmelt Pool

A small pool, classified as an ephemeral snowmelt pool, occurs in the northern portion of the project area near the existing radio tower. This pool contains no dominant wetland vegetation; however, it was ponded during site visits in April and June. At the time of an August field visit, the pool was dry and most of the vegetation in the pool was dominated by ripgut brome, an upland plant species. Additionally, the pool is hydrologically connected to a shrubby drainage feature (see spring wetland 3 below) that is dominated by mountain maple (*Acer glabrum*) and Scouler willow (*Salix scouleriana*).

## Spring Wetlands

Four spring wetlands, all supporting some form of riparian scrub habitat, were mapped as partially occurring in the project area; these features are shown in Figure 3.4-2. Other such features are presumed to occur in the wider project vicinity but were not mapped.

Spring wetland 1 is located on the south-facing slope of Hatchet Mountain approximately 0.5 mile north of SR 299 near the entrance to the project area. It occurs in a narrow drainage that supports a thin band of mesic shrub species surrounded by a dense thicket of ceanothus species. The spring associate species include shining willow (*Salix lucida* ssp. *lasiandra*), blue elderberry (*Sambucus mexicana*), red elderberry (*S. melanocarpa*), mountain ash (*Sorbus* sp.), and blackcap raspberry (*Rubus leucodermis*). Common herbaceous species within the spring drainage include fowl mannagrass (*Glyceria elata*), monkeyflower (*Mimulus* sp.), hedgenettle (*Stachys* sp.), and reed grass (*Calamagrostis* sp.).

Spring wetland 2 is in a narrow drainage adjacent to a logging road on the west-facing slope of Hatchet Mountain on the western edge of the project area. Scouler willow and blue elderberry are the dominant shrubs associated with this spring, with fringed willow herb (*Epilobium ciliatum*), swordleaf rush (*Juncus ensifolius*), Baltic rush (*J. balticus*) monkeyflower, and bleeding heart (*Dicentra formosa*) comprising the herbaceous understory.

Spring wetland 3 is located adjacent to an existing logging road on the north slope of Hatchet Mountain. This feature is densely dominated by blue elderberry, mountain maple, and Scouler willow.

Spring wetland 4, known as Bear Spring on USGS topographic maps, is the only named spring in the project area and is located in the northwest portion of the project area below the existing radio facility. It supports a dominant layer of mountain ash with interspersed dogwood, interior rose (*Rosa woodsii* var. *ultramontana*), bitter cherry, and serviceberry (*Amelanchier alnifolia*).

## Riparian Scrub

Well-developed riparian scrub habitat occurs immediately below Lake Margaret along Goose Creek. This drainage supports extensive riparian vegetation including alder (*Alnus* sp.), willows (*Salix* spp.), and mountain maple, all encompassed by a mature stand of mixed conifers including sugar pine, ponderosa pine, incense cedar, and Douglas-fir. There are likely additional areas of riparian scrub habitat in the project vicinity, but not in the project area, that are too small to map.

## Wildlife

This section describes the wildlife species that typically occur in the project vicinity. The fauna of the Sierran mixed conifer ecosystem is highly diverse, but the distribution and abundance of different species is closely tied to the local structure and composition of the plant communities/wildlife habitats within the community. The distributional pattern and size of habitat patches in the project vicinity have been heavily influenced by the 1992 Fountain Fire and subsequent forest restoration efforts, as well as by timber harvest in the larger forest stands found in the area. Remnant patches of mature forest in the project vicinity and wider area could potentially support wildlife species more typically associated with the climax mixed conifer forest community. In contrast, the disturbed areas, whether they are the result of fire or timber harvest, support only species adapted to the modified conditions of that habitat. Habitats in the project area, project vicinity, and the larger regional area will follow a pattern of successional change toward climax conditions, both in plant species and wildlife, as the communities mature. Habitats within the project area, however, are unlikely to reach climax conditions because the area is managed for commercial timber production.

## Fish

No fish occur in the project area due to lack of suitable habitat. However, Lake Margaret, Hatchet Creek, Roaring Creek, Carberry Creek, and Goose Creek support a variety of freshwater fish species. Fish in Lake Margaret are likely preyed upon by osprey (*Pandion haliaetus*) and bald eagles (*Haliaeetus leucocephalus*) that occur in the area.

## Amphibians

Amphibians in the project vicinity are typically associated with open water and/or wetland areas. Only four small areas in the project area could potentially support amphibians (Figure 3.4-2). None were observed during the reconnaissance-level survey of these areas. However, the following species could potentially occur there or in the project vicinity: Cascades frog (*Rana cascadae*), Pacific giant salamander (*Dicamptodon ensatus*), rough-skinned newt (*Taricha granulose*), ensatina (*Ensatina eschscholtzii*), western toad (*Bufo boreas*), Pacific treefrog (*Pseudacris regilla*), and bullfrog (*Rana catesbeiana*).

## Reptiles

The mosaic of mixed conifer, scrub, pasture, and open water habitats throughout the project vicinity are suitable for a rich variety of reptiles, although none were observed during the reconnaissance-level surveys of the area. These include western pond turtle (*Emys marmorata*), western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*Sceloporus graciosus*), western skink (*Eumeces skiltonianus*), western whiptail (*Cnemidophorus tigris*), northern alligator lizard (*Gerhonotus coeruleus*), rubber boa (*Charina bottae*), ringneck snake (*Diadophis punctatus*), sharp-tailed snake (*Contia tenuis*), racer (*Coluber constrictor*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), California mountain kingsnake (*Lampropeltis zonata*), common garter snake (*Thamnophis sirtalis*), western terrestrial garter snake (*Thamnophis elegans*), western aquatic garter snake (*Thamnophis couchi*), and western rattlesnake (*Crotalus viridis*).

## Birds

Mature mixed conifer forest provides habitat for a diverse complex of birds from large raptors to insect-gleaning songbirds. These include species such as spotted owl (*Strix occidentalis*), northern goshawk (*Accipiter gentilis*), and pileated woodpecker (*Dryocopus pileatus*). Near fish-bearing open water habitats, large conifers and snags of the adjacent forest can provide roosting and nesting

habitat for bald eagles and osprey. A variety of woodpeckers also excavate nest holes in snags: Williamson's sapsucker (*Sphyrapicus thyroideus*), red-breasted sapsucker (*S. ruber*), and black-backed woodpecker (*Picoides arcticus*) prefer hard snags with little decay; white-headed woodpeckers (*Picoides albolarvatus*), northern flickers (*Colaptes auratus*), and hairy woodpeckers (*Picoides vilosus*) prefer soft snags.

Cavities abandoned by woodpeckers can become breeding and roosting sites for mountain chickadees (*Poecile gambeli*), tree swallows (*Tachycineta bicolor*), house wrens (*Troglodytes aedon*), pygmy owls (*Glaucidium passerinum*), screech owls (*Megascops kennicottii*), and saw-whet owls (*Aegolius acadicus*).

Opportunistic insect gleaners converge to feed on the bark and wood-boring beetles attracted to recently burned areas. These include hairy, white-headed, black-backed, and downy woodpeckers (*Picoides pubescens*). Other common species include Steller's jay (*Cyanocitta stelleri*), American robin (*Turdus migratorius*), chipping sparrow (*Spizella passerine*), western wood peewee (*Contopus sordidulus*), and Townsend's solitaire (*Myadestes townsendi*).

In the course of natural succession or the successional development that follows commercial timber harvest, thickets of young trees provide preferred nesting habitat for hermit thrush (*Cathartes guttatus*) and insect gleaning areas for golden-crowned kinglet (*Regulus satrapa*), hermit warbler (*Dendroica occidentalis*), and western tanager (*Piranga lucoviciana*). The recovering shrubs, including ceanothus shrub habitat, provide food, nest sites, and shelter for fox sparrow (*Passerella iliaca*), MacGillivray's warbler (*Oporornis tolmiei*), Nashville warbler (*Vermivora ruficapilla*), and mountain quail (*Oreortyx pictus*).

## Mammals

Mammals of the mixed conifer forest include the larger megafauna such as mule deer (*Odocoileus hemionus*), Roosevelt elk (*Cervus elaphus roosevelti*), black bear (*Ursus americanus*), and cougar (*Puma concolor*), as well as medium-sized mesofauna such as wolverine (*Gulo gulo*), American marten (*Martes americana*), fisher (*Martes pennati*), badger (*Taxidea taxus*), Sierra red fox (*Vulpes vulpes nescator*), spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), porcupine (*Erethronium dorsatum*), raccoon (*Procyon lotor*) and snowshoe hare (*Lepus americanus*). Tree-dwellers include western gray squirrel (*Sciurus griseus*), northern flying squirrel (*Glaucomys sabrinus*), and chickaree (*Tamiasciurus douglasii*). The more diminutive inhabitants of the project vicinity include long-tailed weasel (*Mustela frenata*), ermine (*Mustela erminea*), dusky-footed woodrat (*Neotoma fuscipes*), western jumping mouse (*Zapus princeps*), montane vole (*Microtus montanus*), western harvest mouse (*Reithrodontomys montanus*), and deer mouse (*Peromyscus maniculatus*). Bats that typically occur in the area include California myotis (*Myotis californicus*), small-footed myotis (*Myotis ciliolabrum*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasiurus noctivagans*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

## Special-Status Species

Based on a review of the California Natural Diversity Database, the California Department of Fish and Game's Special Animals list, the California Native Plant Society's Inventory of Rare and Endangered Plants, and other environmental documents, 24 special-status plants and 34 special-status wildlife species were identified as species that could potentially occur in the project vicinity. Special-status species are species that satisfy any of the criteria listed below.

