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3.4 Biological Resources

This section identifies and evaluates issues related to vegetation, wildlife and other Biological Resources in the context of the Project and alternatives. It includes information about the physical and regulatory setting and identifies the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. The information and analysis presented in this section are based in part on the following site-specific or species-specific technical reports. A copy of each is provided in **Appendix C**, *Biological Resources*.

1. Appendix C1: Western EcoSystems Technology (WEST), Inc., 2017. Site Characterization Study Report, Fountain Wind Project, Shasta County, California. January.
2. Appendix C2: Stantec, 2019. Fountain Wind Energy Project Aquatic Resources Survey Report. December 23.
3. Appendix C3:
    a. WEST Inc., 2018. Rare Plant Surveys and Natural Vegetation Community Mapping. Fountain Wind Project, Shasta County, CA. October 17.
    b. WEST, Inc., 2019. Rare Plant Surveys and Natural Vegetation Community Mapping. Fountain Wind Project, Shasta County, California. December 20.
4. Appendix C4:
    a. WEST, Inc., 2018. Year 1 Avian Use Study Report and Risk Assessment for the Fountain Wind Project, Shasta County, California. November 5.
    b. WEST, Inc., 2019. Results of the Year 2 Avian Use Study at the Fountain Wind Project – Addendum to the Year 1 Avian Use Study Report and Risk Assessment. Memorandum to ConnectGen Operating LLC. September 5.
5. Appendix C5: WEST, Inc., 2018. Great Gray Owl Habitat Assessment, Fountain Wind Project, CA. Memorandum to Pacific Wind Development. October 24.
6. Appendix C6: WEST, Inc., 2018. Bat Acoustic Survey Report, Fountain Wind Project, Shasta County, CA. October 22.
7. Appendix C7: WEST, Inc., 2018. 2017 Raptor Nest Survey Report for the Fountain Wind Project, California. Memorandum to Pacific Wind Development. September 19.
8. Appendix C8: WEST, Inc., 2018. 2018 Northern Goshawk Nest Survey Results, Fountain Wind Project, CA. Memorandum to Pacific Wind Development. October 15.
9. Appendix C9: WEST, Inc., 2018. 2018 Eagle Nest Status Survey Report, Fountain Wind Project, California. Memorandum to Pacific Wind Development. September 19.
10. Appendix C10: WEST, Inc., 2018. Response to Informal Consultation Request for Use Permit 16-007, Fountain Wind Project, Shasta County. November 6.
11. Appendix C11: WEST, Inc., 2020. California Spotted Owl Risk Assessment for the Proposed Fountain Wind Project, Shasta County, California. February 24.

12. Appendix C12: WEST, Inc., 2018. 2018 Willow Flycatcher Survey Results, Fountain Wind Project, CA. Memorandum to Pacific Wind Development. October 17.
13. Appendix C13:
    a. WEST, Inc. 2019. 2018/2019 Foothill Yellow-legged Frog Assessment for the Fountain Wind Project, Shasta County, California. December 20.
    b. WEST, Inc., 2018. 2018 Foothill yellow-legged frog and Cascades frog habitat assessments and surveys, Fountain Wind Project, CA. Memorandum to Pacific Wind Development. October 22.

The County independently reviewed these and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance on (in combination with other materials included in the formal record) in the preparation of this Draft EIR.

The California Department of Fish and Wildlife (CDFW), consistent with its role as a Responsible Agency, provided initial input for the County's environmental review process shortly after the CUP application was filed for the Project (CDFW, 2018). The Central Valley Regional Water Quality Control Board (RWQCB) also provided input consistent with its role as a Responsible Agency (RWQCB, 2018). Later, in response to the issuance of notice of intention to prepare this Draft EIR, the County received scoping input about all manner of flora and fauna from a variety of sources. All scoping input received, including regarding Biological Resources, is provided in Section 4.1 of the Scoping Report (Environmental Science Associates, 2019).

3.4.1 Setting

3.4.1.1 Study Area

For the purpose of this analysis of impacts on Biological Resources, the study area consists of the 4,464-acre Project Site. The Project Site is within an approximately 29,500-acre leasehold area (Leasehold Area) in Shasta County in northern California west of the community of Burney and northeast of the larger community of Redding (Figure 2-1, *Project Location*). The east-west running California State Route 299 (SR 299) bisects the northern portion of the Project Site. The Hatchet Ridge Wind Project, which has been in operation since 2010, is located approximately 1 mile to the east. Lassen National Forest is located to the southeast of the Project and Shasta-Trinity National Forest is located to the north and east.

3.4.1.2 Environmental Setting

Regional Ecology

The Project Site is located within the Cascades Ecological Region (ecoregion; Griffith et al. 2016), which is a Level III ecoregion primarily covering parts of Oregon and Washington but also including a discontinuous land area near Mt. Shasta in California. This ecoregion is characterized by underlying volcanic rock strata and a physiography defined by recurring periods of glaciation. With high plateaus and valleys that trend east, this ecoregion includes steep ridges as well as both

active and dormant volcanoes, and is marked by a generally mesic, temperate climate which supports productive coniferous forests and at higher elevations, subalpine meadows.

Leasehold Area Ecology

Topography within the study area is characterized by gently rolling hills that transition to relatively steep, low mountains, with elevations ranging from approximately 2,156 feet; 657 meters in the southwestern corner of the Leasehold Area to 6,814 feet (2,077 meters) near Snow Mountain in the southeast corner. Significant waterways within the Leasehold Area include the north and south forks of Montgomery Creek. The dominant vegetation community is Sierran mixed conifer forest; however, the structure and species composition of this community varies greatly with slope, aspect, elevation, and disturbance (e.g., fire and forest management). Dominant overstory species include a combination of white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), incense cedar (*Calocedrus decurrens*), ponderosa pine (*Pinus ponderosa*), sugar pine (*P. lambertiana*), and California black oak (*Quercus kelloggii*).

The Leasehold Area drains to the north and west into the Pit River and Sacramento River watersheds. A number of permanent and intermittent streams run throughout the Leasehold Area, flowing primarily to the west and northwest. The primary drainages in the north are Hatchet Creek and Montgomery Creek (north and south forks), while Cedar Creek and Little Cow Creek drain the southern portions of the Leasehold Area. Riparian vegetation along these creeks includes various willow species (*Salix* spp.), thinleaf alder (*Alnus incana* ssp. *tenuifolia*), several species of maple (*Acer* spp.), mountain dogwood (*Cornus nuttallii*), and California hazel (*Corylus cornata* var. *californica*). Soils within the Leasehold Area are primarily composed of the Cohasset, Windy, McCarthy and Lyonsville-Jiggs series and range from stony to clay loams that have formed in residuum weathered from volcanic rock (USDA Natural Resources Conservation Service [NRCS], 2017).

The Leasehold Area consists exclusively of private property operated as managed forest timberlands. In August 1992, the Fountain Fire burned approximately 64,000 acres (100 square miles) in and around the Leasehold Area, including a portion of the Project Site. Post-fire management included salvage logging, site preparation, and planting in the year following the fire. Within 5 years of the fire, approximately 17 million seedlings were planted in areas previously supporting timber. Species planted included ponderosa pine, Douglas-fir, and white fir at 10-foot (3.0-meter) spacing, with incense cedar planted along stream buffers. To reduce competition for (tree) seedling establishment, growth regulator herbicides were applied in many areas that had been colonized by manzanita (*Arctostaphylos* spp.) and California-lilac (*Ceanothus* spp.; Appendix C1).

Vegetation Communities

In spring and summer of 2018 and 2019 Western Ecosystems Technology, Inc. (WEST) botanists conducted vegetation mapping and rare plant surveys within the Project Site, covering 4,373.1 acres (Appendix C3a, Appendix C3b). Eight vegetation communities were categorized to the alliance level, consistent with *A Manual of California Vegetation, 2nd Edition* (MCV) (Sawyer et al., 2009) and updated in the current online edition (CNPS, 2019). Eight natural vegetation

communities present within the Project Site are summarized in **Table 3.4-1**, *Natural Vegetation Communities Present and Area within Project Site and Alternatives* and shown on **Figure 3.4-1**.

TABLE 3.4-1
NATURAL VEGETATION COMMUNITIES PRESENT AND AREA WITHIN PROJECT SITE AND ALTERNATIVES

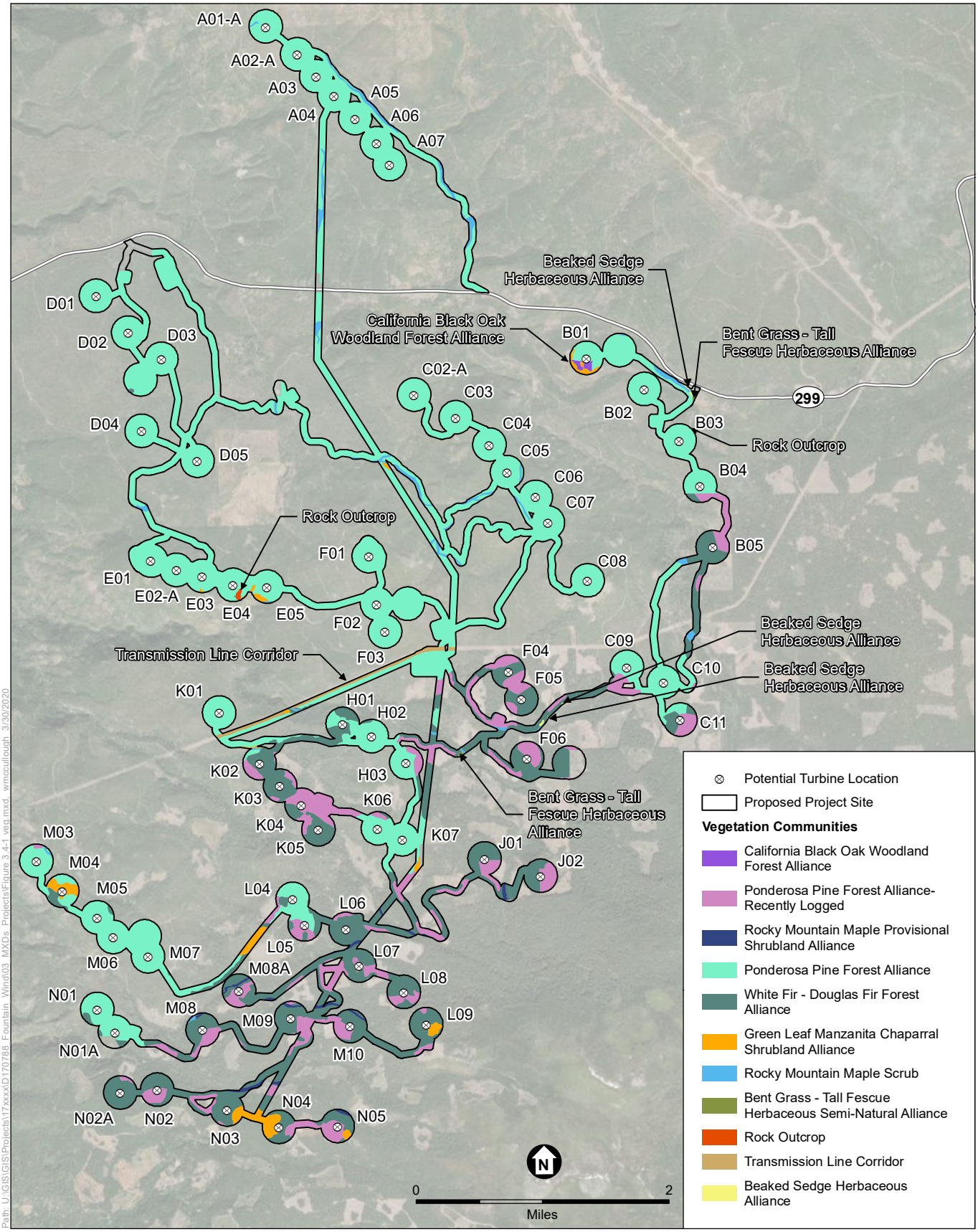
Vegetation Communities (*Scientific Name*)	State and Global Rarity Rank[1]	Project Site[2]	Alternative 1	Alternative 2
Upland				
Ponderosa Pine Forest (*Pinus ponderosa* Forest Alliance [FA])	G5/S4	2,668.8	2325.9	2568.2
Ponderosa Pine Forest – Recently Logged (*Pinus ponderosa* FA)	S4	485.4	485.4	475.4
White Fir - Douglas Fir Mixed Forest (*Abies concolor - Pseudotsuga menziesii* FA)	S4	1,028.5	1028.5	1016.1
California Black Oak Woodland (*Quercus kelloggii* FA)	S4	5.5	5.5	0.0
Green Leaf Manzanita Chaparral (*Arctostaphylos patula* Shrubland Alliance)	S4	76.2	76.2	69.2
Bent Grass - Tall Fescue Meadow (*Agrostis* [*gigantea, stolonifera*] - *Festuca arundinacea* Herbaceous Semi-Natural Alliance)	SNA	1.4	1.4	1.4
Riparian				
Rocky Mountain Maple Riparian Scrub (*Acer glabrum* Provisional Shrubland Alliance)[2]	S3?	107.2	76.0	105.6
Wetland				
Beaked Sedge Wet Meadow (*Carex utriculata* Herbaceous Alliance)	S4	3.4	3.4	3.4
Total		**4,373.1**	**4,002.3**	**4,239.3**

NOTES:

1 State Rank (CDFW 2019):
S3? Apparently Vulnerable – A question mark (?) denotes an inexact numeric rank because we know we have insufficient samples over the full expected range of the type, but existing information points to this rank (Sawyer et al. 2009).
S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
SNA – Semi-Natural Alliance, not ranked because dominant species not all native.

2 The survey area (4,373.1 acres) was slightly different from the Project Site (4,464 acres) as surveys were performed prior to minor changes to the project layout; therefore, approximately 800 acres of the Project Site were not included in the 2019 Rare Plants Survey Area. If these areas were included in the final project footprint, pre-construction surveys will be performed (C-3; WEST 2019b).

SOURCE: WEST, 2019.



SOURCE: WEST Rare Plant & Natural Vegetation Communities Report; 2018/2019

Fountain Wind Project

Figure 3.4-1
Natural Vegetation Communities Found within the Project Site

Descriptions of the eight natural vegetation communities are presented below with the Forest Alliance (FA) name first followed by the more general (habitat description).

Ponderosa Pine Forest FA (Mixed Conifer Forest Burned)

The dominant vegetation community in the Project Site, the Ponderosa Pine FA, burned in the 1992 Fountain Fire. The area was subsequently replanted with conifer seedlings of ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*) and white fir (*Abies concolor*). Ponderosa pine is the dominant overstory species in the mixed conifer forest of even-aged trees (approximately 25 years old). Understory shrub and herbaceous vegetation is variable in species composition and cover, with mahala mat (*Ceanothus prostratus*), green leaf manzanita (*Arctostaphylos patula*), bracken fern (*Pteridium aquilinum*), and native squirrel tail grass (*Elymus elymoides*) most common.

Ponderosa Pine Forest FA – Recently Logged (Logged/Recently Logged)

This Ponderosa Pine FA has been logged within the past 10 to 15 years, through commercial timber harvest, with planted conifer saplings and seedlings, and small, remnant patches of mature trees. Ponderosa pine, and white fir less commonly, are the planted seedling species (Appendix C3). Understory in this FA is sparse, but dominated by invasive herbaceous species where present, including mullein (*Verbascum thapsus*), bull thistle (*Cirsium vulgare*), common St. Johnswort (*Hypericum perforatum*), and houndstongue (*Cynoglossum officinale*).

White Fir – Douglas Fir Forest FA (Mixed Conifer Forest – Burned)

The White Fir – Douglas Fir FA was found in a mosaic with the logged/recently logged areas and those areas not burned by the Fountain Fire (Appendix C3). The forest contains mature, even-aged, mixed conifer species, including white fir, Douglas fir, sugar pine (*Pinus lambertiana*), ponderosa pine, incense cedar (*Calocedrus decurrens*) and red fir (*Abies magnifica*). Forest openings often contain California black oak (*Quercus kelloggii*) and sparse understory due to a closed tree canopy.

California Black Oak Woodland FA (Black Oak Woodland)

The California black oak woodland was found in previously burned areas and lower elevations of the Project Site in a mosaic with patches of green leaf manzanita chaparral (Appendix C3). The deciduous California black oak trees have an open canopy and well-established understory of green leaf manzanita and grasses with Lemmon's needlegrass (*Stipa lemmonii*) most common.

Rocky Mountain Maple Provisional Shrubland Alliance (SA) (Mixed Montane Riparian Scrub/Mixed Montane Riparian Forest)

The Rocky Mountain Maple Provisional SA is a riparian vegetation community, located along ephemeral, intermittent and perennial streams and drainages throughout the Project Site. Rocky Mountain maple is the dominant species, with gray alder (*Alnus incana*) often codominant, particularly in the southern portion of the Project Site and is Mixed Montane Riparian Forest habitat. Understory vegetation is variable in the Project Site, with the southern area generally wetter, with blackfruit dogwood (*Cornus sessilis*), twinleaf honeysuckle (*Lonicera involucrata*), vine maple (*Acer circinatum*), and adjacent conifers providing canopy cover. In the northern, more xeric, riparian areas, riparian understory is dominated by Scouler's willow (*Salix*

scouleriana) along streambanks, with green leaf manzanita and ceanothus (*Ceanothus* spp.) in drier areas. These drier riparian areas in the north of the Project Site are considered Mixed Montane Riparian Scrub habitat.

Green Leaf Manzanita Chaparral SA (Mixed Montane Chaparral)

Green Manzanita Chaparral SA was found interspersed with most other vegetation communities in the Project Site, including rocky ridges and slopes, forest openings, recently burned and recently logged areas, as well as a transmission corridor where vegetation is managed (Appendix C3). The chaparral habitat contains dense green leaf manzanita with bush chinquapin (*Chrysolepis sempervirens*), mountain whitethorn (*Ceanothus cordulatus*), and deerbrush (*Ceanothus integerrimus*) as co-dominants, with little herbaceous understory.

Beaked Sedge Meadows Herbaceous Alliance (HA) (Wet Montane Meadow)

Beaked Sedge Meadows HA were mapped within seasonally or permanently saturated emergent wetland areas adjacent to streams and ponds in higher elevation areas of the Project Site. Composition of these wet meadows is dominated by a high diversity of grass, sedge, rush and forb species, which include beaked sedge (*Carex utriculata*), bluejoint reedgrass (*Calamagrostis canadensis*), marsh foxtail (*Alopecurus geniculatus*), Nebraska sedge (*Carex nebrascensis*), brown sedge (*Carex subfusca*), sword leaved rush *(Juncus ensifolius*), and others. Scattered shrubs occur in some of these wet meadows.

Bentgrass – Tall Fescue Herbaceous Semi-Natural Alliance (Montane Meadow)

The Bentgrass – Tall Fescue Herbaceous Semi-Natural Alliance meadows are found in forest openings and sometimes adjacent to beaked sedge wet meadows. As a semi-natural alliance, these montane meadows are non-native species dominant. Dominant plants include non-natives creeping bentgrass (*Agrostis stolonifera*), tall fescue (*Festuca arundinacea*), and the native species common yarrow (*Achillea millefolium*), and goldenrod (*Solidago* sp.).

Sensitive Vegetation Communities

CDFW designates vegetation communities as sensitive that have a State Rank of S1 to S3. The Rocky Mountain Maple (*Acer glabrum*) Provisional Shrubland Alliance has a State Rank of S3? (Table 3.4-1). A State Rank with a question mark (?), denotes an inexact rank due to insufficient data samples (CDFW, 2020). Within the Project Site, the Rocky Mountain Maple Provisional Shrubland Alliance covers 107.2 acres or 2.4 percent of the Project Site (Table 3.4-1), and is found in riparian areas along ephemeral, intermittent and perennial stream drainages (Appendix C3). Riparian communities, including the Rocky Mountain Maple Provisional Shrubland Alliance, are also considered sensitive, regardless of State Rank, under CEQA because of their rarity and biological importance.

Aquatic Resources

Stantec Consulting Services Inc. (Stantec) conducted a delineation of potential WOTUS, including wetlands and riparian areas (Appendix C2; Stantec, 2019) This survey was completed at the Project Site in 2019 by Stantec biologists. The survey focused on classifying aquatic habitats following *A*

Guide to Wildlife Habitats of California, an older and more general classification system (Mayer and Laudenslayer, 1988) during the aquatic resources delineation (Appendix C2). The WOTUS survey area encompassed a total of 6,118.06 acres. The WOTUS survey covered a 700-foot radius centered on proposed turbine locations, a 200- to 400-foot corridor centered on project roads, a 300-foot corridor centered on the electrical collection line, a 200-foot buffer around proposed project facilities, and a 100-foot buffer around proposed construction staging areas.

The survey area for the WOTUS survey includes numerous named and unnamed drainages with some evidence of surface waters. These drainages include tributary basins of the Whitmore and Pit Rivers, which contain but are not limited to: Richardson Creek, Little Hatchet Creek, Hatchet Creek, Carberry Creek, Goat Creek, North Fork Montgomery Creek, Indian Spring, South Fork Montgomery Creek, Cedar Creek, North Fork Little Cow Creek, Little Cow Creek, and Mill Creek. Hydrology for these features is provided by sheet flow, snow melt, seeps, springs, and groundwater.

Stantec personnel identified 206 wetlands and classified them as one of six "wetland types." A total of 52 acres of potential waters of the United States were mapped within the WOTUS survey area and include fresh emergent wetland (1.0 acre), riparian wetland (26.8 acres), seasonal wetland (0.1 acre), vegetated ditch (0.2 acre), wetland meadow (8.7 acres), wetland seep/spring (1.8 acres), ephemeral stream (0.6 acre), intermittent stream (2.9 acres), non-vegetated ditch (0.2 acres), perennial stream (9.5 acres), and pond (0.2 acre) (Appendix C2). The Project Site boundary was overlain onto the WOTUS survey results to identify the wetlands occurring within the Project Site. Results are presented in **Table 3.4-2**, *Summary of Potentially Jurisdictional Aquatic Resources occurring within the Project Site*). These acreages and linear feet represent all the aquatic resources in the Project Site (Appendix C2).

Non-native Invasive/Noxious Weeds

Surveys for non-native invasive plant species were conducted concurrently with rare plant surveys conducted in 2018 and 2019 (Appendices C3, C4). Roadsides within the Project Site and a subsample of recently logged areas were the focus of the invasive plant surveys, with road segments mapped where invasive plant species were found and the abundance of each invasive species noted. All invasive plant species designated by the California Invasive Plant Council (CAL-IPC) as High, Moderate or Limited were mapped.

The most common invasive, non-native plants observed on the Project Site were common mullein (*Verbascum thapsus*), bull thistle (*Cirsium vulgare*), common St. Johnswort (*Hypericum perforatum*), and houndstongue (*Cynoglossum officinale*). These four invasive plant species were common throughout roadsides, logged and recently logged lands and are abundant in the managed forest lands surrounding the Project Site. Four invasive plant species observed in the Project Site that ranked "high" by CAL-IPC, include Himalayan blackberry (*Rubus armeniacus*), yellow starthistle (*Centaurea solstitialis*), medusahead rye (*Elymus caput-medusae*) and cheatgrass (*Bromus tectorum*). A total of fifteen species of noxious weeds were documented in the Project Site (Appendix C3a, C3b). As noted above, the Project Site and surrounding area are operated as managed forest timberlands, which creates regular disturbances and traffic from timber harvest, resulting in widespread establishment of invasive plants. Active management of some invasive species is performed on logged sites to reduce competition for conifer seedling establishment.

TABLE 3.4-2
SUMMARY OF POTENTIALLY JURISDICTIONAL AQUATIC RESOURCES OCCURRING WITHIN THE PROJECT SITE

Feature Type	Acres	Linear Feet	Cowardin Code[1]
Wetlands			
Fresh Emergent Wetland	0.08	211[2]	PEM
Riparian Wetland	22.10	N/A	PSS, PFO
Seasonal Wetland	0.11	N/A	PEM
Vegetated Ditch	0.01	142	PEM
Wetland Meadow	3.89	N/A	PEM, PSS, PFO
Wetland Seep/Spring	1.16	N/A	PEM, PSS
Subtotal – Wetlands	***27.35***	***353***	-
Other Waters			
Ephemeral Stream	0.40	6,946	R4SB
Intermittent Stream	2.28	6,008	R4SB
Non-vegetated Ditch	0.17	3,535	R4
Perennial Stream	7.72	26,550	R3UB
Pond	0.04	N/A	PUB
Subtotal – Other Waters	***10.61***	***43,039***	-
Total Jurisdictional Area	**37.96**	**43,392**	-

NOTES:
1 PEM = palustrine emergent, PSS = palustrine scrub-shrub, PFO = palustrine forested, R4SB = riverine intermittent streambed, R4 = Riverine intermittent, R3UB = riverine upper perennial unconsolidated bottom, PUB = palustrine unconsolidated bottom. Codes based on Cowardin et al. 1979.
2 Linear distance for stream segments mapped as fresh emergent wetlands.

