APPENDIX 4

BIOLOGICAL RESOURCES ASSESSMENT

Biological Resources Assessment
Draft San Vicente Redwoods Public Access Plan

SANTA CRUZ COUNTY, CALIFORNIA

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LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CCA	California Coastal Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game (currently the CDFW)
CDFW	California Department of Fish and Wildlife (formerly the CDFG)
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CRLF	California Red-Legged Frog
CSRL	California Soil Resource Lab
DBH	Diameter at Breast Height
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
ESU	Ecologically Significant Unit
Inventory	CNPS Inventory of Rare and Endangered Plants
LCP	Local Coastal Program
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
OWHM	Ordinary High Water Mark
PCE	Primary Constituent Element
PFMC	Pacific Fisheries Management Council
Rank	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
USFWS	U.S. Fish and Wildlife Service
WBWG	Western Bat Working Group
WRA	WRA, Inc.

EXECUTIVE SUMMARY

This report provides an analysis of natural community and special-status species issues for the proposed trail alignment associated with the Draft San Vicente Redwoods Public Access Plan (Draft Public Access Plan; PlaceWorks 2018) located in unincorporated Santa Cruz County, California. In December 2015, January, February, June, August, and October 2016, and May, June, and August 2017 WRA, Inc. (WRA) conducted a biological resources assessment within the Project Area for the proposed trail network. WRA observed 13 biological communities, 242 plant taxa and 18 wildlife taxa. Eleven sensitive biological communities were identified, including three sensitive aquatic communities. One special-status plant species and three special-status wildlife were determined to be present based on direct observations made by WRA or documented historical occurrences from the site. An additional 18 special-status plant species known from the region were originally determined to have potential to occur within the trail alignment. However, these plants were not observed within the trail alignment during seasonally timed rare plant surveys in 2016 and 2017, and it was subsequently determined that these species have low potential to occur within the proposed trail alignment, although they may have potential occur elsewhere on the property. An additional 13 special-status wildlife species known from the region were determined to have a moderate to high potential to occur within the proposed trail alignment or the immediate vicinity based on the presence of suitable habitat conditions and the proximity of known occurrences within the vicinity of the Project Area.

Although the proposed Project covers a large amount of land, the proposed Project itself is relatively minimal in nature. As a result of the intensive conservation and planning analyses conducted by the Project team, the proposed trail alignment and staging area have been designed to minimize impacts on the land and the sensitive resources found there. The proposed trail design has incorporated the best available design practices for trail construction and maintenance, reducing the potential for long-term adverse impacts related to erosion, sedimentation, and other issues that can arise from poor trail design. The trail network was designed to occupy only a small fraction of the land within the larger San Vicente Redwoods property, thereby providing ample untouched lands for plant and wildlife conservation. Moreover, the minimal nature of the proposed trail network and the activities that will be allowed there are by their very nature compatible with wildland conservation. With the implementation of the avoidance and minimization measures built into the project, WRA believes that all potential adverse impacts associated with the proposed Project can be reduced to a less-than-significant level.

1.0 INTRODUCTION

On multiple dates in December 2015, January, February, June, August, and October 2016, and May, June, and August 2017, WRA, Inc. (WRA) performed an assessment of biological resources for a proposed trail network within the approximately 8,532-acre San Vicente Redwoods property. The trail network is described in the Draft San Vicente Redwoods Public Access Plan (PlaceWorks 2018). The site is composed of two properties located in unincorporated Santa Cruz County, California (Figure 1). For the purpose of this report, the "main parcel" refers to the approximately 8,159-acre property located off of Empire Grade Road, and the "Laguna parcel" refers to the approximately 373-acre property located adjacent to the Bonny Doon Ecological Reserve. The "Project Area" refers to the alignment for the proposed trail network on both properties and an associated parking and staging area on the main parcel, adjacent to Empire Grade Road. The Project Area includes an approximately 50-foot buffer on either side of the trail alignment and around the parking and staging area (Figure 2).

The purpose of the assessment was to gather information necessary to complete a review of biological resources under the California Environmental Quality Act (CEQA) for the proposed trail network. This report describes the results of the site visit, which assessed the Project Area for the (1) potential to support special-status species and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. Special-status species observed during the site visit were documented and are discussed herein. Specific findings on the habitat suitability or presence of special-status species or sensitive habitats may require that protocol-level surveys be conducted. This report also contains an evaluation of potential impacts to special-status species and sensitive biological communities that may occur as a result of the proposed Project, including potential mitigation measures to compensate for any such impacts.

A biological resources assessment provides general information on the potential presence of sensitive species and habitats. The biological resources assessment is not an official protocol-level survey for listed species which may be required for Project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on site conditions that were observed on the dates of the site visits.