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50, Code of Federal Regulations [CFR], Section 17.12 for

listed plants, 50 CFR 17.11 for listed animals, and various notices in the Federal Register [FR] for proposed species).

- Species that are candidates for possible future listing as threatened or endangered under ESA (71 FR 53756, September 12, 2006).
- Species that are listed or proposed for listing as threatened or endangered under the California Endangered Species Act (Title 14, California Code of Regulations [CCR], Section 670.5).
- Species of Special Concern to the California Department of Fish and Game, as indicated on the *Special Animals List* (February 2006), available at: <http://www.dfg.ca.gov/bdb/pdfs/spanimals.pdf>.
- Plants listed as rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code, Section 1900 et seq.).
- Plants considered by the California Native Plant Society to be “rare, threatened, or endangered in California and elsewhere” (California Native Plant Society List 1B) or “rare, threatened, or endangered in California but more common elsewhere” (California Native Plant Society List 2).
- Species that meet the definitions of rare or endangered under the State CEQA Guidelines, Section 15380.
- Animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

### Special-Status Plants

Table 3.4-2 lists the legal status, geographic distribution, habitat requirements, and identification period for the 24 special-status plant species that have been identified as potentially occurring in the project area. The list includes species identified on the California Natural Diversity Database and USFWS species lists (Appendices C-4 and C-5) as occurring in the region. West conducted surveys for special-status plants within a study area encompassing 50 meters surrounding all proposed project facilities. Based on the dates provided in the WEST report, the surveys were conducted during the appropriate times for all the species listed in Table 3.4-2. Three species were documented as occurring in the project area: Butte County morning glory (*Calyptegia atriplicifolia* ssp. *buttensis*), long-stoloned sedge (*Carex inops* ssp. *inops*), and yellow triteleia (*Triteleia crocea* var. *crocea*). The distribution and extent of Butte County morning glory in the project area is shown in Figure 3.4-3. None of these species are listed under the California or federal Endangered Species Acts. Butte County morning glory is a California Native Plant Society List 1B.2 species (rare or endangered in California). Long-stoloned sedge is a California Native Plant Society List 3.3 species (more information is need about the plant, not very endangered in California). Yellow triteleia is a California Native Plant Society List 4.3 species (plants with limited distribution, not very endangered in California).

### Special-Status Wildlife

Table 3.4-3 lists 34 special-status wildlife species that were identified as having the potential to occur in the project vicinity. The listing status, distribution, habitat requirements, and estimated probability of occurrence in the project area are also provided; additionally, species observed during the WEST surveys are noted. This list was developed on the basis of direct observation

Table 3.4-2. Special-Status Plant Species Potentially Occurring in the Hatchet Ridge Wind Project Region

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Fed/State/CNPS	Geographic Distribution/ Floristic Province	Habitat	Elevation (meters)	Blooming Period	Likelihood of Occurrence <sup>b</sup> within the Project Area
Scabrid alpine tarplant <i>Anisocarpus scabridus</i>	-/-/1B.3	North Coast and Cascade Ranges with occurrences in Colusa, Glenn, Lake, Mendocino, Shasta, Tehama, and Trinity Counties	Upper montane coniferous forest (metamorphic, rocky)	1,650–2,300	Jul–Aug	Moderate; potential habitat present
Rattlesnake fern <i>Botrychium virginianum</i>	-/-/2.2	Known from occurrences in Mendocino, Shasta, and Siskiyou Counties; elsewhere	Bogs and fens, mesic areas in lower montane coniferous forest, meadows and seeps, along streams in riparian forest	728–1,300	Jun–Sep (fertile)	Moderate; species known from within 10 mi. of project area and potential habitat present
Long-haired star tulip <i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	-/-/1B.2	High Cascade Range, Modoc Plateau; southern and central Washington	Clay soils or mesic areas in Great Basin scrub, openings and drainages in lower montane coniferous forest, meadows and seeps, vernal pools	1,005–1,900	Jun–Aug	Moderate; potential habitat present and nearest occurrence is ~4.5 mi. away
Callahan’s Mariposa lily <i>Calochortus syntrophus</i>	-/-/3.1	Known from only one occurrence in Shasta County	Cismontane woodland, lower montane coniferous forest, valley and foothill grassland (vernally mesic)	525–886	May–Jun	Moderate; potential habitat present, although known occurrence is at much lower elevation
Butte County morning glory <i>Calyptegia atriplicifolia</i> ssp. <i>butteensis</i>	-/-/1B.2	Klamath Range, Cascade Range foothills, and San Francisco bay area (Mt. Diablo)	Rocky, sometimes roadside areas in lower montane coniferous forest, chaparral	600–1,524	May–Jul	Known to occur in project area
Bristly sedge <i>Carex comosa</i>	-/-/2.1	Scattered occurrences throughout California; Oregon, Washington	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland	0–625	May–Sep	None; no suitable habitat in project area
Long-stoloned sedge <i>Carex inops</i> ssp. <i>inops</i>	-/-/3.3	High Cascade Range; Oregon, Washington	Lower montane coniferous forest (rocky)	1,000–2,000	Apr–Jun	Known to occur in project area
Slender sedge <i>Carex lasiocarpa</i>	-/-/2.3	High Cascade Range, northern High Sierra Nevada	Bogs and fens, freshwater marshes and swamps along lake margins	1,800–2,100	Jun–Jul	None; project area is below elevation range for this species
Northern clarkia <i>Clarkia borealis</i> ssp. <i>borealis</i>	-/-/1B.3	Klamath Range in Shasta and Trinity Counties	Chaparral, cismontane woodland, lower montane coniferous forest	400–1,340	Jun–Sep	High; potential habitat present and nearest occurrence is ~1.5 mi. away
English sundew <i>Drosera anglica</i>	-/-/2.3	Scattered occurrences in the Klamath Range, High Cascade Range, northern High Sierra Nevada, southern Warner Mountains	Bogs and fens, mesic areas in meadows and seeps	1,300–2,000	Jun–Sep	Moderate; potential habitat present and nearest occurrence is ~4 mi. away

Table 3.4-2. Continued

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Fed/State/CNPS	Geographic Distribution/ Floristic Province	Habitat	Elevation (meters)	Blooming Period	Likelihood of Occurrence <sup>b</sup> within the Project Area
Little hulsea <i>Hulsea nana</i>	-/-/2.3	High Cascade Range, Modoc Plateau in Shasta, Siskiyou, and Trinity Counties; Oregon, Washington	Rocky or gravelly, volcanic soils in alpine boulder and rock field, subalpine coniferous forest	1,720–3,355	Jul–Aug	None; project area is below elevation range for this species
Red Bluff dwarf rush <i>Juncus leiospermus</i> var. <i>leiospermus</i>	-/-/1B.1	Northern Sacramento Valley, Cascade Range foothills in Butte, Placer, Shasta, and Tehama Counties	Vernally mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools.	35–1,020	Mar–May	Moderate; potential habitat present in the project area
Bellinger's meadowfoam <i>Limnanthes floccose</i> ssp. <i>bellingeriana</i>	-/-/1B.2	Cascade Range; approximately five known occurrences in Shasta County; Oregon	Cismontane woodland, meadows and seeps; mesic	290–1,100	Apr–Jun	None; potential habitat not present
Egg Lake monkeyflower <i>Mumulus pygmaeus</i>	-/-/4.2	Lassen, Modoc, Plumas, Shasta, and Siskiyou Counties; Oregon	Seasonally moist sites in meadows and seeps, along streams and on muddy soil of desiccating pools, in Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland	500–1,840	May–Aug	None; potential habitat not present
Shasta snowwreath <i>Neviusia cliffonii</i>	-/-/1B.2	Cascade Range; known from fewer than 20 occurrences in Shasta County near Lake Shasta	Cismontane woodland, lower montane coniferous forest, riparian woodland, often streamsides. Sometimes occurs on carbonate, volcanic, or metavolcanic soils.	300–500	Apr–Jun	None; project area above known elevation range for this species
Slender orcutt grass <i>Orcuttia tenuis</i>	T/E/1B.1	Inner North Coast Ranges, Cascade Range foothills	Vernal pools	35–1,760	May–Sep (uncommonly Oct)	None; no suitable habitat is present
Engelmann spruce <i>Picea engelmannii</i>	-/-/2.2	Shasta, Siskiyou, and Trinity Counties; Oregon, Washington, and elsewhere	Upper montane coniferous forest	1,065–2,135	—	Moderate; potential habitat present
Profuse-flowered pogogyne <i>Pogogyne floribunda</i>	-/-/1B.2	Modoc Plateau in Lassen, Modoc, Shasta, Siskiyou, and Tehama Counties; Oregon	Vernal pools	945–1,745	May–Sep (uncommonly Oct)	None; no suitable habitat is present
Long-stiped campion <i>Silene occidentalis</i> ssp. <i>longistipitata</i>	-/-/1B.2	Southern High Cascade Range in Butte, Plumas, Shasta, Tehama, and Trinity Counties	Chaparral, lower and upper montane coniferous forest.	1,000–2,000	Jun–Aug	Moderate; potential habitat present and nearest occurrence is ~3.5 mi. away
English Peak greenbriar <i>Similax jamesii</i>	-/-/1B.3	Klamath Range, Cascade Range in Del Norte, Shasta, Siskiyou, and Trinity Counties	Streambanks and lake margins in broadleaved upland forest, lower and upper montane coniferous forest, North Coast coniferous forest, marshes and swamps.	580–2,500	May–Jul (uncommonly Aug)	Moderate; potential habitat present and nearest occurrence is ~4 mi. away