SOURCE: Stantec, 2019.

Wildlife

The Aquatic Resource Survey (Appendix C2) mapped 109 perennial stream segments within the study area, a total of approximately 7.7 acres and 26,500 linear feet within the Project Site. The widths of these perennial streams vary between 2 and 90 feet (Appendix C2). In addition to native fishes such as the Sacramento pikeminnow (*Ptychocheilus grandis*) and the special-status Pit roach, the streams may contain invasive species such as green sunfish (*Lepomis cyanellus*) and spotted bass (*Micropterus punctulatus*). **Table 3.4-3** identifies special-status species from the region and their potential to occur within the Project Site.

Amphibians may be present in wetland and stream areas of the Project Site, and in moist leaf litter of the forested areas. In addition to amphibians listed in Table 3.4-3, other common amphibians that may be present include ensatina (*Ensatina eschscholtzii*), rough-skinned newt (*Taricha granulose*), western toad (*Anaxyrus boreas*), Pacific tree frog (*Pseudacris regilla*), and bullfrog (*Lithobates catesbeianus*).

TABLE 3.4-3
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Species	Status	Habitat	Potential for Occurrence in the Project Site
Invertebrates			
Conservancy fairy shrimp *Branchinecta conservatio*	FE/--	Turbid, slightly alkaline, large, deep, vernal pools and winter lakes in California grassland areas	**None**. Suitable vernal pool habitat absent within Project Site
Shasta crayfish *Pacifastacus fortis*	FE/SE	Cool, spring-fed headwaters with clean, volcanic cobbles, over sand and gravel substrates	**Low.** Known only from the Fall River and Hat Creek subdrainages of the Pit River system
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/--	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*)	**Low.** Known only to occur in locations west and south of Project Site in California's Central Valley
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Small, clear-water depression pools and grassed swales; endemic to grasslands of the Central Valley, central coast mountains, and south coast mountains	**None.** Known only from isolated locations in lower elevations of Shasta County; suitable vernal pool habitat absent from Project Site
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/--	Vernal pools and swales in the Sacramento Valley containing clear to highly turbid water	**None.** Known only from isolated locations in lower elevations of Shasta County; suitable vernal pool habitat absent from Project Site
Fish			
Bull trout *Salvelinus confluentus*	FT/SE	Deep pools in cold rivers and large tributary streams, often in moderate to fast currents; also large coldwater lakes and reservoirs; historically found only in the McCloud River system	**None**. No suitable stream habitat present within Project Site; believed to be extinct in California
Chinook salmon *Oncorhynchus tshawytscha*	FT/ST (spring run) FE/SE (winter run)	Large freshwater streams and rivers and estuaries for spawning; require deep, cold, flowing water	**None**. No suitable stream habitat present within Project Site
Pit roach *Lavinia symmetricus mitrulus*	--/SSC	Inhabit deep pools and areas of low flow, moderate gradients, warm temperatures, and mats of vegetation.	**Low.** Limited suitable habitat present on the Project Site; one record of this species 2.7 miles north on Pit River.
Steelhead (Central Valley DPS) *Oncorhynchus mykiss irideus*	FT/--	Sacramento and San Joaquin rivers and their tributaries	**None**. Range lies to the west and south of the Project Site; no suitable stream habitat present within Project Site
Amphibians			
Southern long-toed salamander *Ambystoma macrodactylum sigillatum*	--/SSC	Found in moderate to high elevation (2,300-9,800 feet) meadows and lakes in Sierra Nevada, Klamath and Cascade Mountains.	**Moderate.** Suitable montane meadow habitat is present in burned and logged areas of the Project Site.
Coastal tailed frog *Ascaphus truei*	–/SSC	Cool perennial streams in conifer-dominated habitat including redwood, Douglas-fir, and ponderosa pine habitats in montane areas.	**High.** Known occurrences in the Project Site and suitable habitat present in the southern portion of the site.
Shasta salamander *Hydromantes shastae*	–/ST	Mixed conifer habitat near 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.	**Low.** Recorded 5 miles west of Project Site, but outside of species' known distribution and elevational range.

TABLE 3.4-3 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Species	Status	Habitat	Potential for Occurrence in the Project Site
Amphibians (cont.)			
California red-legged frog *Rana draytonii*	FT/SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation	**Low**. Project Site on edge of this species' range; limited suitable habitat present within Project Site.
Foothill yellow-legged frog *Rana boylii*	–/SC, SSC	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.	**Low.** Project Site on edge of this species' range; surveys, including eDNA sampling, did not identify occurrence of species on site.
Cascades frog *Rana cascadae*	–/CE, SSC	Ephemeral and permanent ponds and streams; oviposition habitat is open, shallow water in unshaded areas; overwinters underwater or in saturated ground.	**Low.** Known occurrence 1.2 miles southeast of the Leasehold Area; minimal and marginally suitable habitat in southern portion of Leasehold Area but no suitable habitat within the Project Site.
Reptiles			
Western pond turtle *Emys marmorata*	--/SSC	Aquatic species requiring ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation.	**Moderate.** Suitable aquatic habitat limited within the Project Site but may be present within pools of larger creeks or ponds; Species has been recorded near southwest corner of Project Site.
Birds			
Northern spotted owl *Strix occidentalis caurina*	FT/SSC	Mature forest, multi layered mixed conifers.	**None**. In Shasta County, northern subspecies occurs only north of the Pit River, which is outside of the Project Site.
California spotted owl	--/SSC	Nests in dense, old-growth, multi-layered mixed-conifer, redwood, and Douglas fir forests.	**Moderate.** Approximately 995 acres of suitable habitat is present in the southern portion of the Leasehold Area, outside the Project Site (Appendix C11). Historical records show occurrence onsite but suitable habitat no longer present within the Project Site. May nest in adjacent suitable habitat and forage within the Project Site.
Yellow-billed cuckoo *Coccyzus americanus*	FT/SE	Riparian forest along the broad, lower flood-bottoms of larger river systems; nests in riparian jungles of willow often mixed with cottonwoods.	**Low.** Rare breeder throughout California. Not known to occur near Project Site; suitable riparian habitat generally not present within the Project Site.
American peregrine falcon *Falco peregrinus anatum*	–/SE, FP	Permanent resident along North and South Coast ranges; Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations.	**Low.** May fly through Project Site during migration or movement between foraging areas.
Bald eagle *Haliaeetus leucocephalus*	–/SE, FP	Primarily nests and roosts in coniferous forests close to a lake, reservoir, stream, or bay.	**High.** Observed during surveys (Appendix C9); nesting habitat located on and near Project Site.

TABLE 3.4-3 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Species	Status	Habitat	Potential for Occurrence in the Project Site
Birds (cont.)			
California horned lark *Eremophila alpestris actia*	–/SSC	Resident in a variety of open habitats, usually lacking large trees and shrubs; grasslands and deserts to dwarf shrub habitats above tree line.	**Moderate.** Not observed during surveys; suitable habitat is present in Project Site.
Cooper's hawk *Accipiter cooperii*	–/SSC	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 Site; observed during Project surveys (Appendix C4).
Golden eagle *Aquila chrysaetos*	–/SSC, FP	Nest on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful prey.	**High.** Observed during surveys (Appendix C9). Likely to pass through Project Site during migration.
Ferruginous hawk *Buteo regalis*	–/SSC	Open terrain in plains and foothills where ground squirrels and other prey are available.	**High.** Likely to pass through Project Site during migration.
Northern goshawk *Accipiter gentilis*	–/SSC	Nests and roosts in older stands of red fir, Jeffrey pine, ponderosa pine, lodgepole pine, Douglas-fir, and mixed conifer forests.	**Moderate.** Suitable foraging habitat in Project Site with limited nesting habitat. Hawks may fly through the site during movement between foraging areas.
Sharp-shinned hawk *Accipiter striatus*	–/SSC	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats.	**High.** Observed during Project surveys (Appendix C4); may fly through Project Site during migration or between foraging areas.
Vaux's swift *Chaetura vauxi*	–/SSC	Summer resident of northern California and common migrant throughout state, prefers redwood and Douglas fir forests, occasionally other conifers, where it nests and roosts in large hollow trees and snags, and prefers foraging over rivers and lakes.	**High**. Observed during Project surveys (Appendix C4); may fly through Project Site during migration or nest nearby.
Willow flycatcher *Empidonax traillii*	–/SE	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 Site; not observed during Project surveys (Appendix C12); may fly through Project Site during migration; potential nesting habitat in Project vicinity.
Yellow warbler *Dendroica petechia brewsteri* (nesting)	–/SSC	Uncommon summer resident and common migrant throughout much of California; nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks or conifers, with brushy understory.	**High.** Observed during Project surveys (Appendix C4); limited suitable nesting habitat in Project Site.
Greater sandhill crane *Grus canadensis tabida*	–/T, FP	Summers in open terrain near shallow lakes or freshwater marshes; winters in plains and valleys near bodies of fresh water.	**Moderate.** Known to pass through Project Site during migration but does not nest there.
Olive-sided flycatcher *Contopus cooperi*	-/BCC, SSC	Breeds in northern California, montane and coniferous forests, usually found in forest openings or edges and nests in prominent trees and snags.	**High.** Observed during Project surveys (Appendix C4); suitable forest edge nesting habitat is found in Project Site.

TABLE 3.4-3 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Species	Status	Habitat	Potential for Occurrence in the Project Site
Birds (cont.)			
Cassin's finch *Haemorhous cassinii*	-/BCC	Open, coniferous forests of mountains, including ponderosa pine and Douglas fir, tend to be restricted to higher elevations in California.	**High.** Observed during Project surveys (Appendix C4); limited suitable nesting habitat found in Project Site.
Lewis' Woodpecker *Melanerpes lewis*	-/BCC	Open forests, riparian forests, burned pine forest, Breeds and winters in northern California.	**High.** Observed during Project surveys (Appendix C4); suitable open forest and burned forest habitat is found in Project Site.
Mammals			
Gray wolf *Canis lupus*	FE/SE	Habitat generalists, historically occupying diverse habitats including tundra, forests, grasslands, and deserts.	**Low.** Gray wolf has been documented in Shasta County (KRCRTV, 2020); natural recolonization of northern California is occurring from Oregon; suitable habitat is present within the Project Site.
Sierra Nevada mountain beaver *Aplodontia rufa californica*	--/SSC	Occurs in open brushy stages of most forest types as well as dense riparian-deciduous habitat. Requires friable soil for burrowing.	**Low.** Nearest detection more than 10 miles away; limited suitable habitat present on Project Site.
California wolverine *Gulo gulo*	--/ST	Higher elevation mixed conifer forests in northern Sierra Nevada; dens in dense forest and hunts in open areas adjacent to mixed conifer forests. Sensitive to disturbance.	**Low.** Occurrences east and northeast of the Project Site from approximately 50 years ago. Project Site contains suitable forest habitat but is frequently disturbed.
Oregon snowshoe hare *Lepus americanus klamathensis*	--/SSC	Found in vicinity of Mt. Shasta, Trinity and Warner mountains. Prefers riparian areas or other habitat with dense understory.	**Moderate.** The Project Site contains suitable habitat for this species.
Fisher *Pekania [=Martes] pennanti*	FC/SSC	Late successional coniferous forests and montane riparian habitats.	**High.** Known occurrences in vicinity; suitable habitat is present on Project Site.
American badger *Taxidea taxus*	–/SSC	Most abundant in drier, open stages of most shrub, forest, and herbaceous habitats with friable soils.	**Low.** Suitable habitat in Project Site is disturbed; not observed in Project surveys (Appendix C1).
Sierra Nevada red fox *Vulpes vulpes necator*	FC/ST	Historically ranged from southern Cascades to Sierra Nevada above 5,000 feet in subalpine forests of lodgepole pine and red fir. Chaparral and wet meadows may also be used.	**Low.** Project Site outside of known occupied range and nearest detection more than 10 miles away.
Pallid bat *Antrozous pallidus*	–/SSC	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.** Suitable tree habitat present in Project Site; detections in acoustic surveys could not be confirmed (Appendix C6).
Townsend's big-eared bat *Corynorhinus townsendii*	–/SSC	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances.	**Low.** Minimal and marginal roosting and foraging habitat; uncommon colonial rooster; detections in acoustic surveys could not be confirmed (Appendix C6).

TABLE 3.4-3 (CONTINUED)
SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Species	Status	Habitat	Potential for Occurrence in the Project Site
Mammals (cont.)			
Spotted bat *Euderma maculatum*	--/SSC	Roosts in cracks, crevices and caves usually high above ground in rock cliffs and canyons or high elevation coniferous forests; forages in meadows, riparian areas, canyons and forests.	**Moderate.** Uncommon solitary bat; minimal and marginal roosting habitat on Project Site, but suitable foraging habitat; detected in acoustic surveys in low numbers (Appendix C6).
Western red bat *Lasiurus blossevillii*	--/SSC	Roosts in foliage in intact riparian habitat; day roosts in edge habitats near streams or fields; may feed around streetlights.	Moderate. Uncommon solitary bat; suitable habitat on Project Site; detections in acoustic surveys could not be confirmed (Appendix C6).
Western mastiff bat *Eumops perotis californicus*	–/SSC	Wide variety of habitats from desert scrub to montane conifer; roosts and breeds in deep, narrow rock crevices, may also use crevices in trees, buildings, and tunnels.	Moderate. Limited suitable roosting habitat present in Project Site; detected in acoustic surveys in low numbers (Appendix C6).

NOTES:
FE: federally-listed endangered species; FT: federally-listed threatened species; FC: federal candidate species for listing; SE: state-listed endangered species; ST: state-listed threatened species; SC: state-listed candidate species; FP: state fully protected species; SSC: state species of special concern. Species status from USFWS 2020a, CDFW 2020

Mixed conifer, scrub, and chaparral areas on the Project Site are suitable for reptiles such as 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*), sharp-tailed snake (*Contia tenuis*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), western terrestrial garter snake (*Thamnophis elegans*), and western rattlesnake (*Crotalus viridis*).

The Project Site is located within the Pacific Flyway and numerous birds likely migrate through the region. The Project Site contains stopover habitat for songbirds, waterfowl, and shorebirds in the form of conifer forest, scrub-shrub, and riparian and wetland habitats. The Project Site is characterized by rolling mountain terrain that generally would not be expected to concentrate or funnel raptors during migration; however, potential exists for migrating raptors to use updrafts and thermals created by topography and to be attracted to riparian areas within the study area. Red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and other common raptor species may be present as residents and/or migrants in the Project Site. In addition, turkey vulture (*Cathartes aura*), great horned owl (*Bubo virginianus*) and other species of owls may also occur in the Project Site. Nesting habitat for owls and forest-dependent raptor species is present throughout the Project Site and vicinity.

While not currently found in the Leasehold Area, California condors' reintroduction to northern coastal California could begin in 2020 (Appendix C1). If reintroduction efforts are successful, there is a possibility that condors could recolonize inland portions of northern California, including the Project Site, at some point in the future. However, the likelihood of this recolonization is currently unknown.

The Project Site has ample forest that could provide roosting habitat for bats and wetland and riparian habitat that may be important foraging habitat. Bat species including California myotis (*Myotis californicus*), small-footed myotis (*Myotis ciliolabrum*), little brown bat (*Myotis lucifugus*), silver-haired bat (*Lasionycteris noctivagans*), and hoary bat (Lasiurus cinereus) have the potential to occur within the Project Site (Appendix C6). The Project Site also has suitable habitat for mule deer (*Odocoileus hemionus*) fawning, and for numerous smaller mammal species. Mammals found in mixed conifer forest include mule deer, Roosevelt elk (*Cervus elaphus roosevelti*), black bear (*Ursus americanus*), and cougar (*Puma concolor*), as well as smaller carnivores such as American marten (*Martes americana*), spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), porcupine (*Erithrozion dorsatum*), and raccoon (*Procyon lotor*). Smaller mammals that may be present include western gray squirrel (*Sciurus griseus*), long-tailed weasel (*Mustela frenata*), dusky-footed woodrat (*Neotoma fuscipes*), western jumping mouse (*Zapus princes*), montane vole (*Microtus montanus*), western harvest mouse (*Reithrodontomys montanus*), and deer mouse (*Peromyscus maniculatus*).

Sensitive Biological Resources

Sensitive biological resources addressed in this analysis include special-status species and sensitive habitats that are afforded consideration or protection under CEQA, the California Fish and Game Code, the California Endangered Species Act (CESA), the federal Endangered Species Act (FESA), the Clean Water Act, the Migratory Bird Treaty Act (MBTA), the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and the Bald and Golden Eagle Protection Act.

Special-Status Species

For the purpose of this analysis, "special-status species" are plants and animals within any of the following categories:

- Species that are listed under the FESA and/or CESA as rare, threatened, or endangered;
- Species considered as candidates and proposed for federal or state listing as threatened or endangered;
- Wildlife designated by CDFW as fully protected and/or species of special concern (SSC);
- Birds designated by CDFW as watch list species;
- Birds protected under the MBTA;
- Bats designated by the Western Bat Working Group (WBWG) as high (red) or medium (yellow) priority; or
- Plants ranked by CDFW to be rare, threatened, or endangered in California.

Based on focused rare plant surveys and natural community vegetation mapping performed in 2018 and 2019, sensitive natural communities do not occur on the Project Site (Appendix C3).

Invertebrates

The CNDDB query for the Project Site and vicinity identified five federally listed invertebrate species in the region (CDFW, 2020). These species were evaluated for potential to occur in the Project Site. Three of the species, Conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*) are specialized for Central Valley vernal pool habitats, which are not present on the Project Site and have no potential to occur. The Shasta crayfish (*Pacifastacus fortis*) has been identified only in the Fall River and Hat Creek subdrainages of the Pit River system upstream of the Project Site drainages in clear gravel shallows. It has low potential to occur in the Project Site. Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is found in association with blue elderberry (*Sambucus mexicanus*) in the Central Valley, south and east of the Project Site. Elderberry shrubs have not been found in the Project Site and therefore the valley elderberry longhorn beetle has a low potential to occur.

Fish

The Site Characterization Study for the Project Site (Appendix C1) examined USFWS and CNDDB species lists and evaluated the available habitat on site. The special-status fish in the region, including bull trout (*Salvelinus confluentus*), Chinook salmon (*Oncorhynchus tshawytscha*) spring and winter run, and Central Valley DPS steelhead (*Oncorhynchus mykiss irideus*), McCloud River redband trout (*Oncorhynchus mykiss ssp.* 2), bigeye marbled sculpin (*Cottus klamathensis macrops*), hardhead (*Mylopharodon conocephalus*), and Pacific lamprey (*Entosphenus tridentatus*) were found to have no potential to occur within the Project Site due to the absence of suitable habitat, or location out of range. These species require large stream and river systems with deep, cold, flowing water. Bull trout are also believed to be extinct in the state of California (Appendix C1).

One California SSC, the Pit roach (*Lavinia symmetricus mitrulus*), has low potential to occur within the Project Site (Appendix C1). Pit roach inhabit both deep pools and areas of low flow, moderate gradients, warm temperatures, and mats of vegetation. There is one CNDDB occurrence of Pit roach 2.7 miles north of the Project Site, within the Pit River and tributaries (Appendix C1). The channels within the Project Site have low potential to support this species. Due to the local terrain for watersheds in the Project's vicinity, hydrological conditions for surface waters tend to be flashy in the winter months and dry in the summer depending on snow melt and winter rains.

Reptiles

Western Pond Turtle

The western pond turtle (*Emys marmorata*), a medium-sized turtle, is a California SSC. The species occurs in a variety of aquatic habitats including streams, rivers, irrigation ditches, ponds, and marshes. Western pond turtles prefer habitats containing ample amounts of aquatic vegetation, muddy or rocky bottoms, and sparsely vegetated banks for basking. The species occurs throughout various elevations in northern California, ranging from sea level to nearly 7,000 feet. Suitable habitat is found within the Project Site, though it is limited to small ponds and/or stream pools (Appendix C1). Within the Project Site, a total of 10.04acres of aquatic habitat resides within

ponds, perennial streams, and intermittent streams (Table 3.4-1). These three aquatic habitat types are most likely to contain suitable western pond turtle habitat. Other aquatic habitat types such as riparian wetlands, freshwater emergent wetlands, wetland meadows, and wetland seep/springs may support western pond turtle populations during wetter years. Approximately 27 acres of potentially suitable aquatic habitat types are present on-site (Table 3.4-2).

While no known populations of the species exist within the Project Site, there is a known CNDDB occurrence from 2004 just outside of the southwestern boundary. This species has a moderate potential to occur within the Project Site.

Amphibians

Coastal Tailed Frog

The Coastal tailed frog (*Ascaphus truei*) is a California SSC. Habitat is restricted to montane areas of hardwood-conifer, redwood, Douglas-fir and ponderosa pine with perennial streams. There is potential suitable habitat within the Project Site, toward the southern boundary, and the species has been documented near the center of the Project Site (Appendix C1). This species has high potential to occur within the Project Site.

Southern Long-Toed Salamander

The Southern long-toed salamander (*Ambystoma macrodactylum sigillatum*) is a California SSC. Preferred habitat is montane meadows and lakes at high elevation and its range includes the Sierra Nevada, Cascade and Klamath mountains (Appendix C1). This species has moderate potential to occur within the Project, as suitable montane meadow habitat is present within the Project Site in burned areas and areas cleared by logging.

Shasta Salamander

Shasta salamander (*Hydromantes shastae*) is a state-listed threatened species (CDFW, 2020). This species is not common, with distribution being comprised of numerous, isolated populations occurring near valley-foothill limestone regions of Shasta County (Appendix C1). Preferred habitat includes hardwood conifer, ponderosa pine, and mixed-conifer habitat typically found from 1,100 to 2,550 feet (335 to 777 meters). These salamanders are most active during wet seasons and retreat to limestone fissures and caves during dry seasons, using logs and talus for cover (Appendix C1). The Project Site is outside of the known species' range, which is limited to the vicinity of Shasta Reservoir to the west. While there does not appear to be suitable habitat within the Project Site boundary, the species has been documented 5 miles to the west. This species has low potential to occur within the Project Site.

Foothill Yellow-Legged Frog

Foothill yellow-legged frog (*Rana boylii* [FYLF]) is a California SSC, a candidate for listing as threatened under the California Endangered Species Act (CESA) and is currently being reviewed for potential listing as threatened or endangered under the FESA. Several occurrences of FYLF have been documented in the vicinity of the Project Site in rocky stream habitat, and although the species has not been documented within the development corridors, and the Project is

proposed on the edge of the species' range, the species has potential to occur within the Project Site (Appendix C13a). However, Project-specific visual encounter surveys in 2018 and eDNA surveys in 2019 throughout the Project Site yielded no detections of this species (Appendix C13a and C13b).

Cascades Frog

The Cascades Frog (*Rana cascadae*) is a California SSC (CDFW, 2020). This species typically inhabits montane lakes, streams, ponds, and wet meadows and can be found in coniferous forests at elevations below 8,200 feet (2,500 meters) (Appendix C1). Reproduction of this species requires shallow, still water, and winter hibernation occurs on lake or pond bottoms. The known current range of this species overlaps only a small area in the southern portion of the Project Site. While the species has been documented 1.2 miles southeast of the Leasehold Area, Project-specific analysis in 2018 indicated only 75 acres of low-quality potential habitat in the southern portion of the Leasehold Area (Appendix C13a). Habitat mapping in the field determined that the potential habitat was not suitable for this species, and visual surveys for Cascade frog were determined to be unnecessary. This area of potential habitat was located in the southernmost portion of the Leasehold Area, and not located within the Project Site.

California Red-Legged Frog

California red-legged frog (*Rana draytonii*) is protected under the FESA (1973) as a threatened species (USFWS, 2020a). California red-legged frog range includes the coast ranges south from Mendocino County and includes part of the Cascades and Sierra Nevada. They are typically found in lowlands or foothills (Appendix C1) below 3,900 feet (1,200 meters) in elevation. Their preferred habitat is shoreline near permanent sources of deep water with dense, shrubby or emergent riparian vegetation (Appendix C1). They also inhabit marshes, calm pools along streams, and ponds. California red-legged frog require year-round pools for larval development. The Project is proposed at the northern extent of the frog's known range, and there may be suitable habitat within the Project Site boundary. However, this species is rare in the region and there have been no documented occurrences within Shasta County or the Project Site during site biological surveys (CDFW, 2020). Thus, the species has low potential to be present.