Note to the Reader: All Figures referenced in the text are included in Appendix A.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential Project impacts.

2.1 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, riparian habitat, and sensitive terrestrial communities. These habitats are protected under federal regulations such as the Clean Water Act; state regulations such as the Porter-Cologne Act, the California Department of Fish and Wildlife (CDFW; formerly the California Department of Fish and Game [CDFG]) Streambed Alteration Program, and the CEQA; and/or local ordinances or policies such as Special Habitat Management Areas or General Plan Elements. Where these communities occur within the Coastal Zone, they may also be regulated under the California Coastal Act (CCA), as administered by the Santa Cruz County Local Coastal Program (LCP).

2.1.1 Clean Water Act Section 404

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act. The Project Area is within the jurisdiction of the Corps' San Francisco District.

2.1.2 Clean Water Act Section 401 and Porter-Cologne Water Quality Control Act

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements. The Project Area is within the jurisdiction of the Central Coast RWQCB.

2.1.3 California Fish and Game Code Section 1600

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by the CDFW under Sections 1600-1616 of California Fish and Game Code (CFGC). Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term "stream", which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term "stream" can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). "Riparian" is defined as "on, or pertaining to, the banks of a stream." Riparian vegetation is defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFW. The Project Area is within the jurisdiction of the CDFW's Bay Delta Region.

2.1.4 Essential Fish Habitat

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration. Protection of EFH is mandated through changes implemented in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" [16 USC 1802(10)]. The NMFS further defines Pacific coast salmon fishery essential fish habitat as "waters and substrate necessary for salmon production needed to support a long-term sustainable salmon fishery and salmon contributions to a healthy ecosystem" (Pacific Fisheries Management Council [PFMC] 1999). California salmonid species covered by this Fisheries Management Plan include Chinook salmon (*Oncorhynchus tshawytscha*) and Coho salmon (*O. kisutch*), and the EFH "must include all streams, lakes, ponds, wetlands, and other currently viable water bodies and most of the habitat historically accessible to salmon" in California (PFMC 1999). Under regulatory guidelines issued by the NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with the NMFS (50 CFR 600.920).

The Project Area is located outside of viable areas to Chinook salmon and Coho salmon (as described in more detail in Section 4.2.2) and Project activities will be minimized to prevent downstream impacts to EFH (as described in Section 6.1.2). Therefore, while EFH was evaluated for the regulatory context of this Project; no further discussion of EFH is warranted.

2.1.5 CDFW Sensitive Terrestrial Communities

Sensitive terrestrial biological communities include terrestrial habitats that fulfill special functions or have special values. The CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2016a). Sensitive plant communities are also identified by CDFW (CNPS 2016a, CDFW 2016b). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G; referred to herein as the "Global Rank") or statewide (S; referred to herein as the "State Rank") as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified by the CDFW must be considered and evaluated under the CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances (see sections 2.1.6 and 2.1.7).

2.1.6 Sensitive Communities Identified by Santa Cruz County Code

Chapter 16 of the Santa Cruz County Code pertains to the protection of natural resources, and includes sections relating to topics such as grading regulations, erosion control, and water quality control, among others. The sections of Chapter 16 which are relevant to the Project are summarized as follows:

Riparian Corridor and Wetlands Protection

County approval is required for projects that may result in impacts to "riparian corridors." In Chapter 16.30, a riparian corridor is defined as:

> *(1) Lands within a stream channel, including the stream and the area between the mean rainy season (bankfull) flowlines;*

(2) *Lands extending 50 feet (measured horizontally) out from each side of a perennial stream. Distance shall be measured from the mean rainy season (bankfull) flowline;*

(3) *Lands extending 30 feet (measured horizontally) out from each side of an intermittent stream. Distance shall be measured from the mean rainy season (bankfull) flowline;*

(4) *Lands extending 100 feet (measured horizontally) from the high water mark of a lake, wetland, estuary, lagoon or natural body of standing water;*

(5) *Lands within an arroyo located within the urban services line, or the rural services line;*

(6) *Lands containing a riparian woodland.*

Sensitive Habitat Protection

County approval is required for projects that may result in impacts to "sensitive habitat." Chapter 16.32 includes the following definition of a "sensitive habitat":

(1) *Areas of special biological significance as identified by the State Water Resources Control Board.*

(2) *Areas which provide habitat for locally unique biotic species/communities including but not limited to: oak woodlands, coastal scrub, maritime chaparral, native rhododendrons and associated Elkgrass, indigenous Ponderosa Pine, indigenous Monterey Pine, mapped grassland in the Coastal Zone and sand parkland; and special forests including San Andreas Oak Woodlands, indigenous Ponderosa Pine, indigenous Monterey Pine and ancient forests.*