Table 3.4-2. Continued

Common Name <i>Scientific Name</i>	Legal Status <sup>a</sup> Fed/State/CNPS	Geographic Distribution/ Floristic Province	Habitat	Elevation (meters)	Blooming Period	Likelihood of Occurrence <sup>b</sup> within the Project Area
Marsh hedge nettle <i>Stachys palustris</i> ssp. <i>pilosa</i>	-/-/2.3	Modoc Plateau in Lassen, Modoc, Plumas, Shasta, and Siskiyou Counties; elsewhere	Meadows and seeps, mesic areas in Great Basin scrub.	1,200–1,770	Jun–Aug	Moderate; potential habitat present and nearest occurrence is ~4 mi. away
Long-leaved starwort <i>Stellaria longifolia</i>	-/-/2.2	High Cascade Range in Butte, Calaveras, and Shasta Counties; elsewhere	Bogs and fens, mesic areas in meadows and seeps, upper montane coniferous forest, and riparian woodland.	900–1,830	May–Aug	Moderate; potential habitat present and nearest occurrence is ~4 mi. away
Salmon Mountains wakerobin <i>Trillium ovatum</i> ssp. <i>oettingeri</i>	-/-/4.2	Shasta, Siskiyou, and Trinity Counties	Mesic areas in lower montane coniferous forest, riparian woodland, and upper montane coniferous forest	855–2,000	Feb–Jul	None; potential habitat not present
Yellow triteleia <i>Triteleia crocea</i> var. <i>crocea</i>	-/-/4.3	Del Norte, Shasta, Siskiyou, and Trinity Counties; Oregon	Granitic or serpentinite substrates in lower montane coniferous forest	1,200–2,000	May–Jun	Known to occur in project area

<sup>a</sup> Status explanations:

**Federal**

- T = listed as threatened under the ESA.
- = no listing.

**State**

- E = listed as endangered under CESA.
- = no listing.

**California Native Plant Society**

- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
- 3 = List 3 species: plants about which more information is needed to determine their status.
- 4 = List 4 species: plants of limited distribution.
- .1 = seriously endangered in California
- .2 = fairly endangered in California
- .3 = not very endangered in California

<sup>b</sup> Likelihood of occurrence definitions:

- High: known occurrence of plant in region from California Natural Diversity Database, or other documents in the vicinity of the project; or the presence of suitable habitat conditions and suitable microhabitat conditions.
- Moderate: known occurrence of plant in region from California Natural Diversity Database, or other documents in the vicinity of the project; or the presence of suitable habitat conditions but suitable microhabitat conditions are not present.
- Low: plant not known to occur in the region from the California Natural Diversity Database, or other documents in the vicinity of the project; or habitat conditions are of poor quality.
- None: plant not known to occur in the region from the California Natural Diversity Database, or other documents in the vicinity of the project; or suitable habitat is not present in any condition.



Table 3.4-3. Special-Status Wildlife Potentially Occurring in the Hatchet Ridge Project Area

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
<b>Invertebrates</b>				
Valley elderberry longhorn beetle	T/–	Streamside habitats below 3,000 feet throughout the Central Valley	Riparian and oak savanna habitats with elderberry shrubs; elderberry is the host plant	None; no suitable habitat (i.e. elderberry shrubs) in project area
<b>Amphibians</b>				
California red-legged frog <i>Rana aurora draytonii</i>	–/T	Along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama to Fresno Counties	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods	None; no known occurrences within 10-mile radius of project area; no suitable habitat in project area
Cascades frog <i>Rana cascadae</i>	–/SSC	Shasta-Trinity region east to the Modoc Plateau and south to the Lassen area and the upper Feather River system	Ephemeral and permanent ponds and streams; oviposition habitat is open, shallow water in unshaded areas; overwinters underwater or in saturated ground	Moderate; known occurrences within 10-mile radius of project area; limited suitable habitat present in project area
Foothill yellow-legged frog <i>Rana boylei</i>	–/SSC	Klamath, Cascade, North Coast, South Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet	Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge; usually found near riffles with rocks and sunny banks nearby	None; no known occurrences within 10-mile radius of project area; no suitable habitat in project area
Shasta salamander <i>Hydromantes shastae</i>	–/T	Restricted to several tributaries of the McCloud River, Pit River, and Squaw Creek in Shasta County	Limestone caves at elevations from 1,000 to 3,000 feet, volcanic and other rock outcroppings; in rainy periods found under woody debris in mixed pine-hardwood stands	None; recorded occurrences within 12-mile radius of project area but project area is above species' known elevational range
Tailed frog <i>Ascaphus truei</i>	–/SSC	Northwestern California from Del Norte to central Sonoma Counties and east as far as southwest Shasta County	Cool, perennial, swiftly flowing streams in conifer dominated habitat including redwood, Douglas-fir, Klamath mixed conifer, and ponderosa pine habitats; also in montane hardwood conifer habitats	None; known occurrences within 12-mile radius of project area but no suitable habitat in project area

Table 3.4-3. Continued

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
<b>Reptiles</b>				
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	–/SSC	Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	None; known occurrences within 10-mile radius of project area but no suitable habitat in project area
<b>Birds</b>				
American peregrine falcon <i>Falco peregrinus anatum</i>	–/E, FP	Permanent resident along North and South Coast Ranges; may summer in Cascade and Klamath Ranges and through the Sierra Nevada to Madera County; winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations	Low; two nesting records within 10-mile radius of project area; not observed during WEST surveys; may fly through project area during migration or movement between foraging areas
Bald eagle <i>Haliaeetus leucocephalus</i>	–/E, FP	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into central coast; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean	High; known occurrences within 10-mile radius of project area, including Lake Margaret; several sightings during WEST surveys
California horned lark <i>Eremophila alpestris actia</i>	–/SSC	Throughout much of the state; less common in mountainous areas of the north coast and in coniferous or chaparral habitats	Common to abundant resident in a variety of open habitats, usually where large trees and shrubs are absent; grasslands and deserts to dwarf shrub habitats above tree line	Low; no known records within 10-mile radius of project area; not observed during WEST surveys; suitable habitat in project area

Table 3.4-3. Continued

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Northern spotted owl <i>Strix occidentalis caurina</i>	T/SSC	A permanent resident throughout its range; found in the north Coast, Klamath, and western Cascade Ranges from Del Norte to Marin Counties	Dense old-growth or mature forests dominated by conifers with topped trees or oaks available for nesting crevices	Moderate; known occurrences within 10-mile radius of project area; limited suitable foraging habitat in project vicinity; not observed during WEST surveys but may fly through project area during dispersal
Cooper's hawk <i>Accipiter cooperii</i>	-/SSC	Throughout California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range	Nests in a wide variety of habitat types, from riparian woodlands and grey pine-oak woodlands through mixed conifer forests	High; suitable foraging habitat in project area; observed during WEST surveys.
Ferruginous hawk <i>Buteo regalis</i>	-/SSC	Does not nest in California; winter visitor along the coast from Sonoma to San Diego Counties, east to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County	Open terrain in plains and foothills where ground squirrels and other prey are available	High; no suitable habitat in project area; does not nest in project area; sighted during WEST surveys; known to pass through project area during migration
Golden eagle <i>Aquila chrysaetos</i>	-/SSC, FP	Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley	Nest on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals	High; no suitable habitat in project area; does not nest in project area; sighted during WEST surveys; known to pass through project area during migration
Greater sandhill crane <i>Grus canadensis tabida</i>	-/T, FP	Breeds in Siskiyou, Modoc, Lassen, Plumas, and Sierra Counties; winters in the Central Valley, southern Imperial County, Lake Havasu National Wildlife Refuge, and the Colorado River Indian Reserve	Summers in open terrain near shallow lakes or freshwater marshes; winters in plains and valleys near bodies of fresh water	High; no suitable habitat in project area; does not nest in project area; sighted during WEST surveys; known to pass through project area during migration