Birds

California Spotted Owl

The California spotted owl (*Strix occidentalis occidentalis*) is a California SSC (CDFW, 2020). In northern California, this species is associated with dense, old-growth, multi- layered mixed-conifer, redwood, and Douglas fir forests. While the California spotted owl (CSO) was recently petitioned for listing at the federal level, the listing was found not warranted in 2019 (Appendix C11). In their assessment, the USFWS found that the primary threats to the CSO are large-scale, high-severity fire, increased tree mortality, drought, effects of climate change, and the barred owl (*Strix varia*) invasion (USFWS 2019).

Suitable nesting/roosting habitat for CSO includes areas of complex-structured/multi-layered forest, high canopy cover, and the presence of old and decadent trees, large snags, and coarse

downed woody debris (Gutiérrez et al., 2017). The CSO forages in forested habitats that are generally similar to nesting and roosting habitat. The California spotted owl tends to avoid crossing brushy and clearcut forest areas, although they may hunt along forest edges. Their core areas may range from 300 to 2,000 acres.

The Project Site is located at edge of the geographic range of the CSO and high-quality nesting/roosting habitat is not present within the Project Site boundary. Approximately 995 acres of suitable habitat is present in the southern portion of the Leasehold Area, outside the Project Site (Appendix C11).

The Fountain Fire, which burned much of the central half of the Project Site in 1992, has resulted in a limited the amount of nesting habitat for some forest-nesting species, but may be suitable for species preferring more open forest and scrub habitats (i.e., early seral) for nesting such as the American kestrel, red-tailed hawk, great horned owl, and western screech-owl (Appendix C11). However, it is possible that the California spotted owl may forage within or disperse through Project Site and there are historical records of occurrence in the Project Site (CDFW, 2020). CSO have been documented in the vicinity of the Project Site (CDFW, 2020). Three historical activity centers are located within 2.0 miles southeast of the Project Site and one historical activity center was located near the center of the Project Site (Appendix C11). Although these owl detections are older, additional surveys for CSO have likely not been conducted in the area since surveys were conducted in the early 1990's. Therefore, CSO could still inhabit the areas with medium and high predicted habitat suitability in the southeastern portion of the Project Site. It should be noted that during other intensive (non-owl-specific) avian surveys conducted for the Project (Appendices C4, C7, C8 and C9) CSO was not detected. These efforts included two years of avian point count surveys.

Since the Project Site is located in proximity to much larger contiguous areas of high suitability habitat on the Shasta Trinity National Forest to the north and west and the Lassen National Forest to the southeast, CSOs are less likely to select to use the more fragmented and less suitable habitats within the heavily managed timberlands present within the Project Site (Appendix C11).

The northern spotted owl (*Strix occidentalis caurina*), is federally listed as threatened, and prefers mature coniferous forests and multi-layered mixed conifer forests. However, this species is not present within Shasta County, since this northern subspecies, for management purposes, is considered only to occur north of the Pit River, which is outside of the Project Site (Appendix C1). The Pit River runs approximately 4.7 miles north of the Project Site. This species is not discussed further in this EIR.

Great Gray Owl

The likelihood of occurrence of the great gray owl (*Strix nebulosa*) within the Project Site and in the region was assessed for purposes of the Project (Appendix C5). The great gray owl is designated as endangered by the state of California (CDFW, 2020). Great gray owl nesting habitat in California is most commonly associated with dense forest stands adjacent to montane meadow foraging habitat. Suitable nesting habitat includes mature or old-growth conifer stands with greater than 50 percent canopy cover containing potential nest trees. Nest trees include

broken-top snags greater than 16-inches in diameter at breast height,[1] trees containing pre-existing stick nests from other species and mistletoe brooms. The estimated state-wide population size is only 100-200 pairs. Although the Project Site is located within the historical range of the species, there were no known occurrences of great gray owl within or immediately adjacent to the Project Site and the nearest known occupied territories were located approximately 85 miles to the northeast in Modoc County (CDFW, 2020). In addition, during other intensive avian studies conducted for the Project (Appendices C4, C7, C8, and C9), this species was never detected. These efforts included 2 years of avian point count surveys and surveys for northern goshawk and willow flycatcher. However, none of these surveys were conducted at night and no surveys were specifically conducted for this species within the Project Site.

In addition, there is no nesting and foraging habitat available for this species within the Project Site. However, there is a small amount of suitable habitat within a private in-holding located northeast of the Project Site, but this habitat is isolated and not known to be used by great gray owl (Appendix C5). A review of potentially suitable nesting or foraging habitat in other areas of the Project Site found no other suitable habitat (Appendix C5). Therefore, this species is not expected to be present, and will not be discussed further in this EIR.

Northern Goshawk

The northern goshawk (*Accipiter gentilis*) is a medium-large raptor with a broad distribution in the western United States, including California and the Project Site. In California, it is considered an SSC when nesting (CDFW, 2020). The northern goshawk can occupy a variety of habitats but prefers mature coniferous and deciduous forests. They eat a variety of prey that includes small mammals and birds. Catching most prey while in flight, goshawks prefer to hunt in more open areas such as cleared forest patches, dense forests with open understories, and along waterways. This species is particularly sensitive to forest management practices that reduce or fragment habitat.

Mainly resident, some individuals from high latitude regions migrate south for the winter. Individuals in North America migrate south along mountain ridge tops at nearly any time of the fall depending on latitude. Over much of their California range, northern goshawks nest mainly in mature and old-growth forest stands. Suitable stands would occur in a broad range of conifer and conifer-hardwood types such as Ponderosa pine. This hawk prefers the densest stands available for nesting, and those with a high canopy closure and open understories for foraging. There is a limited amount of mature forested habitat within the southeast portion of the Project Site (Appendix C1). Within their territories, goshawks will alternate the use of as many as eight nests sites that can be located up to 1.1 miles (1.8 km) apart.

Project-specific surveys were conducted for goshawks to provide a more current assessment of potential presence of active nests in four historical occurrence areas in CNDDB (Appendix C8). Five goshawk detections occurred within the Project Site between April 2017 and May 2018 during fixed-point large bird use surveys and incidental observations (Appendix C4a, Appendix C4b). Two goshawk nests also were found in the Project Site during nest surveys, both inactive, with one in use

[1] The standard position for diameter measurements at standing trees is at breast height, which in the United States is defined as approximately 4.5 feet.

by a great horned owl (*Bubo virginianus*) and the other in a state of unusable disrepair (Appendix C8). During the acoustic surveys, goshawks were not detected, either visually or by ear, and no evidence of nesting goshawks was observed. Although the report authors concluded that the likelihood of nesting goshawks is low in those areas surveyed, this conclusion is not necessarily representative of the entire Project Site. Suitable goshawk habitat occurs in the southeast portion of the Project Site, and properties overlapping with the Cedar Boots timber harvest plan have timber and goshawk management plans in place that protect the species and their nests during logging practices (CAL FIRE, 2016). Overall, the species has moderate potential to be present onsite.

Bald and Golden Eagles

The bald eagle (*Haliaeetus leucocephalus*) is federally protected by the Bald and Golden Eagle Protection Act, is fully protected in California, and is state-listed as endangered. Aerial and ground-based eagle and raptor nest surveys were conducted for the Project during breeding seasons from 2017-2019, as well as fixed-point eagle use surveys from April 2017 through March 2019 (Appendix C9). Project eagle nest surveys found from nine (2017) to eleven (2019) occupied bald eagle nests within 10 miles of the Project Site, with the majority along the Pit River and the closest 2.9 miles from the Project Site boundary. The Pit and Fall rivers support large populations of breeding and wintering bald eagles (Appendix C9). The results of fixed-point eagle use surveys included 22 observations of bald eagles over a two-year survey period, with 13 of the 22 observations made in winter.

The golden eagle (*Aquila chrysaetos*) is federally protected by the Bald and Golden Eagle Protection Act, and is state fully protected in California. Aerial nest surveys found no nesting golden eagles within 10 miles of the Project boundary; this includes three historical golden eagle nests, which could not be located during either year of aerial surveys. While golden eagle nest habitat is not present in the Leasehold Area, golden eagles may nest in the region. During the two-year fixed-point eagle use survey, three golden eagle observations were made. All three observations of golden eagles were made during the spring migration season (Appendix C4).

Greater Sandhill Crane

Greater sandhill cranes (*Grus canadensis tabida*) were once abundant breeders on the Modoc Plateau of northeastern California but are now less abundant and found in the northern and southern regions of the Central Valley. This subspecies is State Threatened on their nesting and wintering grounds because of declining numbers and a reduction in its Pacific Flyway stopover habitat. *G. c. tabida* of the Central Valley population are migratory between nesting areas in British Columbia, Washington, Oregon and northeast California to wintering areas of in the Central Valley and south (Appendix C1). Sandhill cranes typically use large freshwater marshes, prairie ponds, and marshy tundra during summer and grain fields or prairies during migration and winter. Greater sandhill crane nesting or stopover roosting habitat does not occur within the Project Site. The closest known nesting habitat is located approximately 20 miles east of the Project Site, in the Fall River Valley Important Bird Area (Appendix C1), but cranes may stop over in other suitable open wetlands in the region. Over 100 sandhill cranes were observed in flight during Fountain Wind avian surveys (Appendix C4). Sandhill cranes are moderately likely to migrate over the Project Site in spring and fall.

Sandhill cranes can fly from 15-50 miles per hour, depending on wind speed and direction, and they utilize thermals to help gain altitudes of up to 12,000 feet; typically, they migrate at altitudes of less than 5,000 feet. When migrating, sandhill cranes can average 150 miles to over 400 miles a day, usually during daylight hours to take advantage of favorable wind conditions (USFWS, 2020b). As noted in Table 3.4-3, the potential for this species to occur in the vicinity of the Project Site is moderate.

Willow Flycatcher

In 2018, the willow flycatcher was designated as State Endangered (CDFW, 2020). Surveys for the Project (Appendix C12) found no willow flycatcher within or immediately adjacent to the Project Site. The nearest known occupied territories were located approximately 20 miles to the northeast of the Project Site (CDFW, 2020). Two years of avian point count surveys throughout the Project Site also failed to detect any willow flycatchers. However, avian point count surveys were conducted for the purpose of identifying all birds using the Project Site. Specific surveys for willow flycatcher were not required, based on the lack of records of willow flycatcher presence in the vicinity of the Project Site.

Biologists also assessed the occurrence of willow flycatcher habitat within the Project Site. Willow flycatcher breeding habitat consists of dense deciduous riparian shrub and willow thickets both of which are present within the Project Site. This species stays close to their preferred habitat of willow thickets and brushy riparian areas, perching and flying between low lying willow thickets. Areas of preferred habitat including willow thickets and brushy riparian areas within the Project Site were mapped and then buffered by 300 feet to ensure all the habitat was covered and that the average territory size of the willow flycatcher was also included. Three potential willow flycatcher habitat sites were surveyed during the 2018 nesting season (Appendix C12), with listening periods and playback calls conducted to elicit call responses from breeding birds. No willow flycatchers were detected. The Project Site could be used as stop-over and foraging habitat for migrating willow flycatchers during spring and fall, as suitable riparian habitat likely exists on federally-managed lands to the north and south. However, as noted in Table 3.4-4, the potential for this species to occur on site is low.

Migratory and Resident Raptors

Avian point count studies were conducted over a 2-year period in all four seasons from 2017 to 2019 (Appendix C4a, Appendix C4b). Large birds included waterbirds, waterfowl, shorebirds, diurnal raptors, vultures, upland game birds, doves and pigeons, and large corvids. Large bird surveys were conducted approximately once per month at 39 observation points, with approximately 9-10 points surveyed each week of the study period (Appendix C4a, Appendix C4b). During 60-minute large bird surveys, a total of 3,267 observations were recorded in Year 1 and 8,459 observations were recorded in Year 2. This included documentation of 25 and 22 separate large bird species in Year 1 and 2, respectively.

The surveys found that seasonal trends in diurnal raptor use were very similar between years, with the fall and spring migration periods having the highest use (Appendix C4b). Fifteen species of diurnal raptors were detected over all seasons during the two years of surveys, including

Cooper's hawk, northern goshawk, sharp-shinned hawk, ferruginous hawk, red-tailed hawk, rough-legged hawk, northern harrier, red-shouldered hawk, bald eagle, golden eagle, merlin, American kestrel, osprey, prairie falcon and turkey vulture (Appendix C4b). The red-tailed hawk had the highest use of any diurnal raptor species during all four seasons. Among other diurnal raptor species, sharp-shinned hawk and Cooper's hawk had relatively high use in fall and spring. Overall, raptor use was higher during migration seasons.

Diurnal raptors that have the potential to occur within the Project Site include the State Threatened Swainson's hawk, white-tailed kite and American peregrine falcon (the latter two are state fully protected species). None of these three species was recorded during two years of large bird surveys. The northern harrier, a California SSC, was recorded in both years within the Project Site. Six other species of raptors on the CDFW watch list that were observed include the Cooper's hawk, ferruginous hawk, merlin, prairie falcon, osprey, and sharp-shinned hawk (Appendix C4b).

Nine owl species have potential to nest within the Project Site or surrounding area including the barn owl (*Tyto alba*), barred owl (*Strix varia*), flammulated owl (*Otus flammeolus*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), northern pygmy owl (*Glaucidium gnoma*), northern saw whet owl (*Aegolius acadicus*), California spotted owl (*Strix occidentalis occidentalis*), and western screech-owl (*Megascops kennicottii*) (Appendix C1). Additionally, short-eared owl (*Asio flammeus*) may be a permanent resident and breeder regionally, and burrowing owl (*Athene cunicularia*) may be a winter resident regionally but neither is likely to be found in the forested habitats of the study area. Of the owl species potentially occurring within the Project Site, the California spotted owl and long-eared owl are California SSC. During the two years of avian surveys (not focused owl surveys), only the northern pygmy owl and great horned owl were detected within the Project Site (Appendix C4).

Other Resident and Migratory Birds

The Project Site is located within the Pacific Flyway and numerous species of birds are known to migrate through the region. The Pacific Flyway is a major north-south flyway for migratory birds and extends from Alaska to Patagonia and spans the western U.S. From the results of two years of avian point count studies conducted within the Project Site, the site contains some stopover habitat for migratory birds including raptors and songbirds, but not for waterfowl or waterbirds (Appendix C4a, Appendix C4b). This habitat ranges from forests to grassland/ shrub-scrub habitats with smaller areas of riparian and wetland habitat.

Waterfowl

Five species of waterfowl were recorded during two years of surveys within the Project Site, with snow goose (*Chen caerulescens*) accounting for the majority of use in winter and fall, and greater white-fronted goose (*Anser albifrons*) accounting for nearly all spring use (Appendix C4a, Appendix C4b). Other waterfowl species observed over the two years of surveys included the cackling goose (*Branta hutchinsii*), Canada goose (*Branta canadensis*), and tundra swan (*Cygnus columbianus*). Tundra swans were observed rarely but in large flocks. Waterfowl were observed most frequently during winter and during migration.

Waterbird use, comprising two species, American white pelican (*Pelecanus erythrorhynchos*) and sandhill crane (*Antigone canadensis*), was highest in winter. The American white pelican is a California SSC. No waterbird use was recorded in summer. Almost all the waterfowl and waterbird use occurred in the fall and winter indicating that these birds were migrating over the area and neither using migratory stop-over habitats within the Project Site nor breeding there.

Other large birds commonly detected in both years of avian surveys within the Project Site included band-tailed pigeon (*Patagioenas fasciata*) and common raven (*Corvus corax*). Very small numbers of mountain quail (*Oreotyx pictus*), common nighthawk (*Chordeiles minor*), and American crow were also detected (*Corvus brachyrhynchos*) (Appendix C4a, Appendix C4b).

Songbirds

Songbird (small bird) surveys were conducted separately from large bird surveys. Two years of small bird surveys were conducted at the same 39 observation points used for the large bird surveys. During 10-minute small bird surveys in Year 1, 2,408 small bird observations were recorded of 71 species while in Year 2, 1,711 small bird observations were recorded of 50 species (Appendix C4b). The most abundant birds observed in the two years of avian surveys included dark-eyed junco (*Junco hyemalis*), mountain chickadee (*Poecile gambeli*), western bluebird (*Sialia mexicana*) and Steller's jay (*Cyanocitta stelleri*), with woodpeckers also common. Small bird abundance in both years of avian surveys was highest in the fall, followed by summer and spring, and lowest in the winter. Species richness across both years of small bird surveys was highest in summer. The seasonal abundance and species richness results suggest that small bird use is moderate and relatively consistent across seasons and across the Project Site. The results of small bird avian surveys further suggest that there is no specialized use of nesting habitats by resident birds, use of the area by migratory songbirds is non-concentrated. The following sections highlight songbirds observed on the Project Site that are California SSC.

Vaux's Swift

Little is known about life history traits of the Vaux's Swift (*Chaetura vauxi*) in California, where the species generally arrives the first week of April through late May. Vaux's Swift may roost individually or in communal groups. Communal roosts are typically large specialized structures capable of accommodating more than a hundred individual birds and can include mature and old-growth conifers with large top or side cavities as well as man-made structures like chimney (Shuford and Gardali, 2008). In fall, birds arrive to roost sites in northwestern California around late September. This species is a diurnal migrant that flies at heights just at the limit of sight, gathering and circling in large flocks up before dusk in the vicinity of roost sites. The Avian Use Study reported observing a fly-by of a single group comprised of 35 individuals. No communal nest locations or potential nest sites were identified in the Project Site (Appendix C4).

Olive-sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) breeds along the edges and openings of forests, including burned areas, and around the edges of wetlands. It uses tall, prominent trees and snags for singing and as foraging perches because of the unobstructed air space they offer. It arrives in northern California from wintering grounds in early May and leaves again in fall. It is more often

detected along edge habitats than elsewhere in the forest interior and it is often present near water, possibly because of higher insect abundance in these areas. The species in western North America has a proclivity for burned areas. Migratory habitat in spring is mainly mountain areas, although winter habitat includes more riparian and non-coniferous habitats. This species feeds on flying insects caught on the wing; hunting in this manner requires open air space for launching from and returning to foraging perches – as opposed to other flycatcher species that forage in mid-air.

Yellow Warbler

The yellow warbler (*Setophaga petechia*) is a widespread and abundant bird in North America, but occurrence is fragmented and local in the southwest part of the country where it is limited to riparian corridors. The species is largely absent from the Central Valley region and the southern and eastern desert areas of California. Migrants pass through northwest California in April and again in August to September. Found typically in riparian habitats, it is primarily an insectivore. During migration, collision fatalities occasionally occur at television towers and other tall, lighted structures. Preferred breeding areas are wet, deciduous thickets dominated by willows and in disturbed and early successional habitats.

Cassin's Finch

The Cassin's finch (*Haemorhous cassinii*) typically inhabits high elevation coniferous forests in the spring and summer months, descending to lower elevations or migrating south in the winter, though populations in northeastern California may be year-round residents. Conspicuous and vocal in mixed species foraging flocks, and excellent at mimicking the calls of other species, this species primarily eats fruits including berries, plant buds, and seeds, and infrequently insects while foraging on the ground. There is little information on nesting habits of this species, but nest building likely occurs May and June, with timing influenced by elevation. Cup nests are placed in outer branches away from the tree's trunk and, in California, in primarily ponderosa and Jeffrey pine trees. Birds depart the nest and the area as soon as chicks fledge.

Lewis's Woodpecker

Lewis's woodpecker (*Melanerpes lewis*) is a California SSC (CDFW, 2020). When pursuing insects on the wing in summer months, it exhibits prolonged gliding and complex aerial maneuvers; in winter its diet is acorns and other nuts, which it caches in bark crevices. In fall and winter, high concentrations of this species can occur in northern California where oak mistletoe berries are abundant. This woodpecker prefers open forests, ranging from low-elevation riparian areas to higher-elevation burns and pine forests for breeding, and it requires snag trees either standing, dead, or partly dead for nesting. Rather than excavating cavities in wood, this species selects trees already well decayed. Lewis's woodpeckers tend to be locally distributed within their range but is somewhat sporadic in occurrence. It arrives to breeding grounds in early May and departs again around late August or early September. Trends are difficult to assess for this species, but indications point to broad-scale and local-scale decline, probably due to loss of suitable habitat, habitat degradation, and pesticides.

Mammals

Gray Wolf

The gray wolf (*Canus lupis irremotus*) is federally endangered (USFWS, 2020a) and California threatened (CDFW, 2020). Once extirpated from California, gray wolves have been detected in Northern California in recent years, beginning in 2011 (Appendix C1). Gray wolf habitat preference and utilization often reflects the distribution of prey on the landscape rather than direct selection for cover type, with seasonal movements following ungulate migration. Wolf territories usually encompass a variety of habitat types, including forests, meadows, rocky ridges, lakes, and rivers. Springtime natal dens are constructed in well-drained soils in meadows near water sources, in hollow logs, under tree roots, or rock outcrops. CDFW has noted that gray wolves have passed through or adjacent to the Project Site in recent years, and a suspected wolf track was documented at the Project Site in the winter of 2018 (Appendix C10). An adult female gray wolf was found dead in Shasta County in February 2020 (KRCRTV, 2020).

The species requires large, diverse, and undisturbed territories. These habitat preferences limit the possibilities for coexistence with silvicultural and development activities on the Project Site. While the likelihood of gray wolves within the Project Site increases as the species population increases in Northern California, the tendency of this species to traverse long distances and to avoid disturbance would decrease its likelihood of denning in the Project Site.

California Wolverine

The California Wolverine (*Gulo gulo*) is state listed as threatened in California, where its preferred habitat includes higher elevation mixed conifer forests with seasonal snowfall in the Northern Sierra Nevada (CDFW, 2020). The species primarily subsists on a diet of small mammals and carrion, often hunting in open areas adjacent to mixed conifer forests, where dense forest cover provides denning habitat. California wolverines tend to avoid human disturbance and can range large distances within suitable habitats (Appendix C1). Within the Project Site is suitable mixed conifer forest habitat, although the site is a working forest landscape with frequent disturbance. Several occurrences of this species have been noted to the east and on the northeast boundary of the Project Site, though the records are 50 years old (CNDDB, 2020). This species is unlikely to occur within the Project Site.

American Badger

The American Badger (*Taxidea taxus*) is an uncommon permanent resident of California, most commonly found in grassland, shrubland, agricultural, and woodland edge habitats with friable soil for burrowing. It is a California SSC. Badgers are carnivorous and prey on a variety of species, including ground squirrels, reptiles, birds, and carrion depending on seasonal availability. The CNDDB documents badgers 6.5 miles east of the Project (CDFW, 2020), but suitable open habitat for badgers is lacking on the Project Site; thus, this species is unlikely to occur.

Fisher

The West Coast distinct population segment (DPS) of fisher (*Pekania [=Martes] pennant*) is proposed Threatened by the USFWS and currently under review (USFWS, 2019). The Northern

California evolutionarily significant unit (ESU) – consisting of fishers that occur within California in the Klamath Mountains, Coast Range, southern Cascades, and northern Sierra Nevada – is a California SSC. Fishers are opportunistic, generalist predators, that prefers mature, dense forest stands. Suitable habitat will also contain snags, hollow logs, brush piles, and similar types of denning cover. The CNDDB documents several occurrences of fishers within the Project Site, and in the surrounding area (CDFW, 2020). This species has high potential to occur within the Project Site.

Oregon Snowshoe Hare

The Oregon Snowshoe Hare (*Lepus americanus klamathensis*) is a subspecies of snowshoe hare that occurs in the vicinity of Mt. Shasta, the Trinity Mountains, and the Warner Mountains. It is a California SSC. The snowshoe hare prefers heterogeneous habitats with dense understory, as well as riparian habitats, and is rarely found in open habitat or mature closed canopy forests. The Project landscape is patchwork of heterogeneous habitats, due to both logging and fire, and appears to contain suitable habitat for the snowshoe hare. This species is moderately likely to occur within the Project Site.

Deer Habitat

The Project Site includes Columbian black-tailed deer (*Odocoileus hemionus columbianus*) fawning habitat, according to CDFW (2020). The Columbian black-tailed deer, one of six subspecies of black-tailed deer in California, is recognized by black-tipped tail and large, pointy ears. Fawns are usually born in late spring/early summer in dense forests and shrublands, including riparian and mountain habitats, with abundant forage and water nearby. Within the Project Site, a total of 1,217.5 acres of forest/shrub habitat is present within forests/woodlands, chaparral, and shrublands (Table 3.4-1). Deer fawning habitat is present within the Project Site.

Bats

Seventeen bat species have the potential to occur within the Project Site; none are federally or state listed, and five are considered California SSC. Fourteen of the seventeen species have been acoustically detected within the Project (Appendix C6). Of these fourteen species, two species, the spotted bat (*Euderma maculatum*) and the western mastiff bat (*Eumops perotis*), are California SSC. A full list of bat species with potential to occur within the study area can be found in Appendix C6.

Bat fatality rates documented at nearby wind facilities can provide regional context for identifying and mitigating impacts. The Hatchet Ridge Wind Project, which has been in operation since 2010 and is located approximately 1 mile from the Project Site, has documented bat fatality rates for the first three years of operations (i.e., between November 18, 2010 and December 13, 2013) using standardized carcass searches, including searcher efficiency and carcass persistence trials to adjust for inherent biases in estimating Project-related fatality rates (Tetra Tech, 2014). Over the three years of monitoring, a total of 63 bat fatalities were found from four species (silver-haired, Brazilian free-tailed, hoary, and big brown). Estimated annual bat fatality rates ranged from 5.13 to 12.02 bats/turbine, of predominantly hoary, silver-haired, and Mexican free-tailed during their late summer/fall migration period (Tetra Tech, 2014). Rates were highest in

summer (July–September) and predominantly composed of hoary bats, silver-haired bats, and Mexican free-tailed bats. These three species are consistent with the species most commonly detected during the bat acoustic surveys conducted for this Project (Appendix C6). Further, the timing of peak fatalities at the Hatchet Ridge Wind Project aligns with peak activity rates documented at the Project Site.

Pallid Bat

The pallid bat (*Antrozous pallidus*) hunts on and near the ground: approximately 10-20 feet (3-6 meters) off the ground. This opportunistic foraging bat is a generalist, preying on myriad insects like arthropods, whether prey is flying or stationary. They may echolocate while flying, but generally use passive acoustic cues to locate prey.

Pacific Townsend's Big-eared Bat

The Pacific Townsend's big-eared bat (*Corynorhinus townsendii*) occupies myriad habitats up to 3,000 feet in elevation. Distribution is strongly correlated with the availability of caves and cave-like roosting habitat, including abandoned mines. Roost site use varies within seasons and among years. Both maternity and winter hibernating colonies vary in size from a few individuals to colonies of several hundred, with wintering groups composed of both sexes. *C. townsendii* forages in edge habitats preferably along streams and around and in a variety of wooded habitats and can cover large distances while foraging.

Spotted Bat

The spotted bat (*Euderma maculatum*) is a solitary species that infrequently will roost or hibernate in small groups. It is found to nearly 9,000 feet in elevation and prefers to inhabit areas of rock cliff and canyons, roosting in highly fractured rock crevices. During summer, bats may travel from low- to high-elevation feeding areas and return prior to dawn. *E. maculatum* is capable of long distance and rapid flight, and foraging ranges can be large. Individuals forage alone about 6.6-164 feet above ground.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is broadly distributed through much of the western United States. Generally solitary, this species is highly migratory, moving in groups and loosely grouping together to forage in summer. It roosts predominantly in the foliage of trees or shrubs. Little is known about their winter behavior. Roost characteristics are specific: hidden from view, opening beneath to allow bats to drop into flight, dark, sheltered from elements, and generally on south or southwest side of a tree. Prey includes large, nocturnal, winged insects like moths, leafhoppers, and flies; this species forages on the wing and around artificial nighttime lights.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis*) is colonial bat species that occurs from western Texas to parts of southern California, and most recently in northern California to within a few miles of the Oregon border. In California, it was previously thought that this species occurs only to 1,230 feet (375 m) elevation, however, this species roosts up to 4,593 feet (1,400 m) and can forage up to 8,858 feet (2,700 m). This bat species has limited maneuverability in flight. The

distribution of *E. perotis* likely is present only where there are significant rock features offering suitable roosting habitat. It may be found in broad, open habitats, including desert scrub, chaparral, oak woodland, grasslands, and high elevation meadows of mixed conifer forests. This bat requires open, unobstructed waterways for drinking, and drought conditions can impact the species.

Hoary Bat

A migratory species, the hoary bat (*Lasiurus cinereus*) is the most widespread of all North American bats. This common, solitary species winters along the California coast and in southern California, breeding inland and north of the winter range. Habitats suitable for roosting include woodlands and forests with medium-to-large trees and dense foliage. Hoary bats prefer open habitats or habitat mosaics with access to trees for cover, and open areas or habitat edges for feeding. They have a strong foraging preference for moths, although various flying insects are also taken (Zeiner and Laudenslayer 1990). This species is documented on the Project site and at the nearby Hatchet Ridge Wind Project (Appendix C6).

Special-Status Plants

Special-status plants include any of the following:

1. Listed or proposed for listing as threatened or endangered under the FESA or candidates for possible future listing as threatened or endangered under FESA (50 C.F.R. §17.12).
2. Listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 et seq.).
3. Listed as rare under the California Native Plant Protection Act (CNPPA), (Fish and Game Code §1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).
4. Meets the definition of rare or endangered under CEQA Guidelines section 15380, subdivisions (b) and (d), including:
    a. Plants considered by CDFW to be "rare, threatened or endangered in California, including plants tracked by the California Natural Diversity Database (CNDDB) or designated as California Native Plant Society Rare Plant State Rank (CRPR) 1 or 2.
    b. Plants that may warrant consideration based on declining trends, recent taxonomic information, or other factors, which could include plants tracked by the CNDDB and California Native Plant Society as CRPR 3 or 4.
5. Locally significant plants, those that are not rare from a statewide perspective but are rare or uncommon locally within a county or region (CEQA Guidelines §15125(c)), or designated as significant in local or regional plans, policies or ordinances.

The California Native Plant Society has identified five categories of California Rare Plant Ranks (CRPR):

- List 1A—Plants presumed to be extinct in California

- List 1B—Plant species considered rare, threatened, or endangered in California and elsewhere
- List 2—Plant species considered rare, threatened, or endangered in California but more common elsewhere
- List 3—Plants about which more information is needed (a review list)
- List 4—plants of limited distribution (a watch list)

Each CRPR category may include an extension indicating the level of endangerment in California:

- 1—Seriously endangered in California (more than 80 percent of occurrences are threatened and/or high degree and immediacy of threat)
- 2—Fairly endangered in California (20–80 percent of occurrences are threatened)
- 3—Not very endangered in California

CDFW recommends and local governments may require that CEQA review of proposed projects address plants on Lists 1A, 1B, and 2.

No federally listed or candidate plant species are known to occur within the Project Site or vicinity. Based on data from the California Native Plant Society, 191 plant species that occur in Shasta County are considered sensitive. The California Natural Diversity Database (CNDDB) list of special-status plants and plant communities within ten miles of the Project and the California Native Plant Society Inventory of Rare and Endangered Plants list for Shasta County of special-status plant species and sensitive natural vegetation communities were used to identify rare plants with potential to occur in the Project Site. Two federally listed plant species were identified as having potential to occur within the Project Site: Greene's tuctoria (*Tuctoria greenei*) and slender Orcutt grass (*Orcuttia tenuis*; Table 3.5-5). However, based on the absence of vernal pools and open grasslands within the Project Site, these species are unlikely to occur. Federally designated critical habitat for slender Orcutt grass is located approximately 6.0 miles (9.7 km) north of the Project Site.

Four state-level sensitive plants (California rare plant rankings) have been documented within the vicinity of the Project Site (Appendix C3): Butte County morning-glory (*Calystegia atriplicifolia* ssp. *buttensis*), rattlesnake fern (*Botrypus virginianus*), northern clarkia (*Clarkia borealis* ssp. *borealis*), and English Peak greenbriar (*Smilax jamesii*).

Rare plant surveys were conducted in 2018 and 2019 (Appendix C3a, Appendix C3b). Rare plant surveys covered all proposed development corridors throughout the Project Site; however, approximately 800 acres of the Project Site were not surveyed due to modifications to the Project Site that occurred following the 2019 survey. No special-status plants were documented during the rare plant surveys. There is a high level of disturbance to natural vegetation communities within the Project Site due to continued logging operations and the 1992 Fountain Fire, which burned lands surrounding and throughout the central area of the Project site. Based on the negative survey results and current land use activities on the site, occurrence of special-status plants is not expected in the areas which were not included in the 2018 and 2019 surveys; however, this

conclusion remains to be verified. For this analysis, special-status plants (FESA, CESA, CNPPA, CNDDB CRPR 1 or 2) not detected on the Project Site during rare plant surveys are presumed absent. Rare plants were considered in the focused assessments (Appendix C3a, Appendix C3b). Per CDFW protocol, rare plant surveys are typically valid for a period of five years from the date conducted.

3.4.1.3 Regulatory Setting

Biological resources in California are protected and regulated by a variety of laws, regulations, plans and policies administered by federal, state, and local agencies. This section summarizes the biological resource-related agencies, regulations, and policies relevant to the Project and alternatives.

Federal

Federal Endangered Species Act

The Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by NOAA Fisheries) oversee the federal Endangered Species Act (FESA). The USFWS implements and enforces FESA for terrestrial species; NOAA Fisheries implements and enforces it for aquatic and anadromous species. For purposes of this analysis, the USFWS is the oversight agency. Section 7 of the FESA mandates that all federal agencies consult with the USFWS to ensure that federal agencies actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The federal agency is required to consult with the USFWS if it determines its action may affect a listed species or critical habitat will occur in association with its action(s). The FESA prohibits the unlawful "take"[2] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Under Section 9 of the FESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the removal, possession, damage, or destruction of any endangered plant from federal land. Section 9 also prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the FESA.

Section 10 of the FESA requires the issuance of an "incidental take" permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur, incidental to implementation of the project by providing for the overall preservation of the affected species through specific mitigation measures.

[2] Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.

Under the FESA, the USFWS designates critical habitat for listed species. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with FESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not adversely modify the critical habitat to the extent that it impedes the recovery of the species. Within designated critical habitat, USFWS protects habitat that provides the primary constituent elements (PCEs) for survival of the listed species. PCEs are the physical and biological functions considered essential to species conservation that require special management considerations or protection.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. §703 et seq.) is the domestic law that affirms and implements a commitment by the United States for the protection of shared migratory bird resources. Except as permitted by regulations, the MBTA makes it unlawful to intentionally pursue, hunt, take, capture, or kill migratory birds anywhere in the United States. The law also applies to the intentional disturbance and removal of nests occupied by migratory birds or their eggs during the breeding season. In December 2017, the U.S. Department of the Interior issued memorandum M-37050, which redefined “incidental take” under the MBTA such that, “the MBTA's prohibition on pursuing, hunting, taking, capturing, killing, or attempting to do the same applies only to direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control.” The current interpretation of the MBTA’s definition of “take” does not prohibit or penalize take of migratory birds that results from actions that are not intentional.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. §§668-668c) makes it illegal to trade in any bald eagle or golden eagle or parts thereof. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

State

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of endangered and threatened species. Habitat destruction is not included in the State’s definition of take. Section 2090 of CESA requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFW administers the act and authorizes take through Section 2081 agreements (except for designated “fully protected species”).

State-listed plants are protected mainly in cases where State agencies are involved in projects under CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but can be protected under CEQA.

California Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050 and 5515) and Species of Special Concern

The classification of "fully protected" was CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibian and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The California Fish and Game Code sections (fish at Section 5515, amphibians and reptiles at Section 5050, birds at Section 3511, and mammals at Section 4700) dealing with "fully protected" species states that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species," although take may be authorized for necessary scientific research. This language makes the "fully protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with fully protected species were amended to allow CDFW to authorize take resulting from recovery activities for State-listed species.

California SSC are animals not listed under the FESA or CESA, but are nonetheless of concern because they are declining at a rate that could result in listing or historically occurred in low numbers and known threats to persistence currently exist. This designation is intended to result in special consideration for these animals by CDFW, land managers, consulting biologists and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration in the CEQA process and are analyzed along with listed species in the CEQA Appendix G checklist.

Protection for rare plant species under CESA is afforded by the California Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code §§1900-1913), which prohibits the importation of rare and endangered plants into California, take of rare and endangered plants, and sales of rare and endangered plants. The California Native Plant Society also identifies rare or endangered plants and ranks their rarity as 1A, 1B, 2, 3, and 4 species. Plant species with a California Rare Plant Rank 1A, 1B, or 2 are considered to meet CEQA significance criteria and Fish and Game Code sections 1901, 2062 and 2067 criteria as rare or endangered species.

California Fish and Game Code 3503

Fish and Game Code Section 3503 establishes that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. In addition, birds of prey are protected under Fish and Game Code Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (diurnal birds of prey) or Strigiformes (owls) or to take, possess, or destroy the

nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. CDFW considers any disturbance that causes nest abandonment and/or loss of reproductive effort to be "taking."

California Department of Fish and Game Code Sections 1600-1616

CDFW regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. These activities are regulated under Fish and Game Code Sections 1600 to 1616. Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements. Requirements may include avoidance or minimization of the use of heavy equipment, limitations on work periods to avoid impacts on wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses. A Streambed Alteration Agreement may also be required by CDFW for construction activities that have the potential to result in an accidental release of debris, waste or other material into a lake, river or stream.

Porter Cologne Act and Responsibilities of the State Water Resources Control Board under the Clean Water Act

The Clean Water Act requires that the discharge of dredged or fill material into waters of the U.S. does not violate state water quality standards. Applicants for Section 404 or Section 10 permits must obtain a Section 401 water quality certification from the State Water Resources Control Board.

Pursuant to the Porter-Cologne Act, each of California's nine Regional Water Quality Control Boards (RWQCB) must prepare and periodically update basin plans that set forth water quality standards for surface and groundwater, as well as actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to achieve wetlands protection based on water quality standards.

Z'Berg-Nejedly Forest Practice Act

The Z'Berg-Nejedly Forest Practice Act of 1973 (Public Resources Code §§4511-4360.2) and its implementing regulations, the Forest Practice Rules (14 Cal. Code Regs. §895 et seq.), govern the management of privately owned forestlands in California, including with respect to biological resources. See, for example:

- Rule 939.2 General Protection of Nest Sites (14 Cal. Code Regs. §939.2)
- Rule 939.3 Specific Requirements for Protection of Nest Sites (14 Cal. Code Regs. §939.3)
- Rule 939.4 Non-listed Species (14 Cal. Code Regs. §939.4)
- Rule 939.9 Northern Spotted Owl (14 Cal. Code Regs. §939.9)
- Rule 939.12 Sensitive Species Classification (14 Cal. Code Regs. §939.12)

Local

Shasta County General Plan

The Fish and Wildlife Habitat Element (6.7) of the Shasta County General Plan contains policies (summarized below) to guide County planning for biological resource conservation and management (Shasta County, 2004):

Policy FW-b: Recognition that classification of some fish, wildlife, and vegetation resources designated and used as Timberlands in most cases protects habitat resources. However, if there is a conflict, the timber land use classifications shall prevail in a manner consistent with State and Federal laws.

Policy FW-c: Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the USFWS, shall be designed or conditioned to avoid any net adverse project impacts on those species.

Policy FW-d: The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by the following measures:

- regulation of vegetation removal.
- design of grading and road construction to restrict sediment input to all streams.
- establishment of a development set-back.
- the siting of structures, including clustering.

Policy FW-f: The County should encourage and support efforts by State and Federal agencies that implement the Upper Sacramento River Fisheries and Riparian Habitat Management Plan.

Oak Woodland Voluntary Management Guidelines

The County adopted these voluntary guidelines in 1995 to encourage retention of an average canopy of 30 percent or more when harvesting oaks, including trees of a variety of species, ages, and conditions, as well as brush piles, hollow trees and other habitat components. The guidelines recommend the clustering of buildings, protection of residuals, and replacement of removed trees when building occurs among oaks. Development, including roads, cuts and fills, foundations and septic systems should be carefully planned to avoid impacts. The guidelines also recommend landowners consider replacing trees unavoidably removed during construction, and contact a specialist for help maintaining large or specimen trees. Because oak woodland habitat is present within the Project Site, these guidelines are considered in the analysis.

3.4.2 Significance Criteria

A project would result in a significant impact to Biological Resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or

d) 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.

CEQA Guidelines Appendix G Section IV also suggests consideration of local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan covering an area that would be affected by a proposed project. See Section 3.4.1, *Environmental Topics Removed from Consideration*.

3.4.3 Direct and Indirect Effects

3.4.3.1 Methodology

The information and analysis presented below are based in part on data provided in Appendix C, *Biological Resources*. The County independently reviewed this and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance on (in combination with other materials included in the formal record) in the preparation of this Draft EIR. Potential impacts to biological resources were analyzed by:

1. reviewing species-specific studies and surveys within the Project Site to determine the likelihood of a species' presence;

2. overlaying the proposed Project footprint, including permanent and temporary disturbance areas, with maps of biological resources in the Project Site using GIS;

3. calculating the acres of each habitat type that would be removed or disturbed using GIS;

4. distinguishing between direct impacts, which would include construction of wind turbines, roads, and facilities, and indirect impacts that would include habitat disturbance, operation of the Project, and increased human activities during Project construction and operation;

5. assessing the risk of bird and bat collision with wind turbines and power lines based on analysis of this Project and studies from other wind energy facilities, including the Hatchet Ridge Wind Project, and;

6. determining whether an effect on a candidate, sensitive, or special-status species would be substantial based on whether it could result in an adverse effect on the species' population.

The analysis distinguished between permanent impacts (long-term and built environment) and temporary impacts (temporary and short- or limited-term) and addresses the three general phases of the Project as described in Chapter 2, *Description of the Project and Alternatives*:

1. site preparation and construction;
2. operations and maintenance; and
3. decommissioning and site restoration.

Construction-Related Impacts

Habitat loss and degradation (including noise and increased human activity) are the primary impacts on biological resources that would result from the construction of the Project. Loss of habitat would result from construction of all Project components. Permanent habitat loss would occur in the permanent footprint of the Project components, while temporary habitat loss would occur during construction and while habitats are restored and returned to their preconstruction condition. Temporary habitat degradation would occur due to increased noise and human activity. Additional habitat degradation would result from conversion of habitats that would not be restored or allowed to return to their preconstruction state after construction until the Project is decommissioned.

Operational Impacts

Operational impacts from the Project would include collisions of birds and bats with wind turbines while passing through the rotor swept areas, and barotrauma for bats. Operational impacts on birds may also result from collisions with the overhead electric transmission lines. The Project is designed such that all energized Project components, including the above-ground collection lines, would be constructed in accordance with the current suggested practices of the Avian Power Line Interaction Committee (APLIC, 2006, 2012).[3]

The use of vehicles to maintain operations, including turbine maintenance and repair, and defensive space vegetation clearing may result in collisions with common terrestrial wildlife species.

Decommissioning and Site Reclamation

Decommissioning of the Project would include dismantling wind turbine components facilities, excavation and removal of turbine foundations to a depth of approximately 3 feet below grade, natural revegetation of unused roads, recontouring and revegetation of the site. As discussed in Section 2.4.7, the Applicant proposes to return the Project Site to conditions similar to pre-construction conditions, including by replanting with commercial tree species or other vegetative cover. For purposes of analysis, this EIR assumes that the restoration plan included in the Draft

[3] APLIC publications offer design suggestions including pole design, electrical configuration and the use of insulation materials to reduce the risk of avian electrocutions.

Decommissioning Plan would include a detailed description of pre-construction conditions, and that the Final Decommissioning Plan would comply with the timber stocking standards and related requirements of the Forest Practice Act and Forest Practice Rules. Further, the Draft Decommissioning Plan would detail how facilities and infrastructure would be removed, which facilities would be retained, and include standards for re-establishment and monitoring of vegetation. The timeline for decommissioning is expected to be 18 to 24 months.

3.4.3.2 Direct and Indirect Effects of the Project

a) Whether the Project would have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Special-Status Plant Species

Impact 3.4-1: Construction of the Project could, unless mitigated, cause a significant impact to special-status plant species. (*Less than Significant with Mitigation Incorporated*)

As stated in Section 3.4.1.2, no special-status plants were documented in the Project Site during rare plant surveys in 2018 and 2019. Rare plant surveys in forested areas are typically valid for up to 5-years per CDFW protocol. Based on the observed absence of special-status plants, no direct impacts on special-status plants are anticipated within the surveyed areas of the Project Site, provided vegetation clearing and ground disturbance activities occur within 5 years of survey completion.

Approximately 800 acres of the Project Site were not surveyed for special-status plants due to changes in the layout of the Project, which occurred after surveys were completed. If construction activities such as road development, turbine installation, or other ground disturbance occur in the 800-acres of unsurveyed area direct impacts on special-status plants such as removal or crushing could result. Because, special-status plants often occur in isolated non-contiguous populations, damage or destruction of special-status plants would be a significant impact. Implementation of Mitigation Measure 3.4-1 below, Avoid and Minimize Construction Impacts on Special-Status Plants would reduce this impact to a less-than-significant level by conducting rare plant surveys prior to construction, and avoiding or relocating any rare plants found.

> **Mitigation Measure 3.4-1: Avoid and Minimize Construction Impacts on Special-Status Plants**
>
> To prevent adverse impacts to special-status plants, the Project Applicant shall implement the following measures if construction activities are to occur in the area not yet surveyed, or if vegetation removal and ground disturbing construction activities have not been completed within 5 years of the completion of rare plant surveys:
>
> a) A qualified biologist shall conduct a pre-construction survey for special-status plant species with the potential to occur within the unsurveyed area, or other areas if 5 years have passed since completion of rare plant surveys; or as otherwise approved by CDFW. The survey shall follow the procedures outlined in the CDFW (2018) rare plant survey protocol.

b) If special-status plants are found to be present, plant populations shall be avoided using an appropriate (e.g., 20-foot or greater) buffer for the subject population during construction. The buffer shall be staked, roped, and/or fenced off so as to be readily identifiable by construction workers as a buffer area to be avoided.

c) Where special-status plant avoidance is not feasible, the applicant shall mitigate for the loss of plants through the implementation of the following: A qualified ecologist shall develop and implement a restoration and mitigation plan according to CDFW guidelines and in coordination with CDFW. At a minimum, the plan shall include collection of reproductive structures or plant salvage from affected plants, a full description of microhabitat conditions necessary for each affected species, seed germination requirements, restoration techniques for temporarily disturbed occurrences, assessments of potential transplant and enhancement sites, success and performance criteria (e.g., greater than 1:1 replacement of individual plants or the population area), include a minimum 3-year monitoring program, as well as measures to ensure long-term sustainability such as weeding or supplemental water.

d) Survey results shall be provided to the Shasta County Department of Resource Management, Planning Division and CDFW at least 14 days in advance of the initiation of construction activities within the area(s) surveyed. The Shasta County Department of Resource Management, Planning Division shall, in coordination with CDFW, determine whether or not the survey(s) were conducted in accordance with CDFW plant survey protocol and measures b) and/or c) are to be implemented. Construction shall not begin in the surveyed area until the Shasta County Department of Resource Management, Planning Division has confirmed that the survey(s) were conducted in accordance with the protocol and, if necessary, that measures 3.4-1b and/or 3.4-1c have been implemented.

Significance after Mitigation: Less than significant.

Bald and Golden Eagles

Impact 3.4-2: Construction of the Project could, unless mitigated, cause a significant impact on nesting bald and golden eagles. (*Less than Significant with Mitigation Incorporated*)

Nesting Disturbance

Aerial nest surveys conducted in 2017 found 11 occupied bald eagle nests within 10 miles of the project (Appendix C9). Most of these nests were located along or near the Pit River, north of the Project Site and between 4 to 8 miles from the project boundary. The nearest bald eagle nest was found on Lake Margaret, a small reservoir 2.9 miles east of the Project Site boundary (Appendix C9). Over 20 bald eagles were recorded in avian use surveys (Appendix C4).

No golden eagle nests were found during two years of aerial nest searches, and avian use surveys documented only three observations of golden eagles in 914 hours of survey effort over two years (Appendix C4). Typical golden eagle nesting habitat, such as rocky outcroppings or exposed cliffs, may be found in the surrounding region, but is generally absent from the Project Site. The

California Natural Diversity Database identifies three historic golden eagle nests within 10 miles of the project boundary.

Eagles are state fully protected species and are protected under the Bald and Golden Eagle Protection Act in response to declining populations, disturbance of nesting eagles could result in an adverse effect on local bald and/or golden eagle populations and would therefore be substantial. If nests are present within 2 miles of the Project Site, the highest risk to nesting bald and golden eagles during construction activity is disturbance from noise and human activity. Noise from equipment and human disturbance may cause eagles to leave active nests, and repeated or severe disturbance may result in a failed nest attempt or complete nest abandonment, which would be a significant impact. Disturbance from construction could be minimized by measures such as surveying and locating occupied eagle nests, choosing an appropriate time of year for construction phases, establishing buffer distances from active nests according to USFWS recommendations, and monitoring for compliance and effectiveness. The implementation of Mitigation Measure 3.4-2 would reduce the impacts on nesting bald and golden eagles from construction disturbance to less than significant.