**Table 3.4-3. Continued**

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Long-eared owl <i>Asio otus</i>	-/SSC	Permanent resident east of the Cascade Range from Placer County to the Oregon border, east of the Sierra Nevada from Alpine County to Inyo County; scattered breeding populations along the coast and in southeastern California; winters throughout the Central Valley and southeastern California	Nests in abandoned crow, hawk, or magpie nests, usually in dense riparian stands of willows, cottonwoods, live oaks, or conifers	Low; no known occurrences within 10-mile radius of project area; no suitable habitat on project area; not observed during WEST surveys; limited suitable habitat in project area
Merlin <i>Falco columbarius</i>	-/SSC	Does not nest in California; rare but widespread winter visitor to Central Valley and coastal areas	Forages along coastline in open grasslands, savannas, and woodlands; often forages near lakes and other wetlands	Low; no known occurrences in project area; no suitable habitat in project area; may fly through project area during migration
Northern goshawk <i>Accipiter gentilis</i>	-/SSC	Permanent resident in Klamath and Cascade Ranges, North Coast Ranges from Del Norte to Mendocino Counties, and Sierra Nevada south to Kern County; winters in Modoc, Lassen, Mono, and northern Inyo Counties	Nests and roosts in older stands of red fir, Jeffrey pine, ponderosa pine, lodgepole pine, Douglas-fir, and mixed conifer forests	High; known occurrences within 10-mile radius of project area; suitable foraging habitat in project area; not observed during WEST surveys; may fly through project area during migration or between foraging areas
Osprey <i>Pandion haliaetus</i>	-/SSC	Nests along the north coast from Marin to Del Norte Counties, east through the Klamath and Cascade Ranges, and in the upper Sacramento Valley; important inland breeding populations at Shasta Lake, Eagle Lake, and Lake Almanor and small numbers elsewhere south through the Sierra Nevada; winters along the coast from San Mateo to San Diego Counties	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations	High; known occurrences within 10-mile radius of project area; no suitable habitat in project area; two observations during WEST surveys; may fly through project area during migration or between foraging areas

Table 3.4-3. Continued

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Prairie falcon <i>Falco mexicanus</i>	–/SSC	Permanent resident in the South Coast, Transverse, Peninsular, and northern Cascade Ranges, the southeastern deserts, Inyo-White Mountains, foothills surrounding the Central Valley, and Sierra Nevada in Modoc, Lassen, and Plumas Counties; winters in Central Valley, along the coast from Santa Barbara to San Diego Counties, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties	Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands	Low; no known occurrences within 10-mile radius of project area; not observed during WEST surveys; no suitable habitat in project area; may fly through project area during migration or between foraging areas
Purple martin <i>Progne subis</i>	–/SSC	Coastal mountains south to San Luis Obispo County, west slope of the Sierra Nevada, and northern Sierra and Cascade ranges; absent from Central Valley except in Sacramento; isolated, local populations in southern California	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats; also nests in vertical drainage holes under elevated freeways and highway bridges	Low; no known occurrences in project area; not observed during WEST surveys; no suitable nesting habitat in project area
Sharp-shinned hawk <i>Accipiter striatus</i>	–/SSC	Permanent resident in the Sierra Nevada, Cascade, Klamath, and North Coast Ranges at mid-elevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except at very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats	High; observed during WEST surveys; no suitable habitat in project area; may fly through project area during migration or between foraging areas
Vaux's swift <i>Chaetura vauxi</i>	–/SSC	Coastal belt from Del Norte to Santa Cruz Counties and in mid-elevation forests of Sierra Nevada and Cascade Range	Nests in hollow, burned-out tree trunks in large conifers	Low; no known occurrences within 10-mile radius of project area; not observed during WEST surveys; no suitable habitat in project area; may fly through project area during migration or movement between foraging areas

Table 3.4-3. Continued

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Willow flycatcher <i>Empidonax traillii</i>	–/E	Summers along western Sierra Nevada from El Dorado to Madera Counties; in Cascades and northern Sierra Nevada in Trinity, Shasta, Tahama, Butte, and Plumas Counties; and along eastern Sierra Nevada from Lassen to Inyo Counties	Riparian areas and large wet meadows with abundant willows. Usually found in riparian habitats during migration	Low; known occurrences within 10-mile radius of the project area; not observed during WEST surveys; no suitable habitat in project area; may fly through project area during migration
Yellow warbler <i>Dendroica petechia brewsteri</i> (nesting)	–/SSC	Nests throughout California except Central Valley, Mojave Desert region, and high altitudes and eastern side of Sierra Nevada; winters along Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations in San Diego and Santa Barbara Counties	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near stream courses	High; observed during WEST surveys; limited suitable nesting habitat in project vicinity
Yellow-breasted chat <i>Icteria virens</i>	–/SSC	Nests locally in coastal mountains and Sierra Nevada foothills, east of the Cascades in northern California, along the Colorado River, and very locally inland in southern California	Nests in dense riparian habitats dominated by willows, alders, Oregon ash, tall weeds, blackberry vines, and grapevines	None; no known occurrences within 10-mile radius of project area; not observed during WEST surveys; no suitable nesting habitat in project area
<b>Mammals</b>				
American badger <i>Taxidea taxus</i>	–/SSC	Uncommon, permanent resident throughout the state except for north coast	Most abundant in drier, open stages of most shrub, forest, and herbaceous habitats with friable soils	Low; one record within 10-mile radius of project area; suitable habitat in project area
California wolverine <i>Gulo gulo luteus</i>	–/T, FP	Klamath and Cascade Ranges south through Sierra Nevada to Tulare County	Sighted in a variety of habitats from 1,600 to 14,200 feet; most common in open terrain above timberline and subalpine forests	Low; known occurrences within 10-mile radius of project area; last occurrence record in 1983; suitable habitat in project area
Pacific fisher <i>Martes pennanti pacifica</i>	C/SSC	Coastal mountains from Del Norte to Sonoma Counties, east through Cascades to Lassen County, and south in Sierra Nevada to Kern County	Late successional coniferous forests and montane riparian habitats	Low; known occurrences within 10-mile radius of project area; limited poor quality habitat in project area

Table 3.4-3. Continued

Common Name <i>Scientific Name</i>	Status Fed/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Pacific Townsend's (=western) big-eared bat <i>Corynorhinus townsendii townsendii</i>	–/SSC	Coastal regions from Del Norte to Santa Barbara Counties	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after one onsite visit	Low; no known occurrences within 10-mile radius of project area; not detected during WEST surveys; marginal foraging habitat in project area
Pallid bat <i>Antrozous pallidus</i>	–/SSC	Throughout California except high Sierra from Shasta to Kern Counties and the northwest coast, primarily at lower and mid-elevations	Occurs in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California; Relies heavily on trees for roosts	Moderate; no known occurrences within 10-mile radius of project area; possible detection during WEST surveys; suitable habitat in project area
Sierra Nevada snowshoe hare <i>Lepus americanus taboensis</i>	–/SSC	Cascade Range in Siskiyou and Del Norte Counties and Sierra Nevada from Mt. Lassen to Mono and Tulare Counties, generally between 4,800 and 8,000 feet	Dense thickets of conifers, riparian vegetation, or chaparral in boreal life zones	High; observed in project area during J&S reconnaissance survey
Spotted bat <i>Euderma maculatum</i>	–/SSC	Throughout eastern and southern California, central Sierra Nevada, and Sierra Nevada foothills bordering the San Joaquin Valley; one recent record from northern California in the Trinity Alps; probably occurs in other portions of the state where habitat is suitable	Wide variety of habitats from low desert to high-elevation coniferous forest, primarily in areas associated with cliff and canyon habitat; females may favor ponderosa pine forests during reproduction	Moderate; one known occurrence in project area; suitable foraging habitat in project area
Western mastiff bat <i>Eumops perotis californicus</i>	–/SSC	Along western Sierra Nevada primarily at low to mid-elevations and widely distributed throughout Southern Coast Ranges; north to the Oregon border	Wide variety of habitats from desert scrub to montane conifer; roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels	Moderate; no known occurrences within 10-mile radius of project area; not observed during WEST surveys; suitable foraging habitat in project area

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Status explanations:

**Federal**

T = listed as threatened under the federal Endangered Species Act.

C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.

– = no listing.

**State**

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

FP = fully protected under the California Fish and Game Code.

SSC = species of special concern in California.

– = no listing.

Potential Occurrence in the Study Area

High: Known occurrences of the species within the study area, or CNDDDB or other source records occurrence of the species within a 10-mile radius of the study area. Suitable habitat is present within the study area.

Moderate: CNDDDB or other source records occurrence of the species within a 10-mile radius of the study area. Poor quality suitable habitat is present within the study area.

Low: CNDDDB or other source does not record occurrence of the species within a 10-mile radius of the study area. Suitable habitat is present within the study area.

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during surveys conducted for this project, known occurrences recorded in the California Natural Diversity Database or other documents, and the species list provided by USFWS (Appendix C-4). Habitat capable of supporting nine of these species does not occur in the project vicinity, and these species are not considered further. Potential impacts on the remaining 25 species are evaluated in Section 3.4.2, *Impact Analysis*. These species comprise one amphibian, 16 birds, and eight mammals. No fish species identified on the USFWS list are included in this analysis due to lack of habitat in the project area and no potential for downstream impacts. The 25 species evaluated in this section are listed below.