Nesting and Foraging Habitat

Open habitat types that could be utilized by foraging golden eagles comprise a low proportion of the mostly forested landscape: out of 4,464 acres within the Project Site, montane meadow accounts for 1.4 acres (<0.1 percent), mixed chaparral 76.2 acres (1.7 percent), riparian scrub 80.0 acres (1.8 percent), and mixed riparian forest 27.2 acres (0.6 percent). Additionally, bald eagles are not expected to use the Project Site landscape for foraging as surface waters within the Project Site tend to be intermittent in the winter months, and dry in the summer, depending on conditions for snow melt and winter rains. Because of the lack of suitable habitat, it remains unlikely that eagles would use the Project Site for nesting or foraging. Given the relatively low use of the Project Site by bald and golden eagles, and the low percentage of preferred habitat types within the Project boundary, permanent impacts from construction of the Project on bald and golden eagle nesting and foraging habitat would be less than significant.

Mitigation Measure 3.4-2: Avoid and minimize construction-related impacts to nesting eagles *(January 1 to August 31).*

To prevent adverse impacts to nesting eagles, the Project Applicant shall implement the following measures if construction activities are to occur during the nesting season:

a) Conduct terrestrial preconstruction eagle nesting surveys of known previously active nest sites to determine whether eagles are actively nesting or maintaining territories within 2 miles of the Project construction boundary. Surveys will be designed and carried out by a qualified biologist with experience in the natural history and nesting behavior of eagles, following USFWS guidelines. Terrestrial surveys will include all suitable eagle nesting habitat within a 2-mile buffer surrounding the Project construction boundary, as accessible, and subsequent observations at known nests to assess territory occupancy and nesting activity by adult eagles.

b) Results of preconstruction eagle nesting surveys will be reported to the Shasta County Department of Resource Management, Planning Division, USFWS, and

CDFW by August 31 of the year in which the survey was conducted. The Shasta County Department of Resource Management, Planning Division shall, in coordination with resource agencies, determine whether or not the survey(s) were conducted in accordance with appropriate protocols and measures c) is to be implemented. Construction shall not begin in the surveyed area until the Shasta County Department of Resource Management, Planning Division has confirmed that the survey(s) were conducted in accordance with appropriate protocols and, if necessary, that measure 3.4-2c has been implemented.

c) If surveys document active eagle nests within the 2-mile survey buffer, the Project Applicant will coordinate with the County, USFWS and CDFW to define and implement recommended protective measures. Typical measures for working within 2 miles of eagle nests are to establish construction buffers (e.g., with flagging, rope, signage, or other similar barriers) in accordance with USFWS recommendations (National Bald Eagle Management Guidelines, 2007; Golden Eagle, 2013) for specific activities (e.g., vehicular traffic, construction work, etc.); and may be adjusted downward based on site-specific conditions following coordination with the USFWS Migratory Bird Program and CDFW.

Significance after Mitigation: Less than significant.

Impact 3.4-3: Operation of the Project could, unless mitigated, result in significant adverse impacts to or direct mortality of bald and golden eagles (*Significant and Unavoidable*)

Operation of the Project could have direct impacts on bald and golden eagles through collision with power lines or operating wind turbine generators, or electrocution from energized components. The most directly relevant data for an assessment of the Project's potential risk to eagles comes from the nearby Hatchet Ridge Wind Project, specifically its two-year preconstruction avian use survey reports and three-year post-construction mortality monitoring report (Tetra Tech, 2014, 2013, 2012). Both the Hatchet Ridge project and the proposed Project are somewhat unique among western wind projects in their high percentage of forested landscape, however, the Project turbines would be 62 percent taller with 70 percent larger blade diameters than the Hatchet Ridge project. Even with these design differences, the Hatchet Ridge project's study results provide the best available data on potential for eagle mortality to occur.

The Hatchet Ridge Wind Project EIR (Shasta County, 2007) identified the potential for significant and unavoidable impacts on bald eagles, as well as special-status raptors, greater sandhill cranes, and other avian species; however, post-construction avian fatality monitoring did not identify any bald or golden eagle mortalities from project operation (Tetra Tech, 2014). Avian use studies of the Leasehold Area for this Project (Appendix C9) found lower use of the area by bald eagles, and comparable use by golden eagles, when compared to preconstruction surveys at the Hatchet Ridge project site. These patterns were consistent across seasons. However, there is uncertainty that there may be relatively greater impacts on bald or golden eagles due to the Project's substantially taller turbines. For comparison, at Hatchet Ridge, each tower has a maximum total tip height of 420 feet, with a rotor diameter between 253 and 312 feet and a wind-swept area up to 980 sq. ft. (Shasta County, 2007). The Project has total tip height of up to

679 feet, a rotor diameter up to 433 feet, and a wind-swept area of up to 1,360 sq. ft. (Figure 2-4a). Because the wind-swept area of the Project is larger than Hatchet Ridge, and the blades cover a greater area, the relative risk to eagles is considered incrementally greater for the Project. Given the close proximity of the Hatchet Ridge project site to the Project Site, and the similar siting of the two projects outside of preferred eagle foraging habitat, the risk of impacts is anticipated to be similarly low between the two projects. Thus, while the risk to eagles from operation of the proposed Fountain Wind facility is relatively low (due to the limited use of the area by eagles), there remains potential for eagle injury and death due to collisions with turbines. As stated previously, eagles are CDFW fully protected species and are protected under the Bald and Golden Eagle Protection Act in response to declining populations, collision related injury or death of eagles could result in an adverse effect on local bald and/or golden eagle populations and would therefore be substantial. Implementation of Mitigation Measures 3.4-3a, 3.4-3b and 3.4-3c would reduce this potential impact by identifying potentially hazardous situations on the Project Site for bald and golden eagles, providing coordination with the USFWS, providing active steps to reduce eagle hazards, and providing compensatory mitigation, if needed, to address the loss of eagles consistent with federal guidance. However, due to the uncertainty related to the larger turbine size and wind-swept area compared to the Hatchet Ridge project, the potential impact on bald and golden eagles would remain significant and unavoidable. Note that these measures additionally include provisions to protect other raptors and bats, which are discussed later in this section, to avoid redundancy in the document.

Mitigation Measure 3.4-3a: Avoid and minimize operational impacts on avian and bat species.[4]

The Project Applicant will avoid and minimize operational impacts on eagles, other raptors, and bats by enacting the following mitigation measures:

a) Discourage raptor use of immediate vicinity of wind turbine generators by taking steps to reduce prey species' numbers, such as minimizing creation of prey habitat such as rock piles.

b) Follow APLIC (2006, 2012) guidance for all energized Project components to minimize electrocution or collision with transmission lines.

c) Follow *Land-Based Wind Energy Guidelines* (USFWS, 2012) for turbine design and best management practices that help to minimize eagle mortality and eliminate potential raptor perches; avoid guy wires on meteorological towers where possible.

d) Prior to Project construction, the Applicant will coordinate with USFWS regarding potential impacts to eagles and demonstrate the Projects' compliance with the Bald and Golden Eagle Protection Act and the USFWS Eagle Conservation Plan Guidance (2013).

e) All Project staff responsible for operations will be trained in reporting avian and bat wildlife fatalities, including those of bald and golden eagles, other raptors, and bats encountered during turbine maintenance and other regular activities on site.

4 Mitigation measure 3.4-3a encompasses more species than just eagles. This is to avoid redundancy within the document, and the measure is referred to as a means of reducing other impacts throughout the document.

A protocol for project staff will be developed in coordination with CDFW and the County for appropriate handling and reporting fatalities.

Mitigation Measure 3.4-3b: Monitor avian and bat mortality rates during project operations.[5]

To accurately assess operational Project impacts on avian species, including bald eagle, golden eagle, other raptors, and bats, and ensure the effectiveness of avian protection measures, the applicant will design and implement a post-construction mortality monitoring (PCMM) study. The PCMM will include the following elements:

a) The duration of PCMM monitoring to assess ongoing impacts of operation will include post-construction monitoring for eagles, other raptors, and bats. The PCMM monitoring will commence immediately following the beginning of commercial operation and continue for three years following the incorporation of all planned turbines and power generation.

b) PCMM studies will be designed to meet a minimum overall detection probability for bald and golden eagles of 30 percent during the first three years of full operation. Additionally, the PCMM will include a mandatory incidental monitoring and reporting program for other raptors and bats for the life of the Project.

c) Searcher efficiency trials and carcass persistence trials using large raptor carcasses or an appropriate, commercially available proxy will be implemented and used to calculate overall detection probabilities of eagle carcasses. Carcasses of other birds and bats will also be collected and reported.

d) Monitoring will occur over all seasons of occupancy for the species being monitored.

e) Applicant will provide an annual report of PCMM findings to the Shasta County Department of Resource Management, Planning Division, CDFW, and the USFWS. If a bald or golden eagle, other raptors or bats are detected during PCMM, and detections indicate exceedance of the following thresholds, the Applicant and relevant agencies will develop a plan to mitigate the impacts per the *Land-Based Wind Energy Guidelines* (USFWS, 2012).[6]

    - Bald eagle – injury or mortality to one or more bald eagles in any given year.
    - Golden eagle – injury or mortality to one or more golden eagles in any given year.

[5] Mitigation measure 3.4-3b encompasses more species than just eagles. This is to avoid redundancy within the document, and the measure is referred to as a means of reducing other impacts throughout the document.

[6] Injury and mortality thresholds for bald eagle, golden eagle, and California spotted owl stated above were developed based on the low expectation for species mortality during project operations. For northern goshawk, this species is not listed and no California wind farm mortality has been identified in California. Because this species is unlikely to be encountered, a threshold of two individuals was adopted. For other raptors, the adopted threshold was based on the regional populations of Coopers hawk, sharp-shinned hawk, and northern harrier, which are fairly healthy. For most raptor species, mortality to migrating individuals is not anticipated. This assessment was based on focused baseline surveys of the Project area, monitoring findings from the Hatchet Ridge Wind Project, and coordination with raptor experts. For uncommon bat species with low population numbers, four WBWG high priority species are considered to have a low to moderate potential to occur and a threshold of three individuals per species was adopted based their rarity and low encounter numbers at the Hatchet Ridge Wind Project. For two WBWG medium species, a threshold of six bats was adopted based on the absence of habitat in the Project area (western mastiff bat) or the greater abundance of the species (hoary bat).

- Other raptors – injury or mortality to six or more individuals of any sensitive raptor species in any given year, except northern goshawk. For northern goshawk, injury or mortality to two or more individuals in any given year.

- Bats – injury or mortality to three or more bats of a single species identified as Western Bat Working Group (WBWG) high priority (red) species (i.e., pallid bat, Townsend's bat, spotted bat, western red, or western mastiff) in any given year; or injury or mortality to six or more bats of a single species identified as WBWG medium priority (yellow) species (i.e., hoary bat or spotted bat), in any given year.

The Applicant will implement minimization measures recommended by these agencies to limit mortality. Which may include operational modifications such as curtailment of turbine speed. The possible use of low-intensity ultraviolet light and ultrasonic deterrence systems to deter birds and bats from approaching rotating wind turbine blades may also be considered as warranted (AWWI, 2018).

Mitigation Measure 3.4-3c: Offset operational impacts on eagles through compensatory mitigation, if necessary.

a) If bald or golden eagle mortality occurs as a result of the Project, the Project Applicant will fund the retrofitting of electrical utility poles that pose a high risk of electrocution to eagles. Applicant will coordinate with the USFWS and follow the most current USFWS *Eagle Conservation Plan Guidance* (USFWS, 2013). If in coordination with USFWS an alternative compensatory mitigation measure is preferred to pole retrofitting, such alternative compensation measure (e.g., pole reframing or funding carcass removal from roadways) may be implemented.

b) Any compensatory mitigation must occur within the same Eagle Management Unit as the Project, and must be completed within one year of any instance of documented take.

c) Applicant will provide a report to the Shasta County Planning Department and USFWS documenting implementation of measures taken within one year of detection of the eagle take.

d) Annually and after collection of 3 years of post-construction monitoring data, the Shasta County Department of Resource Management's will review the data and, in coordination with the Project Applicant, USFWS and CDFW, will determine which, if any, specific wind turbines generate disproportionately high levels of avian (including eagle) mortalities (based on evidence of statistically significant higher levels of mortality relative to other Project wind turbines). If specific wind turbines are found to result in disproportionately high avian mortalities based on collected data, the Project Applicant shall coordinate with the County to evaluate any feasible measures that can be implemented to reduce or avoid mortalities at those specific wind turbines. Furthermore, if mortalities involve eagles, the County will consider additional measures, including but not limited to carcass removal from roadways or funding for the acquisition of conservation easements on habitat that would provide nesting, foraging, or roosting bald and/or golden eagle habitat.

e) If unauthorized take of a federal or state listed raptor occurs during project operation, the Project Applicant shall immediately notify the appropriate agency (CDFW and/or USFWS) by phone. The Applicant shall submit a written finding to the appropriate

agency and the County within two calendar days that describes the date, time, location, species and, if possible, cause of unauthorized take. The Applicant shall notify the County within three calendar days of the receipt of any USFWS and/or CDFW required or recommended actions resulting from the unauthorized take, including whether an incidental take permit and/or additional requirements is deemed necessary by either agency.

Significance after Mitigation: Due to the uncertainty of potentially increased impacts resulting from larger turbines and wind-swept area when compared to the Hatchet Ridge Wind Project, the impact after implementation of mitigation would be significant and unavoidable.

Impact 3.4-4: Decommissioning of the Project could result in adverse impacts to nesting bald and golden eagles. (*Less than Significant with Mitigation Incorporated*)

The anticipated operational lifespan of the Project is 40 years. Decommissioning of the Project and reclamation of the site is expected to have similar impacts on nesting bald and golden eagles as the construction phase, in terms of noise, disturbance, and equipment used, and would require similar mitigation. The implementation of Mitigation Measure 3.4-4 would reduce this potential impact to less than significant.

Mitigation Measure 3.4-4: Implement Mitigation Measure 3.4-2 (Avoid and minimize construction-related impacts to nesting eagles).

Significance after Mitigation: The implementation of this mitigation measure would reduce this potential impact to less than significant by identifying species presence and providing adequate buffers to avoid direct and indirect impacts to nesting birds.

California Spotted Owl

Impact 3.4-5: Construction, operation and decommissioning of the Project could result in adverse impacts to California spotted owls. (*Less than Significant Impact*)

Nesting and Roosting Habitat

The Project Site is located at edge of the geographic range of the California spotted owl and little high-quality nesting and roosting habitat is present within the Project Site (Appendix C11). The majority (about 75 percent) of the Project Site contains vegetation communities unsuitable, or of low suitability, for California spotted owl nesting (Appendix C11). Areas of the Project Site containing moderate to high suitability for nesting habitat are present only within the southeastern third of the Project Site, with approximately 945 acres classified as having moderate suitability for the species and 50 acres classified as having high suitability. These areas of predicted high suitability for nesting and roosting, are present in small, isolated patches in the Project Site which may limit the potential for these areas to support California spotted owl roosts or nests. Construction of roads and other facilities at the Project Site could remove, fragment, and modify

suitable California spotted owl habitat. As described in the focused California spotted owl assessment prepared for the Project (Appendix C11), although approximately 995 acres of moderate to high suitability CSO habitat occurs within the Project Site, only a portion of this area may need to be cleared for the construction and operation of the Project, since the Project Site includes the disturbance area plus a buffer. For this impact analysis purposes, it was assumed the entire 995 acres would be disturbed. However, because the amount of potential habitat to be cleared for the project is only a small portion of available habitat in the region, and is consistent with current land uses (timber harvest), the loss of this potential habitat is not likely to have a substantial effect on California spotted owl populations or habitat use in the region. Within this regional context, plus the lack of recent (since mid-1990's) California spotted owl detections in areas within or surrounding the Project Site (Appendix C11), indicates the Project's impact on California spotted owl nesting habitat would be less than significant.

Nesting Disturbance

If nesting California spotted owls are present in habitat areas at the time of construction, activities could disturb active nests during the 18- to 24-month construction period. Project construction noise and activities could increase stress levels in owls during daytime roosting/nesting periods, potentially leading to nest abandonment and reduced productivity caused by auditory and visual disturbances. These impacts could occur over two consecutive breeding seasons. Similar construction impacts could occur when the Project is decommissioned. Disturbance of nesting for up to two consecutive years, could adversely affect owl populations due to the small number of California spotted owls present in the region.

Although construction impacts to California spotted owl populations are estimated to be less than significant based on low habitat suitability in the Project area, there is a remaining low risk of nest disturbance if owls were to nest in the area. In an effort to further reduce potential effects on California spotted owl, the County may elect to include additional conservation measures identified below as a condition of permit approval.

Operational Effects

The Project Site has been used primarily for the management of timber production for decades along with its associated timber harvest activities. Timber management and harvest operations have recently been conducted primarily within the southern half of the site. Maintenance of the Project, which will involve episodic driving of project roads by maintenance personnel is not likely to result in vehicle collisions with California spotted owl, as maintenance occurs predominantly during daylight hours when owls are inactive. Additionally, Project maintenance activities will not incrementally increase existing vehicle driving and disturbance levels compared with timber operations.

California spotted owls could incur injury or death as a result of collisions with Project wind turbines during operation in areas where the wind turbine blade height overlaps with the height of the adjacent forest canopy. However, due to the low anticipated use of the Project Site by California spotted owls, the limited extent of mature, complex forest stands within and adjacent to the Project Site, the flight behavior of spotted owls, and the low number of collision fatalities of forest-dwelling owl species documented at wind energy facilities, potential impacts to spotted

owls resulting from collision with Project turbines is anticipated to be very low. As a result, operational impacts on California spotted owl would be less than significant.

Although operational impacts would be less than significant, there is a risk of collisions occurring if species use of the area by owls increases from observed levels, or the larger turbine result in increased collisions. In an effort to further reduce potential effects on California spotted owl, the County may elect to include additional conservation measures, as follows, as a condition of permit approval.

California Spotted Owl Conservation Measures:

Modification of EIR Mitigation Measures 3.4-3a (Avoid and minimize operational impacts on Avian and Bat species) and 3.4-3b (Monitor Avian and Bat Mortality Rates During Project Operations) to include California spotted owl would reduce effects by monitoring mortality rates during project operations and implementing agency-recommended minimization, in response to observed collision injuries or mortalities. Modification of Mitigation Measure 3.4-b (e) would include: if a California spotted owl are detected during PCMM, and detections indicate exceedance of the following threshold, the Project Applicant and relevant agencies will develop a plan to mitigate the impacts per the *Land-Based Wind Energy Guidelines* (USFWS, 2012)

- California spotted owl - injury or mortality to one or more owls in any given year; or three owls over three years.

Minimize construction disturbance to California spotted owl.

To avoid direct impacts to active California spotted owl nests, conduct one season of pre-construction surveys in potentially suitable moderate or high quality habitat areas. Alternatively, the Applicant may choose to assume occupancy in some areas based on the presence of suitable nesting, roosting, or foraging habitat in suitable habitat within the Project Site or within 0.25-mile of the Project roads and wind turbines, and adhere to the guidance and seasonal restrictions described below for operating in an "Un-surveyed Landscape." Also before decommissioning the Project, implement each of the mitigation measures outlined below.

1) ***Surveyed Landscape*** – If pre-construction surveys are completed or are current for the Project Site (based on surveys conducted by the Applicant or other data provided from other entities) and those surveys indicate that the suitable habitat at the site is considered to be occupied by California spotted owl:

   a) Do not conduct activities that result in loud and continuous noise levels above 90 decibels within 0.25 mile (or 1,320 feet) of a nest site between February 1 and July 9.

   b) Do not conduct any modification of suitable habitat within 0.25 mile (or 1,320 feet) of an active nest site between February 1 and September 15. Suitable habitat includes California spotted owl NRF habitat. Modification includes cutting and removal of large trees, down logs or snags. Tree or limb trimming or pruning, brush trimming or removal, and hazard tree felling may occur as long as the noise levels described above are not exceeded during the critical breeding period of February 1-July 9.

c) Do not conduct any smoke-generating activities within 0.25 mile (or 1,320 feet) of a nest site between February 1 and July 31.

2) ***Un-surveyed Landscape*** – If surveys have not been completed or cannot be done, assume occupancy in suitable habitat within the Project Site:

a) Do not conduct activities that result in loud and continuous noise above ambient levels above 90 decibels within 0.25 mile (or 1,320 feet) of un-surveyed suitable habitat between February 1 and July 9. Reduced buffers (e.g., 330 feet to 825 feet) may be appropriate based on the type and volume of anticipated noise, and if the Project Site has higher ambient noise levels. Nest buffer distances may be reviewed by a qualified biologist on a case-by-case basis in accordance with USFWS's *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (USFWS, 2006), and applying the methods to California spotted owl.

b) Do not conduct any modification of suitable habitat within 0.25 mile (or 1,320 feet) of un-surveyed suitable habitat between February 1 and September 15. Modification includes cutting and removal of large trees, down logs or snags. Tree or limb trimming or pruning, brush trimming or removal, and hazard tree felling may occur as long as the noise levels described above are not exceeded during the critical breeding period of February 1-July 9. Prior to the removal of any potential nesting and/or roosting trees, an experienced wildlife biologist will be consulted to assess the usage of these trees by California spotted owls.

Significance after Mitigation: Implementing these mitigation measures would reduce the impacts of construction noise and disturbance on California spotted owls during roosting or nesting periods and would minimize the risk of nest disturbance and increased stress levels that could adversely affect spotted owl behavior and activities.

Migratory and Resident Raptors (excluding Eagles)

Impact 3.4-6: Construction and decommissioning of the Project could result in adverse impacts on nesting raptors (other than goshawks). (*Less than Significant with Mitigation Incorporated*)

Of the 15 species of diurnal raptors recorded in the Project Site, the most common non-eagle raptors were red-tailed hawks (148 observations), sharp-shinned hawks *(*18 observations), and Cooper's hawks (nine observations). Diurnal raptor use documented during the Year 1 surveys was fairly consistent across seasons (Appendix C4a). Common raptor species such as the red-tailed hawk and sharp-shinned hawks and special-status raptor species may nest within or adjacent to the Project Site.

Activities associated with the construction and decommissioning of the Project could adversely affect nesting raptors directly or indirectly. Potential direct impacts include the physical removal of nesting habitat. The Project Site and Leasehold Area are currently managed for timber harvest, resulting in a patchwork of periodically cleared lands resulting in regularly changing nesting habitat conditions. Further, the Leasehold Area and surrounding forested landscape has an

abundance of both forested and open habitats for raptors, including goshawk and other forest raptors. In terms of Project related habitat loss, up to 4,464 acres of land would be cleared of vegetation for the construction of road corridors, electric collection system corridors, and turbine pad areas. Not all of these areas contain suitable raptor nesting habitat and the Project Site is not one large clearance area, but rather a patchwork of forested and open areas throughout the Leasehold Area. The habitat which would be permanently removed would not substantially reduce foraging, roosting, or nesting habitat for raptor populations and therefore, the effect of potential habitat losses to special-status raptors would be less than significant.

Additional direct impacts could include removal of or damage to an active nest from grading or the removal of trees or other vegetation. Potential indirect impacts on nesting raptors could occur if nesting activity is disrupted or abandoned, such as when adult attendance to eggs and young is negatively affected by visual or sound disturbances associated with construction activity.

Because of the abundance of suitable nesting habitat for raptors, it is anticipated that Project construction and decommissioning activities occurring during the nesting season would result in adverse direct and indirect impacts on nesting raptors. As this impact has the potential to disrupt annual nesting cycles for multiple raptors, the impact would be significant. However, it could be reduced to a less than significant level with the implementation of Mitigation Measure 3.4-6.

Mitigation Measure 3.4-6: Avoid and minimize construction-related impacts on nesting raptors (March 1 to August 15)

a) Where feasible, tree and vegetation removal activities shall be avoided in potential raptor nesting habitat during the avian nesting season (March 1–August 15) during each year of construction.
b) If construction is planned to occur during the avian nesting season from March 1–August 15, pre-construction raptor nesting surveys shall be conducted by a qualified biologist to identify raptor nests within 500 feet of proposed work areas. A qualified biologist is defined as a person who is knowledgeable in the distribution, habitat, life history, and identification of Northern California birds, is familiar with the survey methods to locate and survey for active nests within the Project Site and can acquire any permits needed to survey for federally listed or state-listed birds, if such permits become necessary.

c) Results of preconstruction raptor surveys will be reported to the Shasta County Department of Resource Management, Planning Division, USFWS, and CDFW by August 31 of the year in which the survey was conducted. The Shasta County Department of Resource Management, Planning Division shall, in coordination with resource agencies, determine whether or not the survey(s) were conducted in accordance with appropriate protocols and measure 3.4-6d is to be implemented. Construction shall not begin in the surveyed area until the Shasta County Department of Resource Management, Planning Division has confirmed that the survey(s) were conducted in accordance with appropriate protocols and, if necessary, that measure 3.4-6d has been implemented.

d) If active raptor nests are found during pre-construction surveys, a 500-foot exclusion zone shall be established around the nest in which no work would be allowed until the young have successfully fledged or nesting activity has ceased. The determination of fledging or cessation of nesting shall be made by a qualified biologist with

experience in monitoring raptor nests. Any sign of nest disturbances shall be reported to the Shasta County Department of Resource Management, CDFW and USFWS. In coordination with CDFW and/or USFWS, the County may modify the size of the exclusion zone depending on the raptor species and type of construction activity occurring near the nest.

Significance after Mitigation: Implementing the above mitigation measure would reduce the impacts of direct tree and vegetation removal, construction noise and disturbance on nesting raptors that could adversely affect nesting success. These avoidance and minimization measures would reduce this this impact to less than significant.

Impact 3.4-7: Construction and decommissioning of the Project could result in adverse impacts to nesting goshawks. (*Less than Significant with Mitigation Incorporated*)

Northern goshawk is moderately likely to occur within the Project Site; three were observed during avian surveys (Appendix C4). Construction would take place in areas of high quality goshawk nesting habitat and historic northern goshawk occurrence. Mature, dense forest stands with large trees and with an open understory are preferred by goshawks for nesting. Human activities near goshawk nests can cause failure, especially during the incubation period. However, because the area is regularly logged, the likelihood that northern goshawks nest within the Project Site is relatively low. However, if present and nesting, disturbance of nesting for up to two consecutive years, could adversely affect goshawk populations due to the small number of goshawk present in the region. Therefore, impacts on northern goshawk resulting from construction activities in or near active nests would be significant. Nesting goshawks are more difficult to locate than other raptors. Consequently, specialized survey methods are required. Potential impacts on nesting goshawks would be reduced to a less than significant level by implementing Mitigation Measures 3.4-7a and 3.4-7b

Mitigation Measure 3.4-7a: Implement Mitigation Measure 3.4-6: Avoid and minimize construction-related impacts on nesting raptors (March 1 to August 15)

Mitigation Measure 3.4-7b: Avoid and minimize construction-related impacts to nesting goshawks (March 1 to August 15)

a) Prior to any disturbance of forest habitats that fit the nesting criteria of northern goshawks, the Applicant will conduct acoustic surveys for northern goshawk during their nesting season (March 1–August 31) following methods outlined by Woodbridge and Hargis (2006) to assure species is not nesting or using the territory for nesting. If nesting goshawks are found, the nests would be avoided with a suitable buffer distance (minimum 500 feet) in coordination with CDFW.

b) Results of preconstruction goshawk surveys will be reported to the Shasta County Department of Resource Management, Planning Division and CDFW. The Shasta County Department of Resource Management, Planning Division shall, in coordination with resource agencies, determine whether or not the survey(s) were conducted in accordance with appropriate protocols. Construction shall not begin in the surveyed area until the Shasta County Department of Resource Management,

Planning Division has confirmed that the survey(s) were conducted in accordance with appropriate protocols.

Significance after Mitigation: Less than significant.

Impact 3.4-8: Operation of the Project could result in mortality and injury to raptors (including goshawk), as a result of collisions with wind turbines and electrical transmission lines. (*Significant and Unavoidable*)

The Project includes turbine design elements to reduce collision hazards for avian species, such as adherence to APLIC powerline design guidelines, approved tower lighting, and the absence of guy wires. However, the use of such elements does not eliminate the risk of turbine collision during operation. For raptors that are either resident or migrate through the Project Site, operation of the Project could result in direct impacts to this group through injury or mortality if they were to collide with wind turbines. Two years of avian surveys identified no obvious areas of concentrated use or flight corridors by eagles or other diurnal raptors within the Project Site (Appendix C4b) in any season. Topography can significantly influence the migration of raptors where major ridgelines creating lift are often followed by birds, or the shorelines of large bodies of water are also often followed, since both features can provide navigational guidance to migrating raptors (Appendix C4b). Although raptors do migrate through the Project Site, the topography of the sites consists of rolling hills with a lack of large waterbodies or river corridors that would act to concentrate raptors within the Project Site during migration. Hence, the overall risk of raptor collision with turbines is considered moderate, relative to areas where avian species concentrate.

During operations, risk may be low to northern goshawks, because of the small goshawk population in the area, limiting the potential for injury and mortality from transmission lines (collision and electrocution) and wind turbines (collision) that have been recorded elsewhere (Birdlife International, 2015). Because northern goshawks are less common within the Project Site (Appendix C8) and locally (Tetra Tech, 2013) and have had no mortality recorded due to wind turbines in California, there is little projected Project risk to this species during operations and impacts would be less than significant.

A detailed Project risk analysis to migrating or resident raptors is provided in Appendix C4b. Because of the close proximity of the Hatchet Ridge Wind Project, and the similarity of raptor species and vegetation located at the Project Site, data (including 3 years of post-construction raptor fatality surveys) from Hatchet Ridge project site is considered a reliable source of information to assess the likelihood of raptor collision risk at this Project Site. During Year 1 of fatality monitoring at Hatchet Ridge, the estimated annual fatality rate for raptors was 0.06 per wind turbine per year. During the second and third year, raptor fatality rates could not be calculated due to low sample sizes, with only eight diurnal raptor fatalities documented over three years. These included four red-tailed hawks, two sharp-shinned hawks, and one Cooper's hawk, which are the three most common raptors also observed in the proposed Project Site; and one turkey vulture (Tetra Tech 2014). In a comparison of the composition of diurnal raptor species recorded at the Project Site from April 2017 through May 2018 and the Hatchet Ridge project site

from November 2010 to December 2013, the analysis found raptor use was similar between sites, with slightly higher red-tailed hawk and sharp-shinned hawk use found at the Project Site and slightly higher American kestrel and bald eagle use found at Hatchet Ridge project site (Appendix C4a; Tetra Tech 2014). The Project turbines are taller and have a larger rotor-swept area, compared to the Hatchet Ridge project, which would incrementally increase collision risk. The Project-specific study concluded, based on the results of pre- and post-construction studies at Hatchet Ridge and avian use surveys conducted at the Fountain Wind Project Site, that diurnal raptor fatality rates at the Project Site would be similar or slightly higher than those at the Hatchet Ridge project site (Appendix C4a).

Based on the three years of raptor fatality data from the adjacent Hatchet Ridge Wind project, and lower estimates of raptor fatalities from other studies assessed by Tetra Tech, it is likely the proposed Project would result in raptor mortality, between 4.3 and 53 raptors per year.

Because raptors have large home ranges, and thus have low population densities, but have lower reproductive rates due to their longer longevity, operational impacts on raptors would be significant, particularly for special-status species expected to occur regularly on the Project Site such as the Cooper's hawk and sharp-shinned hawk.

> **Mitigation Measure 3.4-8:** Implement Mitigation Measure 3.4-3b (Monitor avian and bat mortality rates during project operations).
>
> **Significance after mitigation:** Implementation of Mitigation Measure 3.4-3b would offset the impacts of Project operations on resident and migratory raptors by documenting any moralities and including operational modifications such as curtailment of turbine speed, ultrasonic deterrence systems or other mitigation to minimize raptor fatalities. However, due to the uncertainty associated with these estimates and the potential for mortality rates projected up to 53 raptors per year, this impact is considered significant and unavoidable. Implementing the above-identified mitigation measures would reduce operations-related impacts to the maximum extent practicable.

Other Resident and Migratory Birds

Waterfowl

Impact 3.4-9: Operation of the proposed project could result in mortality and injury to waterfowl as a result of collisions with wind turbines and electrical transmission lines. (*Less than Significant Impact*)

The majority of waterfowl observations (about 78 percent in Year 1 surveys) comprised three species: snow goose, greater white-fronted goose, and Canada goose, all of which are abundant species in the Pacific flyway (Appendix C4a). An analysis of collision risk to birds using the first year of avian data collected within the Project Site was conducted (Appendix C4a). During Years 1 and 2 of the avian surveys at the Project Site, the majority (97.1 percent and 99 percent, respectively) of waterfowl observations were recorded flying above the estimated rotor swept height of the wind turbines and therefore would not be at high risk of colliding with the Project

turbines. At Hatchet Ridge, waterfowl comprised up to 50 percent of bird mortality, primarily attributed to species making localized movements under high wind and/or low visibility conditions which may cause the birds to fly at a lower altitude and encounter turbines (Tetra Tech 2014). Nonetheless, the overall rate of waterfowl mortality at Hatchet Ridge was still comparatively low for the region and nationally, ranging from 0.27 to 0.39 birds/MW/year (Tetra Tech 2014). In addition, because the Project Site, like Hatchet Ridge, is heavily forested, waterfowl would likely fly at a higher altitude over the trees, and it does not appear that waterfowl or waterbirds use the area as migratory stop-over sites.

In the same avian risk of collision review, waterbirds, including the American white pelican, did not appear to be particularly susceptible to collision with wind turbines. In addition, suitable breeding and stopover habitat for American white pelican is also absent from the Project Site. From Project Site-specific studies (Appendix C4a), it can be concluded that the majority of waterbirds, including the American white pelican, would fly well above the rotor swept height and height of electrical transmission lines within the Project Site. Based on observed species use of the site and review of species habitats, the potential risk of substantial waterfowl mortality is considered low. Because the level of waterfowl collision related injury or mortality is not anticipated to occur at levels which would adversely affect population levels, operational impacts on waterfowl and waterbirds would be less than significant.

Mitigation: None required.

Sandhill Crane

Impact 3.4-10: Construction, operation, and decommissioning of the Project could have potential significant impacts on sandhill cranes during migratory movements in fall and spring, and could result in mortality of and injury to sandhill cranes. (*Less than Significant Impact*)

If present, sandhill cranes at the Project Site during construction and operation could be impacted predominantly during the fall and winter, as well as potentially in the spring when large flocks of birds travel through the vicinity via the North Pacific Flyway on migration. The probability of collision of greater sandhill cranes with powerlines, utility poles, wind turbines, turbine towers, and met station towers during construction and operation of these facilities would increase when: a) flocks are large, b) visibility is hampered, c) wind speeds are excessive, and d) flight occurs at night. Further, the timing of migration late in the fall season and well into winter increases the probability of birds encountering unfavorable weather such as low cloud ceiling, storm winds, or fog over the ridge. There are no available data on the behavior of birds under poor visibility conditions at the Project's ridgetops.

A review of known sandhill crane interactions with wind turbines suggest sandhill crane collisions with wind turbines are rare. (Appendix C4). Wind farms located in local flight routes between foraging and roosting areas present a greater risk to the sandhill crane, particularly during inclement weather conditions, as both factors produce lower elevation flights (Navarrete and Griffis-Kyle 2014). The relative risk to sandhill crane is considered low because the Project

Site is not located within a daily flight route and migrating cranes are known fly at high altitudes (e.g., 3,000 to 5,000 feet above ground) that are generally above the height of proposed facilities (Johnsgard, 2015). Although, injury and fatality could occur to migrating cranes during operation of the turbines, the nearby Hatchet Ridge Wind Project monitored avian fatalities for the first three years of operation and zero sandhill crane mortalities were observed (Tetra Tech, 2014).

Sandhill crane injury or mortality from collision with turbine towers, turbines, and METs could occur during construction of these facilities, especially during migration periods when most crane traffic occurs. Low-light and poor visibility conditions may be particularly hazardous to migrating cranes and increase the probability of collision with unlit structures. Collisions may also occur as a result of crane interactions with ridgetop power lines.

The use of Federal Communication Commission-required lighting on towers during crane migratory periods would increase tower visibility to birds and potentially reduce collisions with towers and turbines during operations. Maintenance and upkeep of the Project facilities during operation is not likely to impact sandhill cranes, because the Project Site does not support suitable stopover or foraging habitat, therefore the species would not be exposed to maintenance activities. Because the likelihood of collision risk would be low, incidental injury or mortality of migrating sandhill cranes would not occur at a level which would result in a decline of sandhill crane populations. Therefore, operating impacts on sandhill cranes would be less than significant.

Although operational impacts would be less than significant, there is a remaining very low risk of collisions occurring if species use of the area increases from observed levels. In an effort to further reduce potential effects on sandhill cranes, the County may elect to include additional conservation measures as a condition of permit approval. Recommended measures include:

> **Sandhill Crane Conservation Measures:** Modify EIR Mitigation Measures 3.4-3a (Avoid and minimize operational impacts on avian and bat species) and 3.4-3b (Monitor avian and bat mortality rates during Project operations) to include sandhill crane. This would offset the impacts of Project operations on sandhill cranes by documenting any mortalities of cranes and implementing operational changes to reduce mortality.
>
> In addition, inclusion of the following conservation measure as a condition of approval would further reduce operational-related impacts to sandhill cranes.
>
> **Sandhill Crane Conservation Measure: Minimize operational impacts to Sandhill cranes by timing the construction of tower and turbine installations, and by putting avian deflectors on ridgetop powerlines.**
>
> 1) Time the installation of METs, turbine towers, and turbine blades so that no tall structures are erected to final heights and left unlit through the fall migration period of sandhill cranes (September through November).
>
> 2) Where mountain top construction of new transmission lines could pose hazards to cranes, efforts would be made to use highly visible markers to aide in bird avoidance of lines. For sandhill cranes, it is expected that most or all collisions with powerlines would take place at night, in low light condition or in inclement weather like fog,

heavy rains, and high winds. Using UV lighting, glow-in-the-dark tape, or bird deflection devices with short gaps between devices would limit risk of collision.

Nesting Songbirds

Impact 3.4-11: Construction and decommissioning of the Project could result in adverse impacts to nesting songbirds, potentially including special-status species. (*Less than Significant Impact*)

Of the 78 species of small birds recorded in the study area, the most common songbirds included dark-eyed junco, mountain chickadee, western bluebird and Steller's jay, with woodpeckers also common. Songbird use in both years of avian surveys was relatively consistent across all seasons and areas surveyed (Appendix C4a, Appendix C4b). The results of avian surveys further suggest that there is no specialized use of nesting habitats by resident small birds. As shown in Table 3.4-3, five special-status songbird species were identified as having a high potential to occur, including Vaux's swift, olive-sided flycatcher, Cassin's finch, Lewis' woodpecker, and yellow warbler. One additional species, willow flycatcher, a state-endangered species was also identified but with a low potential to occur on the Project Site.

Most Songbirds, including special-status species Olive-sided flycatcher, Cassin's finch, and Lewis' woodpecker

Activities associated with the construction, operation, and decommissioning of the Project could potentially adversely affect nesting songbirds, including the special-status species, directly or indirectly. Potential direct impacts to nesting songbirds protected by the Migratory Bird Treaty Act include the physical removal of nesting habitat or the direct removal or damage to an active nest from the grading or the removal of trees or other vegetation that might provide a nesting substrate. Direct impacts to birds include injury, mortality, nest destruction or disturbance resulting in nest abandonment. Potential indirect impacts on nesting song birds could occur if nesting activity or adult care of eggs and young is negatively affected by visual or sound disturbances associated with construction activity. The majority of songbird species using the Project Site including special-status species, olive-sided flycatcher, Cassin's finch, and Lewis' woodpecker do not require hard to find specialized nesting habitat. The removal of nesting habitat within the Project Site and potential nesting disruption due to construction noise are not anticipated to adversely affect songbird species populations. Because the potential effect on any individual songbird species population would not be substantial, the impact on most songbird species including olive-sided flycatcher, Cassin's finch, and Lewis' woodpecker from construction and operation of the project would be less than significant.

Although the impact on nesting songbirds is less than significant, the County may elect to include additional conservation measures as a condition of permit approval to further reduce potential adverse impacts on nesting songbirds.

> **Conservation Measure for Nesting Songbirds:** Avoid and minimize construction-related impacts to nesting songbirds

> Prior to any disturbance of nesting habitat during breeding season (March 1 to August 15), a qualified biologist will survey the area to be impacted to locate any active bird nests. Active nests will be avoided by a suitable buffer distance (e.g., 100 to 250 feet).

Three special-status passerine birds, Vaux's swift, yellow warbler, and willow flycatcher, may occur in the Project Site and have specialized habitat requirements that may be directly impacted by the construction and decommissioning of the Project.

Vaux's swift

Vaux's swifts use communal roosts, typically mature conifers with large top or side cavities year-round, including during nesting and migratory periods. Direct removal of active communal roost trees during the nesting season could result in the temporary displacement of hundreds of individuals. However, the existing use of the Leasehold Area for timber management likely precludes the existence of large trees with suitable roosting cavities, and no communal roosts were identified in the Project Site during the avian surveys (Appendix C4). As a result, the likelihood of a communal roost being affected by vegetation clearing or other construction activities is low. The potential impact on nesting Vaux's swift is less than significant.

Although the impact on Vaux's swift from Project construction, operation and decommissioning is less than significant, if communal roosts, previously undetected are present and active impacts could occur. To further reduce the potential for adverse impacts, the County may include additional conservations as a condition of permit approval. Recommended measures include:

> **Conservation Measure for Vaux's Swift:** To minimize direct and indirect impacts on Vaux's swift, a pre-construction habitat assessment shall be conducted to determine the location of potential roost sites used by this species in the Project Site, as follows:
>
> 1. Conduct a habitat assessment for potential Vaux's swift roost sites: Habitat assessment shall be completed prior to removing or altering any trees, snags, or structures that could potentially provide roosting habitat for Vaux's swift. An assessment of such habitat will take place during the spring and fall roosting seasons. The assessment shall be conducted by an experienced and qualified biologist who is able to identify potential Vaux's swift roosts and nest trees. Emphasis will be on large, live and dead trees with exposed hollowed cavities in tree trunks.
> 2. Reduce any temporary impacts to roost sites during construction and decommissioning. Assess any trees (and structures during decommissioning) located within a minimum 200-foot buffer area from construction disturbance areas. In general, the buffer area will cover all habitat within the line of sight from the edge of the disturbance area and may be adjusted and expanded as necessary by a qualified biologist, depending on the severity of planned disturbance. Impact minimization measures may include:
>
>   a. Delaying work in a buffer area until swifts would be absent from their roost, or present but in low numbers.
>
>   b. Employing the use of sound or vision barriers between the active roost and the temporary disturbance activity.

c. Initiating any disturbance prior to a sensitive season and continuing into the following sensitive season so that Vaux's swift can avoid establishing a roost in the area of disturbance or can become desensitized to the disturbance prior to a sensitive season.

d. As an alternative to implementing the above listed measures, all highly suitable roost habitat may be surveyed and assessed, and the qualified biologist can make the determination that survey approaches and results are sufficient to indicate an absence of roosting Vaux's swift in the Project Site.

Yellow Warbler and Willow Flycatcher

The yellow warbler is a migratory species in northern California, with presence in the region during the spring and fall. Throughout its range, the yellow warbler is found exclusively in riparian habitats (Lowther et al., 1999). Riparian habitat in the study area is limited and, within the Project Site, 115.2 acres of riparian habitat may be directly impacted by the Project. As a riparian obligate, the loss of riparian habitat could adversely affect migratory populations of yellow warbler. However, because there is an abundance of riparian habitat in the region, the loss of 115.2 acres of riparian habitat would not result in a decline in yellow warbler populations. Migrating yellow warblers could be also deterred from using habitat within and adjacent to the Project Site by noise and disturbance associated with Project construction and decommissioning, and by collision during Project operation. The number of injuries and mortalities resulting from collisions would not result in a substantial reduction in the population of yellow warbler in the region, and would therefore be less than significant.

No active willow flycatcher breeding populations are specifically known to occur on the Project Site based on the results of protocol-level surveys for willow flycatcher conducted on the Project Site (Appendix C12). However, willow flycatchers may fly over the Project Site during migration and may use available patches of riparian/wetland and meadow habitat as stopover habitat in spring and fall (Appendix C12). As stated above up to 115.2 acres of riparian habitat may be removed or otherwise altered as part of Project construction. Migrating flycatchers could be impacted by noise and disturbance associated with Project construction and decommissioning, and by collision during operation. Due to the lack of breeding populations within the Project Site, and the low potential for willow flycatcher to occur, impacts on willow flycatcher from construction, operation and decommissioning of the Project would be less than significant.

Although, Project impacts on yellow warbler and willow flycatcher would be less than significant, adverse effects would occur. To further reduce the potential for and level of adverse impacts, the County may include additional conservations as a condition of permit approval. Recommended measures include:

Conservation Measure for Willow Flycatcher and Yellow Warbler: The following measures to avoid and minimize the removal and fragmentation of suitable habitat for the willow flycatcher. This measure also would protect yellow warblers, which also use riparian habitat.

1) Using the willow flycatcher habitat model developed by CDFW (Timossi et al., 1995) and using a biologist knowledgeable about willow flycatcher habitat to

examine aerial imagery of the Project Site, map areas of suitable habitat within the final boundaries of the Project Site and ground-truth the presence and quality of this habitat. This information would be used by the Applicant to modify road construction and other plans, if necessary, to minimize the removal or degradation of willow flycatcher habitat. Upon completion of construction, the Applicant will submit to the Shasta County Department of Resource Management Planning Division, CDFW, and USFWS a report detailing the results of these minimization efforts, and shall provide a summary of acreages of breeding and foraging habitat that were temporarily or permanently affected by construction.

2) For all willow flycatcher habitat identified to be impacted within the final Project Site, conduct pre-construction protocol surveys during the breeding season (June 15 to August 15) using the most recent CDFW survey guidelines (Bombay et al., 2003). Survey results will be provided to the Shasta County Department of Resource Management Planning Division and CDFW. If additional areas of potentially suitable habitat than those already surveyed will not be directly impacted during Project construction, then no further willow flycatcher surveys will be required.

   If nesting willow flycatchers or yellow warblers are found, coordinate with CDFW to protect these sites and buffer them from disturbance using a 250-foot exclusion zone (or width recommended by CDFW/USFWS depending on disturbance type) around the habitat or any nest sites found. Within this zone, no work will be allowed until the young have successfully fledged or nesting activity has ceased. The determination of fledging or completion of nesting shall be made by a qualified biologist with experience in nest searching and monitoring for willow flycatchers, in coordination with CDFW. Any active nest sites shall be monitored periodically throughout the nesting season to identify any sign of disturbance and to document nest status.

Pit Roach, Amphibians and Western Pond Turtle

Impact 3.4-12: Site preparation and construction, operations and maintenance, and decommissioning and site restoration of the Project could result in habitat loss and water quality impacts on Pit roach, special-status amphibians and western pond turtle. (*Less than Significant with Mitigation Incorporated*)

The site preparation and construction, operations and maintenance, and decommissioning phases of the Project have potential to cause temporary indirect and direct, and permanent indirect adverse impacts to aquatic and semi-aquatic species within the Project Site. Approximately 38 acres of wetlands and waters were identified on the Project Site (Table 3.4-2). These wetland and other waters habitats may be occupied by aquatic and semi-aquatic (also use upland habitat) species. Although Project development would not impact all of wetlands and waters in the Project Site, some of these habitats would be removed or disturbed. Impacts on wetland and other aquatic habitats are discussed below under Impact 3.4-16. Briefly, permanent impacts to wetlands and other waters would occur on 2.22 acres of wetlands and 1.2 acres of other waters. These impact acreages represent 8 percent of the wetlands and 11 percent of other waters mapped in the aquatic resources survey (Table 3.4-2, Appendix C2), which covered a larger survey area than the Project Site. Temporary impacts would occur on 1.48 acres of wetlands and 0.64 acre of other waters.

The removal or disturbance of wetlands and other waters would reduce available habitat for aquatic and semi-aquatic species in the Project Site. Because of the relatively small amount of habitat present, this could result in an adverse effect on local pit-roach, amphibian and western pond turtle populations, which would be considered a significant impact. This impact could be reduced to a less than significant level, with the implementation of habitat and water quality protective and restoration measures, and with a minimum of 1:1 compensation for permanently removed habitat. Implementation of Mitigation Measures 3.4-16 a, b and c, as described under Impact 3.4-16, would reduce these impacts to a less than significant level.

During construction, there is a low likelihood that semi-aquatic species using upland habitat could also suffer injury or mortality from increased vehicle traffic (compared to current timber harvest activities) and ground disturbing activities. Operational vehicle traffic is expected to be similar or less than current conditions and would not result in increased impacts on semi-aquatic species. Increased injury and mortality of special-status amphibians and western pond turtle during construction is not expected to affect species populations, which are concentrated near aquatic habitat and would be less than significant. The County may elect to include additional measures as conditions of permit approval to further protect semi-aquatic species from temporary construction related impacts. Implementation of the Terrestrial Species Conservation Measure discussed under Impact 3.4-14 would reduce potential impacts on semi-aquatic species including sensitive amphibians and western pond turtle within upland areas.