Cascades frog	Long-eared owl	Yellow warbler
American peregrine falcon	Merlin	American badger
Bald eagle	Northern goshawk	California wolverine
California horned lark	Osprey	Pacific fisher
Northern spotted owl	Prairie falcon	Pacific Townsend's big-eared bat
Cooper's hawk	Purple martin	Pallid bat
Ferruginous hawk	Sharp-shinned hawk	Sierra Nevada snowshoe hare
Golden eagle	Vaux's swift	Spotted bat
Greater sandhill crane	Willow flycatcher	Western mastiff bat

## Aquatic Resources

Aquatic resources identified in the project area consist of intermittent streams, ephemeral streams, spring wetlands, and one ephemeral pool (Figure 3.4-2). A formal wetland delineation of waters of the United States, the term used by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) for aquatic resources considered jurisdictional under Section 404 of the federal Clean Water Act (CWA), has not been conducted in the project area in accordance with USACE standards because the exact project footprint has not been finalized. For the purposes of this EIR, and because a formal wetland delineation has not been completed, all aquatic resources were assumed to be potentially jurisdictional under the CWA. The aquatic resources listed below were mapped in the project area.

- **Spring wetlands.** Present in scattered locations in the project area as described above in *Land Cover Types*.
- **Ephemeral and intermittent drainages.** These features are mostly unvegetated drainages, with some patches of shining willow and Scouler willow, and a defined bed and bank typically averaging 3 feet in width.
- **Ephemeral snowmelt pool.** One ephemeral snowmelt pool is located in the northern portion of the project area as described above in *Land Cover Types*.

The location and extent of these aquatic resources is shown in Figure 3.4-2.

## Regulatory Setting

### Federal Regulations

#### Federal Endangered Species Act of 1973, as Amended

The Endangered Species Act (ESA) protects species, and their habitats, that have been identified by USFWS or the National Marine Fisheries Service (NMFS) as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The federal ESA is administered by USFWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, whereas other listed species are under USFWS jurisdiction. Because no habitats that may contain listed fish would be affected by the proposed project, NMFS and its responsibility under ESA are not discussed further in this section. Provisions of Sections 7, 9, and 10 of ESA could be relevant to the proposed project and are summarized below.

#### Endangered Species Act Prohibitions (Section 9)

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of threatened species is also prohibited under Section 9, unless otherwise authorized by federal regulations. Take, as defined by ESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Harm is defined as “any act that kills or injures the species, including significant habitat modification.” In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites not under federal jurisdiction.

#### Endangered Species Act Authorization Process (Sections 7 and 10)

Take of listed species can be authorized through either the Section 7 consultation process (for actions by federal agencies) or the Section 10 permit process (for actions by nonfederal entities). Federal agency actions are activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the lead federal agency) must consult with USFWS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, USFWS issues a biological opinion (BO), setting forth one of the determinations below.

- The action may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding).
- The action will not jeopardize the continued existence of any listed species (no jeopardy finding) and will not result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS may stipulate discretionary “reasonable and prudent” conservation measures. If the project would not jeopardize a listed species, USFWS issues an incidental take statement to authorize the proposed activity.

In cases where a nonfederal entity is undertaking an action that does not require federal authorization, the take of listed species must be permitted by USFWS through the Section 10 process. If the proposed project would result in the incidental take of a listed species, then the project proponent must first obtain a Section 10(a)(1)(B) incidental take permit (ITP). Incidental take under Section 10 is defined as the take of federally listed fish and wildlife species “that is incidental to, but not the purposes of, otherwise lawful activities.”

To receive an ITP, the nonfederal entity is required to prepare a Habitat Conservation Plan (HCP). The HCP must include conservation measures that avoid, minimize, and mitigate the project’s impact on listed species and their habitat.

### **Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (16 USC 703 et seq.) (MBTA) implements various treaties and conventions between the U.S., Canada, Japan, Mexico, and Russia, providing protection for migratory birds as defined in 16 USC 715j. The MBTA makes it unlawful for any person to take, kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird, including feathers, parts, nests, or eggs. The MBTA does not, however, protect habitats of migratory birds.

### **Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. The BGEPA makes it unlawful for any person to take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export, or import at any time or in any manner a bald or golden eagle, alive or dead; or any part, nest, or egg of these eagles; or violate any permit or regulations issued under the BGEPA. *Take* includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. *Transport* includes convey or carry by any means and also deliver or receive for conveyance.

### **Section 404 of the Federal Clean Water Act**

Section 404 of the federal Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the United States. USACE is responsible for issuing permits authorizing such placement (Section 404 permits).

Waters of the United States is the term used by USACE and EPA for areas under federal jurisdiction pursuant to Section 404 of the CWA. Waters of the United States are typically categorized as either wetlands or other waters of the United States.

Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that, under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For a wetland to qualify as jurisdictional according to USACE and, therefore, subject to regulation under Section 404 of the CWA, the feature must support a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. Other waters of the United States are sites that typically lack one or more of the three indicators identified above. For the purposed of this document,

drainages include all streams, creeks, rivers, and other surface features with defined beds and banks. The springs in the project area may constitute wetlands or other waters of the United States. The ephemeral and intermittent streams in the project area may constitute other waters of the United States.

## State Regulations

### California Endangered Species Act

The California Endangered Species Act (CESA) protects wildlife and plants listed as threatened and endangered by the California Fish and Game Commission. CESA prohibits *take* of state-listed wildlife and plants and requires an incidental take permit for authorization of take. The California Fish and Game Code defines *take* as any action or attempt to “hunt, pursue, catch, capture, or kill.” The requirements for an application for an incidental take permit under CESA are described in Section 2081 of the California Fish and Game Code and in final adopted regulations for implementing Sections 2080 and 2081. Incidental take may also be authorized if the state-listed species is also listed under the federal Endangered Species Act (2080.1) or is part of an approved Natural Community Conservation Plan (NCCP) (2835).

### Fully Protected Wildlife Species under the California Fish and Game Code

The California Fish and Game Code provides full protection from take (i.e., the California Department of Fish and Game (DFG) cannot issue a take permit) for a variety of species. Section 5050 lists protected amphibians and reptiles. Section 5515 prohibits take of fully protected fish species. Section 3511 prohibits take of fully protected bird species. Fully protected mammals are protected under Section 4700. The California Fish and Game Code defines take as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Except for take related to scientific research, all take of fully protected species is prohibited. Four fully protected species have some potential to occur on or near Hatchet Mountain: California wolverine, bald eagle, golden eagle, and greater sandhill crane.

### Protection of Birds and Nests

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Many bird species could potentially nest in the project area or its vicinity. These nests would be protected under these sections of the Fish and Game Code.

### Streambed Alteration

DFG has jurisdictional authority over streams and lakes and wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600–1616. DFG has the authority to regulate work that will “substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.” Activities of any person, state or local governmental agency, or public utility are regulated by DFG under Section 1602 of the Code. DFG enters into a streambed or lakebed alteration agreement with the project proponent and can impose conditions on the agreement to ensure no net loss of values or acreage of the stream, lake, associated wetlands, and associated riparian habitat.

The lake or streambed alteration agreement is not a permit, but rather a mutual agreement between the California Department of Fish and Game (DFG) and the project proponent. Because DFG includes under its jurisdiction streamside habitats that may not qualify as wetlands under the federal CWA definition, DFG jurisdiction may be broader than USACE jurisdiction.

## 3.4.2 Impact Analysis

This section describes the analysis relating to impacts on biological resources associated with the proposed project. It describes the methods used to determine the project's impacts and the thresholds of significance of those impacts. Measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

### Methods

Project impacts on biological resources in the project area were evaluated primarily on the basis of the information and analyses presented in the baseline ecological studies conducted for the project (Appendices C-1, C-2, and C-3), review of pertinent literature, the reconnaissance-level survey of the project area, and the wetland investigation of the project area.

### Impact Mechanisms

#### Construction Impacts

Construction of the proposed project could directly or indirectly affect biological resources. The types of activities listed below could cause varying degrees of impacts on biological resources.

- Fragmentation of sensitive biological communities and special-status plant populations as a result of development.
- Grading and paving activities during construction and building activities.
- Excavation of turbine foundation sites.
- Trenching to install underground electric cabling.
- Soil compaction, dust, and water runoff from the construction and development site.
- Construction activities in wetlands and other water bodies that contain ponded or flowing water and saturated soils.
- Construction-related noise (from equipment).
- Development of soil stockpiling areas to contain material from excavation and access road construction.
- Runoff of fuels, lubricants and other petroleum products, and other chemicals into sensitive resource areas (e.g., wetlands).
- Introduction of invasive nonnative species into the project area that could displace native plant species in open space areas.

- Increases in noise, human presence, and vehicular traffic that could result in disturbance or direct mortality.

## Operational Impacts

Operation of the proposed project could directly or indirectly affect biological resources. The following types of activities could result in varying degrees of impact on biological resources.

- Operation of wind turbines and associated electrical transmission lines could directly affect biological resources through collision with moving turbine blades or transmission lines, as well as through increases in visual and noise disturbance that could alter normal movement and behavior patterns.

## Thresholds of Significance

Criteria for determining the significance of impacts related to biological resources were based on the environmental checklist form in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.). An impact related to biological resources was considered significant if it would result in any of the conditions listed below.

- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or USFWS.
- Have a substantial adverse effect on federally protected wetlands, as defined by CWA Section 404 (including, but not limited to, marshes and vernal pools) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.
- Reduce a substantial amount of a locally and regionally uncommon habitat or plant community.
- Reduce substantially the local and regional distribution of common and sensitive biological resources.
- Cause long-term degradation of a sensitive plant community because of substantial alteration of landforms or site conditions (e.g., alteration of wetland hydrology).
- Cause substantial fragmentation or isolation of wildlife habitats, especially riparian and wetland communities.

## Impacts and Mitigation Measures

### Construction Impacts

#### **Impact BIO-1: Removal and disturbance of special-status plants (less than significant with mitigation)**

Butte County morning glory, long-stoloned sedge, and yellow triteleia have been documented as occurring in the project area, and individual plants and groups of plants would be removed or disturbed during construction of the project as currently designed.

Long-stoloned sedge and yellow triteleia are designated as “not very endangered in California” by the California Native Plant Society; as such, impacts on these species are typically considered significant only if the populations are locally significant. Factors to consider when assessing local significance include the presence of the species outside its known elevation or geographic range; unusual taxonomic qualities; and population characteristics such as density of plants, unusual associates, etc. Because the occurrences of these species in the project area do not appear to meet any of these criteria, they should not be considered locally significant. Impacts on these two species are considered less than significant; no mitigation is required.

Butte County morning glory is designated as “rare and endangered in California” by the California Native Plant Society. Consequently, an evaluation of impacts on the species is mandatory under CEQA. Proposed project facilities in occupied habitat include six wind turbines, access roads, and electrical collection facilities (underground lines). According to the extent of these facilities as detailed in the project description, approximately 11 acres of occupied habitat for Butte County morning glory would be permanently affected and approximately 15 acres would be temporarily disturbed by construction of the project. Based on the total occupied habitat of the population in the area (approximately 144 acres), the potential permanent removal of 11 acres (approximately 8% of the population), regardless of the number of turbines, does not appear to result in a substantial adverse effect on the population. However, the project involves construction with heavy equipment and could therefore result in the introduction of nonnative invasive species. Construction could also change the hydrology or other important characteristics of the area. These changes to the habitat over time may ultimately make the area unsuitable for the species and eliminate it from the area. As the extent of this impact is unknown, it must be assumed to be potentially significant at this time. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce this impact to a less-than-significant level.

#### **Mitigation Measure BIO-1: Avoid Butte County morning glory**

Wherever possible, redesign the location of the facilities to avoid habitat for Butte County morning glory. The applicant will, to the extent possible, adjust the location of six turbines and associated access roads currently planned for construction in Butte County morning glory habitat. If this avoidance measure is not possible, the applicant will implement Mitigation Measure BIO-2.

#### **Mitigation Measure BIO-2: Minimize impacts on Butte County morning glory**

Butte County morning glory appears to have a patchy distribution within the population in the project area. The applicant will minimize impacts on Butte County Morning glory by locating facilities in unoccupied patches of the population, or in areas that support the lowest densities of plants. To accomplish this measure, a qualified botanist (*a qualified botanist* is defined as a person with at least an undergraduate degree in botany or biology and specific experience conducting botanical surveys in the region surrounding the project area for at

least 3 years/seasons) will conduct a detailed survey of the area prior to construction to describe and map the exact boundaries of the population in the project area and the density of plants within the population. The survey must be conducted during the appropriate time of year, and the results of the survey as well as final facility siting must be submitted to the California Department of Fish and Game (DFG) and the Shasta County Department of Resource Management and approved by both agencies prior to construction.

For Butte County morning glory habitat temporarily disturbed during construction (approximately 15 acres), the applicant will confine the work area to the minimum amount necessary to complete the work. Where temporary disturbance is necessary, the applicant will conduct project activities and necessary ground disturbance in a manner that is consistent with the successful reestablishment of the species. A list of specific actions necessary to ensure successful reestablishment of the species following temporary disturbance, and the locations where these actions will be implemented, will be prepared by a qualified botanist, submitted to DFG and the Shasta County Department of Resource Management, and approved by both agencies prior to construction.

Finally, to minimize impacts on Butte County morning glory resulting from the potential introduction of invasive species, the applicant will implement invasive species control measures during construction and implement monitoring for a period of 3 years following construction. Prior to construction, the applicant must conduct a survey to map invasive species within the project area. During construction, the applicant will implement measures to prevent the spread of existing invasive species as determined necessary by a qualified botanist. Following construction, the applicant will monitor the project area every year for a period of 3 years during the appropriate period(s) of the year to ensure that invasive species have not been spread into new areas or that no new invasive species have been introduced. Through coordination with the Shasta County Department of Resource Management, and under the judgment of a qualified botanist, the applicant will implement measures to control invasive species if deemed necessary. An invasive species control plan must be submitted to the Shasta County Department of Resource Management and DFG prior to construction. Additionally, invasive species monitoring and treatment reports must be submitted to the Shasta County Department of Resource Management and DFG annually following the completion of construction activities.

### **Impact BIO-2: Potential loss or disturbance of wetlands and/or riparian habitats (less than significant with mitigation)**

Construction activities associated with the proposed project could result in the temporary and/or permanent placement of fill material into waters of the United States, including wetlands. This area may be incidentally filled or disturbed during construction or improvement of access roads, culvert replacement, and establishment of staging areas. Additionally, construction of the proposed project could adversely affect such resources through disturbance, placement of fill material, transport of sediment, and runoff of contaminants (e.g., fuel, lubricants). The precise extent of disturbance or fill material that would be placed into waters of the United States would be determined upon submittal of the final site plan during the Section 404 permit process. This impact could be considered significant. Implementation of Mitigation Measure BIO-3 would reduce this impact to a less-than-significant level.

### **Mitigation Measure BIO-3: Avoid and minimize disturbance of waters of the United States, including wetlands**

The applicant will implement the measures listed below.

- Redesign or modify the project to avoid direct and indirect impacts on wetlands and streams, if feasible.
- Avoid all wetlands and other waters of the United States by installing orange construction barrier fencing (and sedimentation fencing in some cases) between the construction site and the wetland/other waters areas.
- Avoid construction activities in saturated or ponded wetlands and streams during the wet season to the maximum extent possible. Where such activities are unavoidable, protective practices, such as use of padding or vehicles with balloon tires, will be employed.
- If deemed necessary by USACE during the Section 404 permit process, use geotextile cushions and other materials (e.g., timber pads, prefabricated equipment pads, geotextile fabric) in saturated conditions to minimize damage to the substrate and vegetation.
- Stabilize exposed slopes and stream banks immediately upon completion of construction activities. Other waters of the United States will be restored in a manner that encourages vegetation to reestablish to preproject conditions and contours to reduce the effects of erosion on the drainage system.
- Restrict any instream construction within the ordinary high water mark to the low-flow period of May through October.
- Complete all activities promptly to minimize their duration and resulting impacts.
- Prohibit equipment access or staging in or within 250 feet of wetlands and other waters of the United States along existing access roads. Confine access to existing roads.
- Keep all protective measures in place until all construction activities have been completed near the resource; remove such measures immediately following construction activities.
- Locate all turbines and project infrastructure (roads, substations, and other facilities) away from wetlands and drainages. Establish a setback as described below.
- Construct project components using the setback recommendations established in USACE and California Department of Fish and Game guidance: a 100-foot setback from wetlands and streams and a 250-foot setback from ephemeral pools that provide habitat for special-status amphibians.
- Retain a qualified wetland biologist to identify and flag the boundaries of wetlands prior to construction as “exclusion areas”; construction crews will follow the recommended setbacks.
- Appurtenant project facilities (e.g., underground cables) will be sited at least 250 feet from identified wetland resources.
- Ground disturbance during construction will be sited at least 100 feet from the boundaries of delineated wetlands to the extent feasible to minimize secondary effects on the resources.

- All fueling and storage areas will be located at least 250 feet from intermittent streams and wetlands to prevent spills of fuel or other hazardous materials from entering receiving waters.
- Develop A Spill Prevention and Containment Plan and maintain appropriate equipment on site to prevent adverse impacts on wetlands that could result from an inadvertent spill.

**Impact BIO-3: Temporary disturbance of up to 135 acres and permanent loss of up to 73 acres of habitat for special-status wildlife species (less than significant)**

The proposed project would result in the permanent loss of up to 73 acres of ceanothus scrub, manzanita, and various types of young mixed conifer forest through the removal of vegetation for construction of project facilities. Additional habitat could be temporarily disturbed during clearing and grading for staging areas, turbine foundations, burying underground cables, and other activities. These vegetation types provide potential foraging habitat for Cooper's hawk, golden eagle, long-eared owl, northern goshawk, sharp-shinned hawk, American badger, California wolverine, Sierra Nevada snowshoe hare, Pacific Townsend's big-eared bat, pallid bat, and western mastiff bat. However, these habitat types are common within the project area, the project vicinity, and the region. All these species have home ranges that extend beyond the construction footprint, and none of them are dependent on these habitat types within the project area to meet their life history requirements. Therefore, this impact is considered less than significant.