Additionally, Clearing, grading, and other soil disturbances during construction have the potential to increase erosion from the Project Site into aquatic habitats, which could result in temporary indirect adverse impacts to aquatic species. Indirect impacts may include temporary increases in turbidity of surface waters and transport of other pollutants such as oil from machinery into aquatic habitats. These direct adverse impacts to water quality may have temporary indirect adverse impacts on aquatic species. Unless mitigated, these impacts could reduce local aquatic and semi-aquatic species populations, which would be considered significant. Effects from degraded water quality could be reduced by using erosion control, pollution control, and wetland and waters protective measures. Implementation of Mitigation Measures 3.4-12 would reduce this potential impact to less than significant by avoiding and minimizing impacts on habitat for aquatic and semi-aquatic species.

> **Mitigation Measure 3.4-12:** Implement Mitigation Measure 3.12-1 (Water Quality Best Management Practices during Activities in and near Water) and Mitigation Measure 3.4-16b (Avoid or Minimize Impacts to Wetlands and Other Waters)
>
> **Significance after Mitigation:** Implementing these mitigation measures would reduce the potential water quality impacts of the Project on wildlife by partial avoidance of and compensation for the removal of wetland and other waters habitat. The mitigation measures would also minimize adverse impacts from erosion or other pollution on water quality of Project Site surface waters to less than significant. The recommended Terrestrial Species Conservation Measure would further reduce the less than significant Project impacts to Pit roach, special-status amphibians and western pond turtle.

Bats

Impact 3.4-13: Operation and maintenance of the Project could result in direct mortality and injury to bats, including special-status species. (*Significant and Unavoidable)*

Bats have low reproductive rates and require high adult survivorship to avoid population decline (Thompson et al. 2017). Operation of the Project poses a risk of direct injury and mortality to bats, including special-status species, as a result of wind turbine operation in areas where the flight altitudes of foraging, migrating, and transiting bats coincides with the height of wind turbine blades. Based on the 3-year monitoring completed for the Hatchet Ridge Wind Project (Tetra Tech, 2014) and the Project-specific bat acoustic survey report (Appendix C6), the likelihood of injury risk is considered low for special-status bat species, but risk is higher for other bat species such as hoary bat. Recent mortality estimates (Arnett and Baerwald 2013) and models (Frick et al. 2017), have identified potential population-level effects from wind operations on particular bat species, including hoary bat. Surveys confirm hoary bat as one of the most common species on the Project Site (Appendix C6) and surveys at the Hatchet Ridge wind facility confirm that hoary bat are particularly vulnerable to wind operations in the region (Tetra Tech 2014). Based on this date it is anticipated the operation of the Project would result in adverse effects on bats, potentially affecting bat populations. As a result, the injury and mortality of bats resulting from Project collisions with turbines would result in a significant effect.

Maintenance of the Project would be unlikely to result in a significant adverse impact to bat species, unless unforeseen circumstances arise, for example, if repair work is conducted at night under artificial lighting that attracts flying insects.

To monitor any adverse effects to bats, including special-status species, the Project shall implement Mitigation Measure 3.4-13, which would document and report bat mortalities from the Project, identify appropriate mortality minimization measures, and implement all recommended minimization measures to reduce mortality. Implementing this measure would reduce operational impacts on bats, but impacts would remain significant and unavoidable.

> **Mitigation Measure 3.4-13:** Implement Mitigation Measure 3.4-3b (Monitor Avian and Bat Mortality Rates During Project Operations.
>
> **Significance after Mitigation:** Implementing Mitigation Measures 3.4-13 would allow the identification of potentially hazardous towers to bat species, if present, which would facilitate adaptive management approaches such as curtailment and deterrence to deter bats if, as a result of post-construction monitoring, it is determined that multiple individuals of a particular bat species are being injured or killed by collisions with turbines consistent with the thresholds identified in Mitigation Measure 3.4-3b. Though implementation of this measure would reduce impacts on bat species, impacts on bats would remain significant and unavoidable.

Terrestrial Mammals

Impact 3.4-14: Site Preparation and Construction and Decommissioning and Site Restoration of the Project could result in temporary adverse impacts to special-status mammals. (*Less than Significant Impact)*

Site preparation and construction may result in temporary adverse impacts to special-status mammals including the Oregon snowshoe hare and the Pacific fisher through injury or death to individual animals from interactions with construction equipment; entrapment in open holes or trenches; removing access to cover, forage or water; or through temporary disturbance to or permanent loss of habitat. Construction activity could interfere with normal foraging, breeding, dispersal, and other typical behaviors, particularly from noise, activity, as well as attractants such as food-related trash. Although construction would result in disturbance, because the site is currently active timber managed lands, large truck traffic and vegetation clearing already occurs. The Project would increase the level of activity during construction but is not likely to result in an adverse effect on special-status mammal populations given the abundance of similar habitat available in the region and Project vicinity. Therefore, the impact on special-status terrestrial mammals would be less than significant.

When completed, only substation, switchyard, and operations facilities would be fenced; therefore, movement through the landscape is not expected to be significantly impacted for terrestrial mammals and impacts from operations are expected to be less than significant with no mitigation required.

Although the impacts on special-status terrestrial mammals would be less than significant, the County may elect to include additional measures as conditions of permit approval to further reduce adverse effects. Suggested conservation measures which would provide best management practices to reduce Project-related impacts to terrestrial mammals include:

> **Terrestrial Species Conservation Measure: Avoid and minimize impacts to terrestrial special-status species.**
>
> The Applicant will implement the following measures to minimize and monitor impacts during both construction and decommissioning phases:
>
> a) Applicant will design and implement a plan for workers encountering injured or dead special-status terrestrial species during construction, to include a stop-work order within 50 feet, notification of a qualified biologist, and notification of CDFW and/or USFWS as appropriate.
>
> b) All personnel on-site (i.e., employees, contractors, inspectors, and visitors) will check for presence of wildlife under or in equipment before operating. Wildlife found underneath or within vehicles or equipment will be allowed to leave voluntarily or removed by a biological monitor if it is safe to do so. State or federally listed species will not be handled and USFWS and/or CDFW will be contacted.
>
> c) All excavations will be backfilled, sloped at a 3:1 ratio, covered completely to prevent wildlife access, or fully enclosed with exclusion fencing at the end of each workday. If an animal is found entrapped, construction will be delayed until it has left the excavation or been removed by a qualified biological monitor if it is safe to do so.

d) Natural water sources will remain unfenced in order to provide access for terrestrial and semi-aquatic wildlife.

e) All food-related trash will be contained in secured, wildlife-proof containers to prevent attracting wildlife to work areas.

f) Vehicle speeds will not exceed 15 miles per hour during all phases of the Project; speed limit signs will be posted at all entry points and throughout the Project Site.

g) High-intensity lighting will be minimized to the level needed for worker safety.

h) Nighttime vehicle traffic will be minimized.

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b) Whether the Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

Rocky Mountain Maple Riparian Scrub

Impact 3.4-15: Site preparation and construction, operations and maintenance, and decommissioning and site restoration of the Project would result in adverse impacts to riparian habitat or other sensitive vegetation communities. (*Less than Significant with Mitigation Incorporated*)

Site preparation and construction activities occurring within the Rocky Mountain Maple Riparian Scrub sensitive natural community, which also describes most riparian habitat mapped in the Project Site (107.2 acres), would result in a direct impact through the removal of vegetation. Construction activities would include clearing and grubbing, topsoil stripping, grading, compaction, utility trenching and placement of aggregate surfacing. Grading would include removal, storage and disposal of soil, gravel, vegetation, organic matter, loose rock and debris. Although the exact footprint of vegetation removal may not encompass the entire Project Site, the potential loss of over 100 acres of sensitive Rocky Mountain Maple Riparian Scrub would be significant due to both the acreage loss and the fracturing of the community through the creation of cleared areas (i.e. roads).

Ongoing operations and maintenance impacts to sensitive vegetation communities and riparian habitats could occur through edge effect degradation or introduction of weeds. With an anticipated operational lifespan of 40 years, Project-caused changes to the riparian habitats and sensitive natural communities may therefore occur over time from these indirect permanent effects. It is unlikely that edge effect degradation would result in a substantial reduction in the Rocky Mountain Maple Riparian Scrub community. Therefore, the impacts on sensitive vegetation communities from operation and maintenance activities would be less than significant.

Project decommissioning and site reclamation would include restoration of the site to pre-construction conditions. This would include the restoration of lost Rocky Mountain Maple Riparian Scrub and rehabilitation of adjacent areas that were affected by edge effect disturbance or introduction of weeds. Therefore, impacts associated with decommissioning and restoration activities would be beneficial to sensitive vegetation communities.

To avoid potential significant impacts of construction, specifically the removal of up to 107.2 acres of Rocky Mountain Maple Riparian Scrub habitat or other sensitive vegetation communities, implementation of Mitigation Measures 3.4- 15a and b would be required.

Mitigation Measure 3.4-15a: To minimize the amount of riparian vegetation removed during construction. Implement Mitigation Measure 3.4-16b for wetlands (Avoid and minimize impacts to wetland and other waters).

Mitigation Measure 3.4-15b: Compensate for Impacts to Rocky Mountain Maple Riparian Scrub Habitat.

The Applicant shall implement a Reclamation and Revegetation Plan that includes detailed measures for the compensation, restoration, and/or enhancement of Rocky Mountain Maple Riparian Scrub Habitat on a per-acre basis. The standard for mitigation shall be no net loss. If restoration is selected as a method of compensatory mitigation, the Applicant shall prepare a riparian mitigation and monitoring plan as part of the Project's reclamation and revegetation plan and shall submit it to the County for review, determination of adequacy, and approval. Mitigation ratios shall be at a1:1 level.

The Rocky Mountain Maple Riparian Scrub Habitat mitigation and monitoring plan shall be written by a qualified biologist and shall include the following elements, at minimum:

a) goals of the plan and permitting requirements satisfied;

b) Riparian habitat restoration activities and locations, including the restoration of temporarily affected riparian habitat to preconstruction conditions;

c) monitoring and reporting requirements (including monitoring period), and criteria to measure mitigation success; and

d) remedial measures, should mitigation efforts fall short of established targets.

The County may consult with CDFW about the adequacy of the plan and may consult with other agencies, if the plan aims to fulfill multiple permitting and mitigation requirements.

Significance after Mitigation: With implementation of these mitigation measures, impacts on sensitive vegetation communities and riparian habitat would either be avoided, minimized or impacts would be compensated at a 1:1 or greater ratio, consistent with any resource agency commitments discussed in Mitigation Measure 3.4-15b Waters). Therefore, following mitigation, this impact would be less than significant.

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c) Whether the Project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Impact 3.4-16: Site preparation and construction, operations and maintenance, and decommissioning and site restoration of the Project could result in adverse impacts to wetlands and other waters. (*Less than Significant with Mitigation Incorporated)*

Project site preparation and construction would result in both temporary and permanent direct impacts to wetlands and other waters subject to federal and State jurisdiction under Sections 401 and 404 of the Clean Water Act. Therefore, implementing the Project would require a Clean Water Act Section 404 permit from USACE and a Water Quality Certification from the Central Valley RWQCB. Wetlands that meet USACE criteria for hydrology, hydric soils, and hydric vegetation as mapped for purposes of the Project (Appendix C2) are subject to USACE jurisdiction These and other mapped features may be determined to be Waters of the United States (WOTUS) and/or waters of the State of California, and therefore subject to jurisdiction of the USACE and/or RWQCB.

Based on anticipated Project disturbance (Table 2-1), permanent impacts to wetlands and other waters would occur to 2.22 acres of wetlands and 1.2 acres of other waters. These impact acreages represent 8 percent of the wetlands and 11 percent of other waters mapped in the aquatic resources survey (Table 3.4-2; Appendix C2), which covered a larger survey area than the Project Site. The permanent removal or filling of 3.44 acres of wetlands and other waters would be considered a substantial adverse effect and therefore a significant impact. Temporary impacts would occur to 1.48 acres of wetlands and 0.64 acre of other waters. These direct impacts would occur from the ground-disturbing activities listed above and would be considered temporary in nature in areas where wetlands and other waters are not filled, and functions are not lost. Temporary impacts to wetlands would not permanently alter wetland hydrology (though soils or vegetation may be altered) and would only apply to wetlands in which restoration is deemed feasible prior to project implementation.

The Project would require road crossings at a total of 32 streams. Twenty-four new road crossings would be required, including 5 perennial streams, 12 ephemeral and intermittent streams and 7 non-vegetated ditches. Eight crossings would occur where there are existing roads and crossings, which may require improvement or replacement. These include 3 perennial streams and 5 ephemeral and intermittent streams. Construction of stream crossings (Figure 3.12-1 and Figures 3a and Figure 3b in Appendix C2) would temporarily affect water quality of other waters during construction and installation of culverts, which may result in erosion of bank soils into waterways, as well as potential spills of oils and other hazardous materials used with equipment. Following construction, permanent impacts would only be to the crossing itself.

Permanent impacts due to filling and grading from road construction activities would result in wetland functional loss, including loss of habitat functions, water quality functions, and hydrology functions. Construction or widening existing access roads, installing or replacing existing culverts, and placement of project staging areas would result in direct impacts to aquatic resources. Moreover, incidental leakage of hazardous materials (for example fuel and lubricants)

or erosion caused by construction activity may result in surface runoff and inputs of sediment and contaminants into aquatic resources. In addition to proposed direct impacts, indirect impacts to wetlands and other waters may include introduction of invasive species, upslope introduction of dust and other contaminants, and vehicle emissions associated with the construction and operation of the project. If hazardous materials or erosion occur and effect wetlands or other waters, the impacts would be significant.

The exact types and extent of impacts to aquatic resources would be determined upon completion of the final site plan as part of the Clean Water Act Section 404 permitting process.

The implementation of Mitigation Measure 3.16a, which would require the implementation of best management practices to minimize damage to waterways during construction, and Mitigation Measure 3.4-16b and 3.4-16c would reduce or compensate for impacts from loss and damage to wetlands and other waters to less than significant.

> **Mitigation Measure 3.4-16a:** Implement Mitigation Measure 3.12-1 (Water Quality Best Management Practices during Activities in and near Water)
>
> **Mitigation Measure 3.4-16b: Avoid and Minimize Impacts to Wetlands and Other Waters.**
>
> The Applicant will avoid and minimize impacts on wetlands and other waters by implementing the following mitigation measures:
>
> a) Avoid direct and indirect impacts to wetlands and streams in final siting and design to the maximum extent feasible.
>
> b) Design stream crossings, including culverts, to pass a 100-year event without increasing average flow velocity or bed/bank scour potential.
>
> c) Monitor stream crossings in burn areas seasonally and maintain culverts and drains, since burned areas may experience sediment and debris loads that could result in clogged or blocked culverts.
>
> d) The Applicant shall also submit a site plan showing all aquatic resources and appropriate regulatory buffers or setbacks to Shasta County.
>
> e) The Applicant shall assign a qualified wetland scientist to mark all aquatic resources associated with the final project site plan. Temporary high visibility fencing, and signage may be used to help protect these areas. The qualified wetland scientist would also identify corresponding setbacks to aquatic resources, as required by Project permits.
>
> f) On a continuous basis, a qualified wetland scientist or biological monitor shall be assigned to visually inspect aquatic resources, and surrounding areas, for evidence of hydrologic loss in aquatic areas.
>
> g) Develop a Spill Prevention, Control, and Countermeasures (SPCC) Plan to minimize adverse impacts to wetlands.

Mitigation Measure 3.4-16c: Compensate for Impacts to Wetlands and other Waters.

The Applicant shall implement a Reclamation and Revegetation Plan that includes detailed measures for the compensation, restoration, and/or enhancement of wetlands and other waters on a wetland type per-acre basis. The standard for mitigation shall be no net loss. If restoration is selected as a method of compensatory mitigation, the Applicant shall prepare a wetland mitigation and monitoring plan as part of the Project's reclamation and revegetation plan and shall submit it to the County for review, determination of adequacy, and approval. Mitigation ratios shall be calculated following USACE wetland mitigation procedures and shall be based on the actual impact acreage of final design per as-built construction drawings and the results of the preconstruction surveys. After review and approval by the County and pertinent regulatory agencies, mitigation shall be carried out at a ratio no less than 1:1, or another ratio approved by the appropriate jurisdictional agency, whichever is higher.

The wetland mitigation and monitoring plan shall be written by a qualified biologist and shall include the following elements, at minimum:

a) goals of the plan and permitting requirements satisfied;

b) wetland restoration activities and locations, including the restoration of temporarily affected wetlands and other waters to preconstruction conditions;

c) monitoring and reporting requirements (including monitoring period), and criteria to measure mitigation success; and

d) remedial measures, should mitigation efforts fall short of established targets.

The County may consult with USACE about the adequacy of the plan and may consult with other agencies, if the plan aims to fulfill multiple permitting and mitigation requirements.

Significance after Mitigation: Implementing these mitigation measures would reduce the potential impacts of the Project on wetlands and other waters to less than significant because impacts on these resources either would be avoided or would be compensated for at a ratio of 1:1 or higher, as directed by the appropriate jurisdictional agencies. A 1:1 ratio would be adequate to achieve a no-net-loss scenario if the following mitigation measures are adhered to and wetland revegetation efforts are successful after the monitoring period. The mitigation measures would reduce construction-related impacts of the Project on wetlands and other waters to less than significant.

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d) Whether the Project would 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.

Impact 3.4-17: Site preparation and construction, operations and maintenance, and decommissioning and site restoration of the Project would not result in adverse impacts to 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. (*Less than Significant Impact*)

Although the Project Site is privately owned and managed for timber production, the forested area of the site likely helps connect older forest habitats of the Lassen and Shasta Trinity national

forests at a landscape-level. However, in desktop review of the Project Site (Appendix C1), and in conducting 2 years of a variety of wildlife surveys within the Project Site, no evidence of any significant movement corridor for wildlife species was documented (Appendix C10).

Suitable deer fawning habitat is present on the Project Site and includes dense forests and shrublands, including riparian and mountain habitats, with abundant forage and water nearby. Disturbance to deer fawning habitat and mammal travel corridors could occur during construction activities, depending on the time of year that activities occur. Although development of the Project is not expected to exceed levels of activity that would occur at the Project Site during timber harvest operations or associated activities such as road maintenance or construction, the development of the Project will remove vegetation that may serve as fawning habitat and cover for travelling mammals. However, there remains substantial areas of underbrush and forestland in the vicinity to provide fawning habitat. Security fencing or other physical barriers that may impede terrestrial animal movements would be limited during construction (e.g., chain-link fencing around the proposed O&M building or other secure structures). The operation and maintenance phase of the Project is unlikely to have significant adverse impacts to deer fawning habitat and mammal travel corridors. It is expected that traffic levels would be similar to those currently used for forest management and timber harvest and for other land uses in the area. A small increase in traffic on existing and proposed access roads is very unlikely to present a barrier to wildlife movement because the roadways would remain rural and lightly traveled after Project construction. Turbine operation is not expected to impact migration corridors as the turbines themselves do not block passage of species through the site. The risk of collision with the turbines has been accounted for elsewhere.

Potential collisions of wildlife and vehicles would be low due to the Applicant's proposal to work primarily during daylight hours with speed restrictions (see Section 2.4.5.5, *Construction Schedule and Workforce*). Potential impacts during decommissioning and reclamation of the Project Site are expected to be similar to site preparation and construction, but with a shorter duration of adverse impacts. Impacts would be less than significant.

Due to the local terrain for watersheds in the Project's vicinity, hydrological conditions for surface waters tend to be intermittent or ephemeral in the winter months and dry in the summer depending on snow melt and winter rains. While native resident or migratory fish may traverse the Project Site when surface drainage allows, impacts to movement of fish from the Project would be less than significant because of the seasonality of the watercourses. Although impacts are less than significant, implementation Mitigation Measure 3.4-16b protecting wetlands and other waters would further reduce the likelihood of any potential impacts to fish.

Thus, impacts to resident or migratory fish or wildlife species, established wildlife corridors, or native wildlife nursery sites from Project construction, operation and maintenance, and decommissioning would be less than significant. Although impacts are less than significant, implementation of Mitigation Measure 3.4-14 (Avoid and Minimize Impacts to Terrestrial Mammals) would reduce the potential for vehicular wildlife mortality and disturbance to fawning habitat.

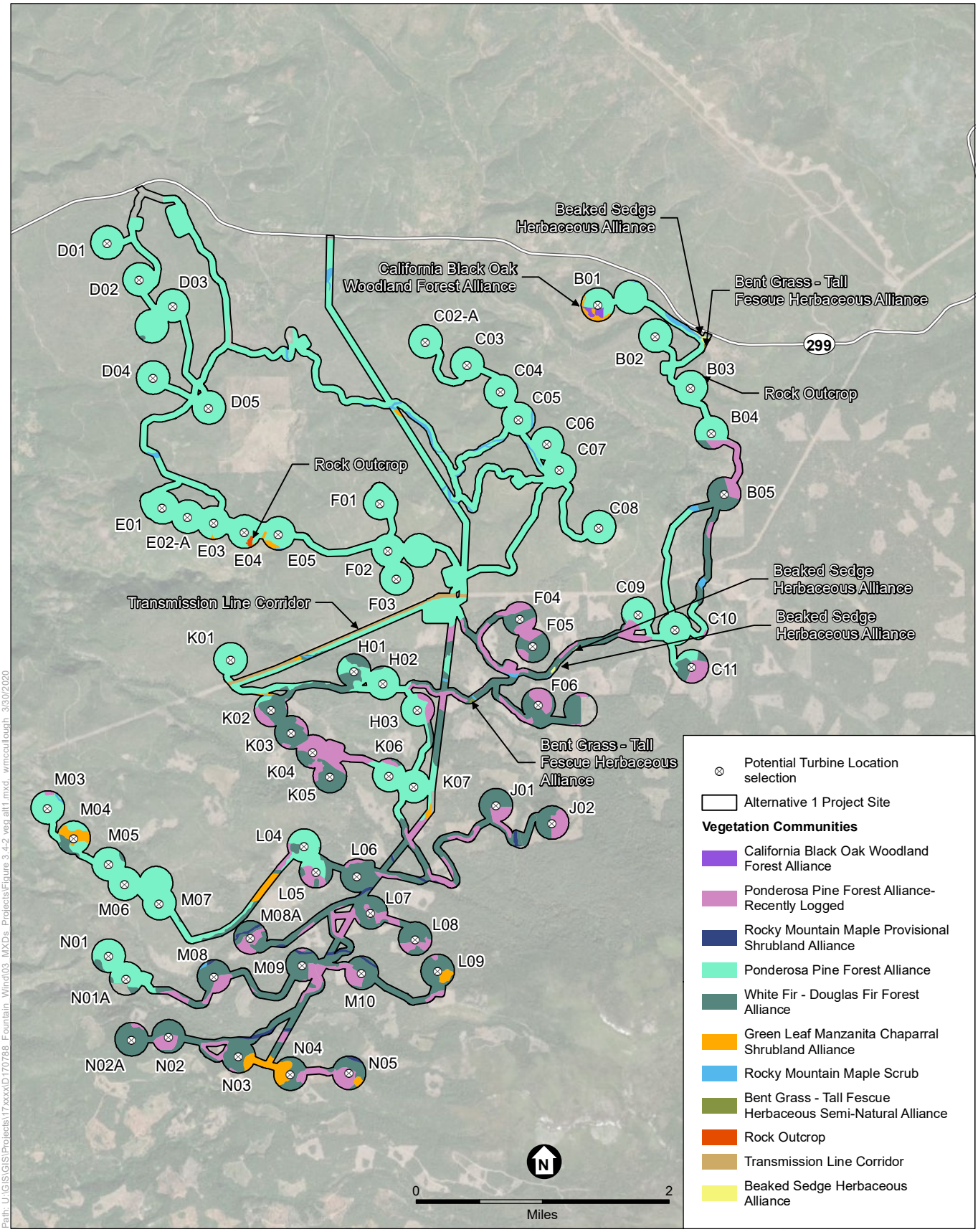
Mitigation: None required.