**Impact BIO-4: Permanent loss of potential nesting habitat for northern goshawk, Cooper's hawk, sharp-shinned hawk, and long-eared owl (less than significant)**

Construction of the proposed project could result in the loss of some of the older-aged mixed conifer forest that occurs in relatively small patches near the northern end of the project area. Although highly unlikely, it is possible that these habitats could support nesting pairs of northern goshawk, Cooper's hawk, sharp-shinned hawk, and long-eared owl. The small patches of older-aged mixed conifer forest are small and of relatively poor habitat quality due to their size, age, and relative isolation. Accordingly, the permanent loss of these habitats is considered less than significant.

**Impact BIO-5: Potential direct mortality of eggs and nestlings and/or loss of reproductive potential for nesting northern goshawk, Cooper's hawk, sharp-shinned hawk, long-eared owl, and yellow warblers (less than significant with mitigation)**

Construction of the proposed project could result in the direct mortality of eggs and nestlings of nesting special-status species through removal of eggs and nest sites during vegetation removal and clearing and grading activities. The Migratory Bird Treaty Act and the California Fish and Game Code prohibit the removal of nests with eggs or nestlings. This could be considered a potentially significant impact. Implementation of Mitigation Measures BIO-4 and BIO-5 would reduce this impact to a less-than-significant level.

**Mitigation Measure BIO-4: Conduct vegetation removal activities during the non-breeding season**

To avoid potential impacts on nesting yellow warblers, raptors, and other migratory birds, all initial ground disturbance and vegetation removal activities will occur during the non-

breeding season (i.e., August 15–March 1). If vegetation removal activities during the breeding season cannot be avoided, implement Mitigation Measure BIO-6.

#### **Mitigation Measure BIO-5: Conduct preconstruction surveys for nesting birds and avoid active nest sites**

To avoid potential impacts on nesting yellow warblers, raptors, and other migratory birds, a preconstruction survey will be conducted to locate all active nests of special-status birds and birds protected under the Migratory Bird Treaty Act. Nest sites of special-status raptors will be avoided and no vegetation removal activities will occur within a 0.25-mile radius of the nest until the young have fledged or the nest has failed, as determined by a qualified biologist. No vegetation removal activities will be conducted within 100 feet of the nests of nesting songbirds until the young have fledged or the nest has failed, as determined by a qualified biologist.

#### **Impact BIO-6: Potential direct mortality and/or loss of habitat for Cascades frog, willow flycatcher, yellow warbler, and other wetland and riparian dependent species (less than significant with mitigation)**

Construction of the proposed project could result in the direct mortality, disturbance, and loss of habitat for Cascades frog, willow flycatcher, yellow warbler, and other wetland and riparian dependent species through fill, vegetation removal, ground disturbance, and noise disturbance in or near wetland or riparian habitats. Implementation of Mitigation Measure BIO-3 would avoid this impact completely.

#### **Impact BIO-7: Potential loss of up to 75 acres of deer fawning habitat (less than significant)**

The project area is located within a California Department of Fish and Game–designated deer fawning area. Construction of the proposed project could result in the permanent loss of up to 73 acres of potential deer fawning habitat and the temporary disturbance of 135 acres. However, the habitat types that occur within the project area are both locally and regionally common, and the size of the project area is very small relative to the size of the deer fawning area, which encompasses all of Hatchet Mountain and beyond. Consequently, construction of the proposed project is not expected to significantly alter the behavior or reproductive success of deer in the area. This impact is considered less than significant.

### **Operational Impacts**

Operation of the proposed project is expected to result in direct mortality of raptors, waterbirds, waterfowl, migratory birds, other avian species, and bats resulting from collision with turbines and/or overhead transmission lines. If mortality rates are high enough, they could constitute substantial adverse impacts on populations of some species and interfere with the local and migratory movements of some species. Current information suggests that the exposure risk for greater sandhill cranes occurs during migration, and that the greatest exposure risk for bald eagles occurs primarily during winter (Appendix C-1). Because these periods (for both species) involve populations of unknown geographical affiliation, it is not possible with current information to accurately assess population-level impacts. Consequently, this level is defined arbitrarily as three bald eagle mortalities in any given year and five greater sandhill crane mortalities in any given year. These thresholds may be modified if the project applicant can provide information suggesting that higher levels of mortality can be sustained without incurring population-level effects, and if such an analysis is approved by USFWS and the California Department of Fish and Game.

**Impact BIO-8: Potential direct mortality of greater sandhill cranes (significant and unavoidable)**

Greater sandhill crane is listed as threatened under the California Endangered Species Act. Operation of the proposed project could result in the direct mortality of greater sandhill cranes through collision with rotating turbines or transmission lines. Sandhill cranes are known to be at a relatively high risk of collision with transmission lines, at least in areas where breeding or wintering habitat is in proximity to power lines (Brown and Drewian 1995). Greater sandhill cranes nest in open fields in or near shallow lakes or freshwater marshes in northeastern California and winter in flooded fields and agricultural areas in the Sacramento–San Joaquin River Delta and other parts of the Central Valley. One flight of 30 sandhill cranes was documented flying over the project area within the rotor-swept area of the proposed turbines (Appendix C-1); based on this observation, the relative exposure risk calculated for sandhill crane was the eleventh largest risk of all birds observed using the project area (Appendix C-1). It is therefore possible that flocks of cranes could regularly be exposed to turbine collision impacts during migration between breeding grounds in northeastern California and wintering grounds in the Central Valley and Sacramento–San Joaquin River Delta. Without additional information on the movement patterns of greater sandhill cranes during migration, the magnitude of this potential impact cannot be reasonably predicted; because the actual mortality rate could be higher than that indicated by the exposure risk calculated in the baseline ecological studies (Appendix C-1), this impact is considered significant and unavoidable. Implementation of Mitigation Measure BIO-6 would reduce this impact to the maximum extent practicable.

**Mitigation Measure BIO-6: Monitor avian mortality rates and implement adaptive management measures, if necessary**

Following initiation of project operations, a monitoring study will be conducted to determine avian mortality rates resulting from operation of the project. The monitoring study will use standardized area searches of all turbines at the project site in accordance with published guidelines (see California Energy Commission [CEC] *Guidelines* [California Energy Commission and California Department of Fish and Game 2006]). The information will be compiled, analyzed, and documented in annual reports for a period of 5 years, and will be made available to the public for use in evaluation of future wind farm projects. If mortality rates of special-status species are determined to be below the level at which populations may be negatively affected (as defined above), no further mitigation will be required. As lead agency under CEQA, the County will coordinate closely with USFWS and the California Department of Fish and Game (DFG) to set up an adaptive monitoring program for implementation by the applicant.

If mortality rates exceed levels at which population-level effects could occur, one or more of the following adaptive management measures will be implemented at the discretion of USFWS or DFG to reduce the level of mortality to the maximum extent practicable.

- Timing restrictions on the operation of one or more turbines (time of day or seasonal shutdown). Turbines are shut down when the turbine blades are “feathered” horizontally in the wind, and the turbines stop rotating.
- Permanent shutdown of one or more turbines.
- Relocation of one or more turbines.

**Impact BIO-9: Potential direct mortality of bald eagles (significant and unavoidable)**

Bald eagle is listed as threatened under the California Endangered Species Act and was recently delisted under the federal Endangered Species Act. Operation of the proposed project could result in the direct mortality of bald eagles through collision with rotating turbines or transmission lines. Bald eagles nest at Lake Margaret and along the Pit River. The nest site at Lake Margaret (active in 2006) is located approximately 1.75 miles from the project area. Eleven nesting territories are located along the Pit River (10 active in 2004), and 17 additional territories (10 active) are located in adjacent areas (Pacific Gas and Electric Company 2005). The wintering bald eagle population along the entire Pit River watershed covered under the Pit River Management Plan has ranged from 27 to 61 birds, with a median population near 50. The proposed project is located within the Pit River watershed and is approximately 2 miles south of the Pit River at the closest point. The proposed project is located outside areas designated as essential bald eagle habitat in the Pit River Management plan. Twelve bald eagles were documented flying over the project area, of which seven were observed to be flying within the rotor-swept height of the proposed turbines (Appendix C-1). An additional three observations were recorded incidentally, two of which were within the rotor-swept height of the proposed turbines (Appendix C-1). All these observations were recorded during winter (November–April). Although golden eagles have been found to be susceptible to mortality from wind turbines (Erickson et al. 2001) (one golden eagle was documented during the avian use surveys [Appendix C-1]), there have been relatively few documented mortalities of bald eagles at wind power plants; it should be noted, however, that most wind power projects where mortality monitoring studies have been conducted support relatively low levels of bald eagle use.

Bald eagle use of the project area throughout the year was estimated to be 0.039 birds per 20-minute survey, while the overall raptor use was 1.028 per 20-minute survey; thus, bald eagles comprised approximately 4 % of the raptor use in the project area. Assuming that use is directly correlated to mortality and that between 0 and 0.1 raptor fatalities per year per MW can be expected to occur from operation of the proposed project, operation of a 100MW project would result in one bald eagle fatality every 2–3 years (Appendix C-2). Although this level of mortality is probably not high enough to result in adverse population-level effects, the actual mortality rate that would result from operation of the proposed project could be much higher given the large number of bald eagles living and moving through the vicinity and the well-documented susceptibility of golden eagles to collision impacts near wind farms. Because the actual mortality rate could be higher than that indicated by the exposure risk calculated in the baseline ecological studies (Appendix C-1) and the mortality rate estimated in the BA (Appendix C-2), this impact is considered significant and unavoidable. Implementation of Mitigation Measure BIO-6 would reduce this impact to the maximum extent practicable.