3.4.3.3 PG&E Interconnection Infrastructure

The Project would include interconnection infrastructure as described in Section 2.4.3, *Project Substation, Switching Station and Interconnection Facilities*. These elements would include both overhead and underground collection system. Overhead collector systems (rather than trenched construction) would be implemented for stream and wetland crossings, to avoid steep terrain, and for other sensitive resource avoidance areas. Construction of the substation, switching stations, and interconnection components would include up to 19 acres of temporary disturbance, and 13 acres of permanent disturbance (including the footprints of the collector substation, switching station, graveled parking and maintenance areas). The proposed location for PG&E interconnection infrastructure is immediately adjacent to the existing PG&E central east-west transmission corridor in under 30-year aged, mixed conifer forest that burned in the 1992 Fountain fire. No sensitive vegetation communities, riparian, wetland or aquatic resources would be directly impacted through construction and operation of the PG&E interconnection infrastructure. The PG&E infrastructure permanent footprint of 13 acres would remove only 0.5 percent of the mixed conifer forest (burned) within the Project Site, and is unlikely to attract non-avian wildlife or hamper wildlife movement corridors through the Project Site and surrounding area. The PG&E infrastructure may contribute to impacts to resident, nesting birds during construction and maintenance and impacts to birds during operation from collision with transmission lines or from electrocution as a result of perching on transmission lines. All other mitigation measures that would be required for the Project also would be implemented to address impacts specifically of the PG&E infrastructure.

Alternative 1: South of SR 299

Under Alternative 1, the Project would be constructed, operated and maintained, and ultimately decommissioned as proposed south of SR 299, and none of the up to seven turbines proposed to the north of SR 299 (turbine numbers A01 through A07) or related infrastructure would be developed. The Alternative 1 Site would consist of the approximately 4,086 acres located south of SR 299, while the approximately 378 acres of the Project Site located north of SR 299 would continue to be managed for timber production (see **Figure 3.4-2**, *Vegetation Communities within the Alternative 1 Site*). Each of Alternative 1's up to 65 turbines could be up to 679 feet above ground level at the top of the blade (the same as the Project) and would have a generating capacity of 3 to 5.7 MW (also the same as the Project). Compared to the Project, this alternative would have 1.8 miles less of new access roads, 4.1 miles less of widening of existing access roads, 2.1 miles less of underground electrical collector lines, and 2.2 miles less of overhead electrical collector lines. Total anticipated temporary construction disturbance areas and expected permanent disturbance areas would be 125.0 acres and 60.5 acres less than the Project, respectively. This is 2.8 percent and 1.3 percent reduction in the expected acres of temporary and permanent disturbance areas within the Project Site (4,464 total acres) respectively. This small reduction in disturbed acres is due to fewer acres of total disturbance from turbines and pads, access roads, overhead and underground electrical collector lines, temporary laydown areas, and other facilities. Since the



SOURCE: WEST Rare Plant & Natural Vegetation Communities Report; 2018/2019

Fountain Wind Project

Figure 3.4-2
Vegetation Communities within the Alternative 1 Site

seven turbines that would not be built are located in the area burned by the 1992 Fountain fire, the largest difference in the acreage of habitats included in the Project Site between Alternative 1 and the Alternative 2 is a reduction in burned mixed conifer forests of 343 acres. There is also expected to be less acreage included in the Project Site of mixed montane riparian scrub (31 acres), and unmapped habitats (3.6 acres). The acres of black oak woodland, mixed montane riparian forests, unburned mixed conifer forests, mixed montane chaparral, montane meadow, and wet montane meadow habitat included in the Project Site would not change. For the purpose of comparison, only changes in impacts to resources that would require mitigation or need additional or less mitigation compared to the Project are detailed below for Alternative 1.

Bald and Golden Eagles, California Spotted Owl, Migratory and Resident Raptors, Sandhill Crane, and Nesting Songbirds

It is estimated that the elimination of 7 turbines (9.7 percent) out of the 72 turbines proposed would likewise reduce the total estimated collision risk to migratory and resident birds, but not substantially so. Under Alternative 1, direct impacts to riparian habitat that may support yellow warbler would be reduced by 31.3 acres, or a 27 percent reduction. Conservation measures for songbirds identified in Impact 3.4-11 would further reduce the less than significant impacts on songbirds. Similarly, operation would pose direct impacts on songbirds through collisions with turbine structures during operation of the 40-year term of the requested conditional use permit. Although some impacts may be reduced under Alternative 1, the same types of impacts would occur, and would be addressed by the same mitigation measures. Therefore, as with the Project, the mitigation measures from Section 3.4.3.2 would be implemented and would help to reduce impacts on birds. Following the implementation of Mitigation Measures 3.4-2, 3.4-3a, 3.4-3b, 3.4-3c, 3.4-4, 3.4-6 and 3.4-8, as with the Project, Alternative 1 would offset the impacts of Project operations on bald and golden eagles, and resident and migratory raptors by documenting any moralities and providing adaptive management to respond to avian fatalities. However, due to the uncertainty associated with the Project turbine size and wind-swept area, the raptor impact estimates, and the potential for unexpectedly higher raptor mortality rates, impacts on bald and golden eagles and other raptors would remain significant and unavoidable. Implementing the above-identified mitigation measures, and conservation measures identified in Impacts 3.4-5 (California spotted owl), 3.4-10 (greater sandhill crane), and 3.4-11 (songbirds) would reduce operations-related impacts to the maximum extent practicable.

Bats

Although Alternative 1 would entail somewhat less surface disturbance, less loss of wildlife habitat, and less potential impact to special-status species due to the removal of seven turbines and associated roads, the nature of the impacts would remain the same, and the same mitigation measures would need to be implemented to reduce potential impacts below established thresholds. Therefore, the mitigation measures outlined in Section 3.4.3.2 would be implemented for Alternative 1. Impacts to bats would be reduced but could still be potentially significant and unavoidable.

Sensitive Vegetation Communities and Riparian Habitats

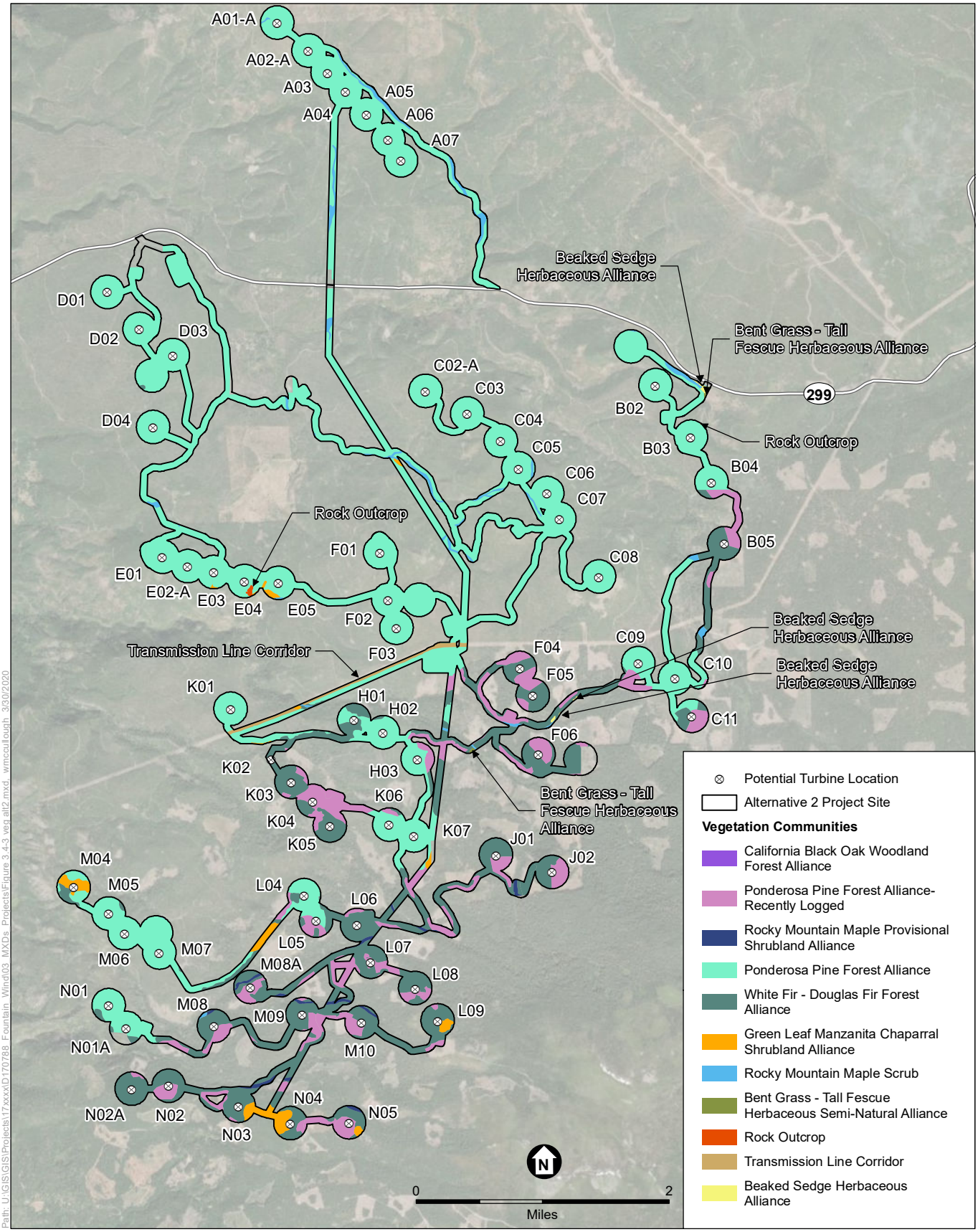
Alternative 1 would directly impact the same vegetation communities as the Project but would reduce the development footprint by 377.9 acres, or 8.5 percent. Under Alternative 1, direct impacts to sensitive vegetation community Rocky Mountain Maple Riparian Scrub would be reduced by 31.3 acres (76 acres of disturbance), or a 27 percent reduction compared to the Project. Although reduced under Alternative 1, impacts to sensitive vegetation would still occur and Mitigation Measure 3.4-16c (Compensate for Impacts to Wetlands and other Waters) would need to be implemented to reduce construction-related disturbances and impacts to a less than significant level.

Aquatic Resources

Alternative 1 would entail less surface disturbance and less potential impact to aquatic resources. Although the area of disturbance for the entire Project would be decreased by 377.9 acres, the types of potential impacts would remain the same throughout the remaining Project Site, which contains numerous aquatic resources, including wetlands and other waters. Under Alternative 1 approximately 2.11 acres of wetlands and 1.33 acres of other waters would be permanently impacted, a slight decrease relative to the Project. As with the Project, Mitigation Measures 3.4-16a and 3.4-16b would be implemented to reduce construction and decommission-related disturbances and impacts related to temporary indirect impacts to aquatic resources from the Project Site to a less than significant level.

Alternative 2: Increased Setbacks

Under Alternative 2, proposed setbacks would be increased relative to the Project to preclude turbine construction within three times the height of the turbine (i.e., within 2,037 feet) of a residential property line and within 1.5 times the height of the turbine (i.e., within 1,018.5 feet) of SR 299, any other publicly-maintained public highway or street, and of Supan Road or Terry Mill Road (see **Figure 3.4-3**, *Vegetation Communities within the Alternative 2 Site*). Implementation of these setbacks would preclude construction of proposed turbines M03, D05, and B01 based on the residential property line setback, and would preclude turbine KO2 based on the roadway setback. Related infrastructure and work areas for these four turbines (including temporary turbine construction areas, access roads and crane roads) would not be needed. The remaining turbines, infrastructure and other improvements would be the same as proposed for the Project. Compared to the Project, Alternative 2 would have 1.0 mile less of new access roads, 4.1 miles less of widening of existing access roads, 2.1 miles less of underground electrical collector lines, and 2.2 miles less of overhead electrical collector lines. Total anticipated temporary construction disturbance areas and expected permanent disturbance areas would be 125.0 and 60.5 acres less than the Project, respectively. This is a 2.8 and 1.3 percent reduction in the expected acres of temporary and permanent disturbance areas within the Project Site (4,464 total acres) respectively. This total disturbance area is identical to Alternative 1. This small reduction in disturbed acres is due to fewer acres of total disturbance from turbines and pads, access roads, overhead and underground electrical collector lines, temporary laydown areas, and other facilities. Since the four turbines that would not be built are located in the area burned by the 1992 Fountain fire, the largest difference in the acreage of habitats included in the Project Site between Alternative 2 and the Project is a reduction in burned mixed conifer forests of



SOURCE: WEST Rare Plant & Natural Vegetation Communities Report; 2018/2019

Fountain Wind Project

Figure 3.4-3
Vegetation Communities within the Alternative 2 Site

100.5 acres. There is also expected to be less acreage included in the Project Site of black oak woodland (5.5 acres), unburned mixed conifer forest (12.4 acres), mixed montane chaparral (6.9 acres), and mixed montane riparian scrub (1.7 acres). The acres of mixed montane riparian forests, montane meadow, and wet montane meadow habitat included in the Project Site would not change.

For the purpose of comparison, only changes in impacts to resources that would require mitigation or need additional or less mitigation compared to the Project are detailed below.

Bald and Golden Eagles, California Spotted Owl, Migratory and Resident Raptors, Sandhill Crane, and Nesting Songbirds

Since the four turbines that would not be built are located in the area burned by the 1992 Fountain fire, the largest difference in the acreage of habitats included in the Project Site between Alternative 2 and the Project is a reduction in burned mixed conifer forests of 100.5 acres. This reduction of impacts to this habitat type would have little benefit to raptors as it is likely few raptors nest in this area. In addition, the reduction of 4 turbines out of the 72 (5.5 percent) turbines would reduce the collision risk to migratory and resident raptors, but not substantially. Under Alternative 2, direct impacts to riparian habitat would be reduced by 1.7 acres, or 1 percent of suitable habitat for the yellow warbler. Similarly, operation would pose direct impacts to songbirds through collisions with turbine structures during operation of the 40-year term of the requested conditional use permit. Although some impacts may be reduced under Alternative 2, the same mitigation measures would apply. Conservation measures identified in Impacts 3.4-5 (California spotted owl) and 3.4-10 (greater sandhill crane) would further reduce less than significant operations-related impacts to these species.

Following the implementation of Mitigation Measures 3.4-2, 3.4-3a, 3.4-3b, 3.4-3c, 3.4-4, and 3.4-6, and 3.4-8, as with the Project, Alternative 2 would reduce impacts of Project operations on resident and migratory raptors by documenting any moralities and providing adaptive management to respond to avian fatalities. However, due to the uncertainty associated with the Project turbine size and wind-swept area, the raptor impact estimates, and the potential for unexpectedly higher raptor mortality rates, impacts on bald and golden eagles and other raptors would remain significant and unavoidable.

Bats

Although Alternative 2 would entail somewhat less surface disturbance, less loss of wildlife habitat, and less potential impact to special-status species due to the removal of four turbines and associated roads, the nature of the impacts would remain the same, and the same mitigation measures would need to be implemented to reduce potential impacts below established thresholds. Therefore, the mitigation measures outlined in Section 3.4.3.2 would be implemented for Alternative 2 and would reduce construction-related and operational disturbances and impacts to local bat populations and their habitats. However, impacts could be considered significant and unavoidable.

Sensitive Vegetation Communities and Riparian Habitats

Alternative 2 would directly impact the same vegetation communities as the Project, except for California black oak woodland, which would be excluded, reducing the Project footprint by 137.6 acres or 3.1 percent. Under Alternative 2, direct impacts to sensitive vegetation community Rocky Mountain Maple Riparian Scrub, a riparian habitat, would be reduced by 1.7 acres (105.6 acres of disturbance), or 1 percent compared to the Project. The implementation of Mitigation Measure 3.4-16c (Compensate for Impacts to Wetlands and other Waters) would reduce construction-related disturbances and impacts to a less than significant level.

Aquatic Resources

Although Alternative 2 would entail somewhat less surface disturbance, 2.22 acres of wetland and 1.33 acres of other waters would be permanently impacted, the same area as under the Project. Because the impacts would remain the same, the same mitigation measures would need to be implemented to reduce these potential impacts. Therefore, Mitigation Measures 3.4-16a and 3.4-16b would be implemented reduce construction and decommission-related disturbances and impacts related to temporary indirect impacts to wetlands and other waters in the Project Site to a less than significant level.

No Project Alternative

If the No Project Alternative is implemented, none of proposed wind turbines or associated infrastructure or facilities would be constructed, operated and maintained, or decommissioned on the Project Site. The proposed overhead and underground electrical collector system and communications lines would not be developed. No disturbance, noise, attractants, or collision hazards would be introduced to the Project Site relative to baseline conditions. The Project Site would continue to be operated as managed forest timberlands. No impacts would result from the No Project Alternative.

3.4.4 Cumulative Analysis

3.4.4.1 Geographic Extent/Context

The geographic scope for the analysis of cumulative impacts to biological resources includes Shasta County and adjacent migration and movement corridors, including local rivers and streams and the portions of the Pacific Flyway for migratory birds proximate to the Project site. This cumulative impact analysis considers past, present and reasonably foreseeable future actions that will or could contribute impacts that are similar in nature to those of the Project and that overlap geographically and temporally with impacts of the Project. The discussion of existing environmental conditions (as described in Section 3.4.1.2, *Environmental Setting*) reflects ongoing impacts of past projects, including past timber harvests.

The incremental impacts of the Project to biological resources are disclosed in Section 3.4.3, *Direct and Indirect Effects*. In summary, they include the temporary and permanent loss of habitat, avian and bat mortality, loss of individuals of certain special-status wildlife species, and temporary construction impacts. The operational impact on raptors is considered significant and

unavoidable. A cumulative impact to biological resources would occur if the Project, combined with all past, present, and reasonably foreseeable cumulative projects in the vicinity of each resource being evaluated, would result in: (1) regulated biological resources becoming limited in extent within the cumulative analysis area; (2) population declines of special-status wildlife resources within the cumulative analysis area; or (3) if compensation for those impacts cannot be achieved.

3.4.4.2 Existing Cumulative Conditions

The 100 MW Hatchet Ridge Wind Project is the only existing wind energy project in the cumulative scenario (Section 3.1.3.1, *Cumulative Scenario*). There are no other wind energy projects currently proposed in Shasta County. The 2007 Hatchet Ridge Wind Project EIR identified significant and unavoidable impacts to greater sandhill cranes, bald eagles, and special-status raptors and other avian species; however, post-construction avian fatality monitoring has not identified any sandhill crane or bald eagle mortalities resulting from that project. Given the close proximity of the Hatchet Ridge project site to the Project Site and the similarity of the two wind energy generation efforts, similar impacts are anticipated to avian species.

Aside from wind projects, other reasonably foreseeable projects in Shasta County include 25 projects that either have applied for or have received approval to proceed. Among them are requests for or implementation of use permits and reclamation plans for mining operations, which would not pose collision hazards to avian species; relatively short towers or poles for cellular and radio uses that could have limited and localized impacts related to avian collisions; timber harvest plans, which would be performed in conformance with federal and state regulations protecting nesting birds and would not substantially reduce habitat for avian species; and urban development, mostly in urban centers, which would have limited impacts on biological resources.

3.4.4.3 Construction, Operations, and Decommissioning

Direct impacts to wildlife as a result of the Project include temporary and permanent loss of habitat along with the displacement and/or potential mortality of mostly common wildlife species that are poor dispersers such as snakes, lizards, and small mammals. The combined effect of impacts to common wildlife species (i.e., species with no special status) from the Project and impacts of the cumulative projects is considered less than significant because the potentially affected area is largely undeveloped and the species are common and wide-ranging within it.

Collision Risk

Impact 3.4-18: The Project could cause a cumulatively considerable contribution to a significant cumulative impact to avian and bat species from collisions with Project infrastructure. (*Significant and Unavoidable*)

Resident and migratory bird and bat species are at risk of collision with features of the Project as well as past, current, and reasonably foreseeable projects in the cumulative scenario. Cumulative projects that could contribute to a collision risk include the Hatchet Ridge Wind Project and three tower projects: Cellular Tower Use Permit use permit (County project #UP18-0006), Hat Creek

Radio Observatory (project #AMND18-0004), and the T-Mobile Wireless Mono Pole (project #UP19-0005). These projects are located in relatively undeveloped areas and have the potential to pose risks to birds and bats during operations resulting from collisions with overhead transmission lines, utility poles, wind turbines, turbine towers, and meteorological towers.

Project-level impacts related to collisions with infrastructure were identified for raptors species (e.g., red-tailed hawk, sharp-shinned hawk, Cooper's hawk, northern goshawk, bald eagle, and golden eagle), and special-status bat species. These impacts, combined with losses associated with past, present, and future projects are considered a significant cumulative impact to these bird and bat species because the impacts have the potential to limit the populations of the species within the cumulative impacts analysis area. For this reason, the cumulative impact is considered significant. As discussed below, the Project's incremental contribution to this significant cumulative effect would not be cumulatively considerable.

For goshawk, no recent breeding activity has been locally described locally and low number of goshawks have been detected at the Project Site or the Hatchet Ridge project site. Sandhill cranes do not use the Project Site for roosting and breeding, and but sandhill cranes have been detected at the Project Site and the Hatchet Ridge project site during migration. Use of the Project Site by smaller bat species is limited, and mortality from turbines appears low at Hatchet Ridge, compared to other wind facilities. Several conservation measures are suggested to further reduce several less than significant impacts to California spotted owl, nesting songbirds and greater sandhill crane, include conservation measures for Impact 3.4-11 (Conservation Measure for Nesting Songbirds; Conservation Measure for Vaux's Swift, and Conservation Measure for Willow Flycatcher and Yellow Warbler), one conservation measure for Impact 3.4-10 (Sandhill Crane Conservation Measure), and one conservation measure for Impact 3.4-5 (California Spotted Owl Conservation Measure).

The Project and similar cumulative projects would be required to minimize potential avian and bat impacts by implementing mitigation measures. For the Project, these include Mitigation Measures 3.4-3.4-3b (Monitor Avian and Bat Mortality Rates During Project Operations), 3.4-3c (Offset Operational Impacts on Eagles through Compensatory Mitigation, if Necessary). Implementation of these mitigation measures would reduce the Project's contribution to this cumulative impact for most avian species and bats; however, due to the uncertainty associated with eagle, other raptor and bat mortality estimates and the potential for unexpectedly high mortality rates, this impact would not be reduced to less than significant under CEQA. In other words, the Project could have a cumulatively considerable (significant) contribution to a significant cumulative effect to eagles, other raptors and bat species based on the uncertainty associated with mortality estimates and the potential for unexpectedly high mortality rates and the uncertainty regarding whether cumulative impacts could result in population-level declines in these species. Because no additional reasonable, feasible mitigation measures are available that, if implemented, would reduce the Project's contribution below the established level of significance, the Project's contribution to this impact would remain significant and unavoidable.

Electrocution Risk

Overhead transmission lines associated with the Project and the Hatchet Ridge Wind Project also pose an electrocution risk for avian species, particularly for large, aerial perching birds such as hawks and eagles, because of their large wingspan (APLIC, 2006). Impacts to golden eagle and other raptors associated with the Project combined with losses of individual birds from electrocution associated with past, present, and future projects are considered a significant cumulative impact to these species because the impacts have potential to limit the populations of the species within the cumulative impacts analysis area. For this reason, the impact would be considered significant under CEQA. For the Project, potential impacts associated with electrocution would be minimized through the proposed adherence to APLIC guidance for new power poles and transmission lines. The Hatchet Ridge Wind Project also incorporates APLIC design guidelines to reduce potential electrocution impacts. Implementation of the Project's mitigation measures would reduce the Project's contribution to this cumulative impact such that it would not be cumulatively considerable.

Waters of the U.S. and Sensitive Natural Communities

Construction activities associated with the Project could result in the temporary and/or permanent placement of fill material into waters of the United States, including wetlands. The Hatchet Ridge Wind Project is the only other project in the cumulative scenario with identified impacts to sensitive natural communities; and the project-level and cumulative impacts to these resources were considered less than significant and fully mitigated following project implementation. Under the Project, 37.96 acres of wetlands and other waters were identified in the study area, of which a small portion would be subject to temporary or permanent impacts. The actual acreage of impacts would be refined and likely significantly reduced during project design, engineering, and permitting. Similarly, a portion of the identified Rocky Mountain Maple Riparian Scrub natural community within the study area would be impacted during Project construction. This natural community is likely not subject to impacts from other projects in the cumulative scenario. For the Project, potential impacts the loss of waters of the U.S. and sensitive natural communities would be minimized through implementation of Mitigation Measures 3.4-16b (Avoid and minimize impacts to wetland and other waters) and 3.4-16c (Compensate for Impacts to Wetlands and other Waters). The Hatchet Ridge Wind Project also implemented mitigation measures to minimize and fully mitigate losses of waters of the U.S., including wetlands and sensitive natural communities. Implementation of the Project's mitigation measures would reduce the Project's contribution to this cumulative impact such that it would not be cumulatively considerable.

When considered in combination with the impacts of other projects in the cumulative scenario, the Project's incremental contribution to avian and bat mortality and impacts to sensitive natural communities would not be cumulatively considerable because implementation of Project's mitigation measures would reduce the impacts to less than significant under CEQA.

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