**Impact BIO-10: Potential direct mortality of spotted owls (less than significant)**

Two subspecies of spotted owl have been documented in the general vicinity of the project area: California spotted owl (*Strix occidentalis occidentalis*) and northern spotted owl (*S. o. caurina*). Northern spotted owl is federally listed as threatened, while California spotted owl is a California species of special concern. For regulatory purposes, USFWS considers the Pit River in Shasta County as the dividing line between California and northern spotted owl populations. Populations south of the Pit River are considered to be California spotted owl. Although the proposed project is located approximately 2.5 miles south of the Pit River, in reality this area represents a zone of intergradation between the two subspecies. While it is likely that any potential impacts on spotted owl, a resident non-migratory species, would occur on California spotted owls, it is assumed for the purposes of this analysis that the impacts could affect northern spotted owls.

Historically, spotted owls maintained a territory in the project area (Figure 3.4-3). While vegetation in this area was destroyed during the 1992 Fountain fire, suitable nesting and foraging habitat for spotted owls still remains approximately 0.5 mile north of the project area boundary (Appendix C-2). Spotted owl territories have been documented in mixed conifer stands throughout the project region (Figure 3.4-3).

Spotted owls typically use unlogged mature and old-growth coniferous forests (Forsman et al. 1984; Solis and Gutiérrez 1990; Carey et al. 1992) and tend to avoid crossing brushy and clearcut (or burned) forest areas, although they may hunt along the edges (Gutiérrez et al. 1995). Because spotted owls occur in relatively low densities in the general vicinity of the project area and because the majority of the project area is currently in early successional stage forest, it is unlikely that spotted owls use the project area. Because spotted owls are highly territorial, only pairs with territories that include the project area would be likely to occur near the project area. Historically, only 1–2 pairs (Figure 3.4-3) have occupied such territories.

Spotted owls are considered to have a very low risk of collision with turbines or meteorological towers (Appendix C-2). Spotted owls on territories conduct almost all their flights below the forest canopy, which would likely be below the lowest height of a turbine blade. While it is possible that spotted owls may fly within the height of turbine blades during dispersal (i.e., when juveniles leave the territory on which they were born and seek new territories to occupy), no one has documented whether spotted owls fly above or below the canopy while dispersing (Gutiérrez et al. 1995). Current information suggests that all spotted owl offspring undergo dispersal events. However, it is impossible to measure or estimate the risk of mortality to dispersing spotted owls from operation of the proposed project due to the lack of knowledge regarding flight characteristics of dispersing juveniles. In general, it is presumed that dispersing spotted owls would fly within the canopy of suitable forested habitat and would consequently not be at risk of collision. In addition, few forest owl mortalities have been documented at wind projects (see Erickson et al. 2001), presumably because their behavior puts them at low risk of collision. Because the expected risk of mortality to resident and dispersing spotted owls is expected to be extremely low, this impact is considered less than significant. No mitigation is required.

### **Impact BIO-11: Potential direct mortality of special-status raptors and other avian species (significant and unavoidable)**

Direct mortality of many avian species through collision with turbine blades and transmission lines has been well documented. In some cases, high levels of avian mortality have resulted from operation of wind farms. Diurnal raptors are considered to be particularly susceptible to mortality from collision with wind turbines and transmission lines because of their large size and flight characteristics (Erickson et al. 2001). Operation of the proposed project could result in the direct mortality of special-status raptors (e.g., Cooper's hawk, long-eared owl, ferruginous hawk, sharp-shinned hawk, osprey, merlin, peregrine falcon) and both common and special-status avian species (e.g., California horned lark, yellow warbler).

To assess the potential magnitude of this impact at Hatchet Mountain, a 1-year study of avian use of the project area was conducted and the information used to compare avian use at the project site with avian use at operating wind farm facilities where mortality data have been collected (Appendix C-1). These data were then used to estimate the potential mortality rate for raptors and other avian species and to compare the magnitude of the impact on avian species in general with that at other operating wind farms.

The estimated mean annual raptor use at Hatchet Ridge was 0.69/survey, with 50% of this value comprising turkey vulture use. Raptor/vulture use at Hatchet Mountain is lower than at 10 wind

resource areas but higher than at 17 other wind resource areas evaluated in the continental United States using similar protocols. Correlating the estimated mean raptor use at Hatchet Mountain in conjunction with data on raptor use and mortality at existing wind farms yields an estimated mortality rate of 0.06/MW/year, or six raptor mortalities per year at Hatchet Mountain for a 100-MW project. The 90% confidence interval around this estimate is 0–17 raptor fatalities per year for the project. Based on species composition of the most common raptor fatalities at other western wind farms and species composition and timing of raptors observed at Hatchet Mountain, the majority of fatalities of diurnal raptors would consist of red-tailed hawks and American kestrels, both of which are locally and regionally common species.

Of 24 wind farm sites with comparable data, overall avian use of the Hatchet Mountain site is lower than 20 of these sites and higher than four sites. Estimated songbird mortality at Hatchet Mountain is lower than the national average of 2.3 birds/turbine/year or 3.1 birds/MW/year. Based on conclusions and estimates made from the information collected during the 1-year avian use study, operation of the proposed project could result in avian fatalities less than or equal to the national average for these facilities, with a slightly higher average for diurnal raptors.

However, the accuracy of these estimates are confounded by several factors. The proposed project will use 2.3–2.4 MW turbines, whereas the data from other wind farms used in the analyses are from wind farms using 1.8 MW turbines. Larger turbines such as those proposed for use at Hatchet Mountain are characterized by larger and higher rotor-swept areas but lower rotation speeds (in revolutions per minute). Whether these turbine characteristics would result in lower, higher, or comparable mortality rates than traditional turbines is unknown. Due to the uncertainty associated with these estimates and the potential for unexpectedly high mortality rates, this impact is considered significant and unavoidable. Implementation of Mitigation Measure BIO-6 would reduce this impact to the maximum extent practicable.

### **Impact BIO-12: Potential direct mortality of special-status and common bat species (less than significant)**

High levels of bat mortality resulting from collision with wind turbines have been documented at some wind farms, particularly in the eastern United States (Erickson et al. 2002). Ten species of bats occur or could potentially occur in the project area (Appendix C-1), only one of which is considered a special-status species (pallid bat is a California species of special concern). Operation of the proposed project could result in the direct mortality of special-status and common bat species through collision with rotating turbine blades. To assess the magnitude of this potential impact, bat use of the project area was sampled at a single location for 78 nights between May and October 2006 using Anabat detectors (Appendix C-1).

The mean number of bat passes per detector per night was compared to existing data at five wind farms where both bat activity and mortality levels have been measured. The level of bat activity documented at the Hatchet Mountain site is much lower than at three eastern and midwestern wind farm sites, all of which had relatively high levels of bat mortality; but it is higher than at two western wind farm sites, both of which had relatively low levels of bat mortality. The data collected on site do not indicate that substantial numbers of bats migrate through the project area, although some bat mortality is likely to occur. Therefore, this impact is considered less than significant. No mitigation is required.

**Impact BIO-13: Potential interference with avian and bat migration corridors (less than significant)**

Significant levels of avian and bat mortality are not likely to occur unless the project area comprises a substantial portion of an established migration corridor. Avian use of Hatchet Mountain was relatively uniform, and no obvious flyways or concentration areas were observed. The majority of large birds flew perpendicular to and across the prominent ridgeline, rather than parallel with the ridge, suggesting that the ridge is not an important migratory route for diurnal migrants<sup>1</sup>. The data collected during the 1-year avian use study suggest that the project area is not within a major migratory pathway for diurnal migrants. The information available indicates that interference with migration corridors is unlikely; this impact is considered less than significant. No mitigation is required.

**Impact BIO-14: Potential displacement of special-status and common wildlife species from the project area (less than significant)**

The presence of wind turbines and associated facilities and the movement, noise, and increased levels of human activity around turbines could result in the permanent displacement of some wildlife species from the project area. Density of nesting raptors at one wind farm site was significantly lower than in the surrounding area, despite the presence of similar habitats. However, several examples of raptors successfully nesting in or near wind farms have also been documented (Appendix C-1). Because the density of nesting raptors in the project area is very low, no significant displacement of nesting raptors is expected to occur. Reduction in the numbers of nesting songbirds and waterfowl at wind farms has similarly been documented; this may also occur in the project area. Displacement of terrestrial species (e.g., bear, deer, elk, and other mammals) associated with the presence of wind energy facilities has not been well studied. Noise, light, and increased human presence could potentially result in some displacement of these species; however, because the project area consists primarily of locally and regionally common habitats that are actively managed and recently disturbed, this impact is considered less than significant. No mitigation is required.

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<sup>1</sup> Raptors and other birds often use updrafts associated with ridgelines to increase the efficiency of gliding flight (as opposed to flapping flight). Accordingly, birds using such ridgelines as migration corridors typically travel parallel to the ridgeline, not across it.