(3) *Areas adjacent to essential habitats of rare, endangered or threatened species as defined in subsections (5) and (6) of this definition.*

(4) *Areas which provide habitat for species of special concern as listed by the California Department of Fish and Game in the special animals list, natural diversity database.*

(5) *Areas which provide habitat for rare or endangered species which meet the definition of Section 15380 of the California Environmental Quality Act guidelines.*

(6) *Areas which provide habitat for rare, endangered or threatened species as designated by the State Fish and Game Commission, United States Fish and Wildlife Service or California Native Plant Society.*

(7) *Nearshore reefs, rocky intertidal areas, sea caves, islets, offshore rocks, kelp beds, marine mammal hauling grounds, sandy beaches, shorebird roosting, resting and nesting areas, cliff nesting areas and marine, wildlife or educational/research reserves.*

(8) *Dune plant habitats.*

(9) *All lakes, wetlands, estuaries, lagoons, streams and rivers.*

(10) Riparian corridors.

County code allows for limited uses within these sensitive habitats, including nature study and research and hunting, fishing, and equestrian trails that have no adverse impact on the species or habitat. Although no hunting or fishing will be allowed on the site, the proposed use of the site for pedestrian, bicycle, and equestrian trails is in line with the spirit of the County code.

Development within any sensitive habitat area is subject to the following conditions:

- *All development shall mitigate significant environmental impacts, as determined by the Environmental Coordinator.*

- *Dedication of an open space or conservation easement or an equivalent measure shall be required as necessary to protect the portion of a sensitive habitat which is undisturbed by the proposed development activity or to protect a sensitive habitat on an adjacent parcel.*

- *Restoration of any area which is a degraded sensitive habitat or has caused or is causing the degradation of a sensitive habitat shall be required; provided, that any restoration required shall be commensurate with the scale of the proposed development.*

2.1.7 Environmentally Sensitive Habitats Identified by the Santa Cruz County Local Coastal Program

The County of Santa Cruz Local Coastal Program (LCP; County of Santa Cruz 1994) defines Environmentally Sensitive Habitats protected under the California Coastal Act in the unincorporated portions of Santa Cruz County. In addition to areas shown on County General Plan and LCP Resources and Constraints Maps, the LCP considers all of the habitats listed above in Section 2.1.6 as Environmentally Sensitive Habitats for purposes of the California Coastal Act. The LCP also identifies a number of specific special-status plant and wildlife species, the habitat for which constitutes Environmentally Sensitive Habitat.

The LCP regulates development and other activities within and adjacent to Environmentally Sensitive Habitats and defines required buffers or setbacks from such habitats. The LCP defines allowed uses within Environmentally Sensitive Habitats and their buffers and specifically identifies "non-motorized recreation and pedestrian trails" as an allowed use compatible with riparian habitat. Because the Santa Cruz County LCP is contained within their General Plan, many of the LCP protections over Environmentally Sensitive Habitats within the Coastal Zone are aligned with the County Code regarding sensitive biological resources and implementation of the LCP is through the Riparian Corridor and Wetlands Protection Ordinance (16.30) and the Sensitive Habitat Ordinance (16.32) (see Section 2.1.6).

2.2 Special-Status Species

2.2.1 Special-Status Plants and Wildlife

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. In addition, CDFW Species of Special Concern, CDFW California Fully Protected species, USFWS Birds of Conservation Concern, and CDFW Special-Status Invertebrates are all considered special-status

species. Although these aforementioned species generally have no special legal status, they are given special consideration under the CEQA. Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity. Bats listed as a "High Priority" or "Medium Priority" species for conservation by the WBWG are typically considered special-status and are considered under the CEQA. In addition to regulations for special-status species, most birds in the United States, including non-special-status native species, are protected by the Migratory Bird Treaty Act of 1918 (MBTA) and the CFGC, i.e., sections 3503, 3503.5 and 3513. Under these laws, destroying active bird nests, eggs, and/or young is illegal.

Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (Inventory) with California Rare Plant Ranks (Rank; formerly known as CNPS "Lists") of 1 and 2 are also considered special-status plant species and must be considered under the CEQA. Rank 3 and Rank 4 species are afforded little or no protection under the CEQA, but are included in this analysis for completeness.

Table 1. Description of California Rare Plant Ranks and Threat Codes

California Rare Plant Ranks	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

2.2.2 Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

2.3 Protected Trees

Chapter 16 of the Santa Cruz County Municipal Code outlines polices for the protection of significant trees within the unincorporated portions of the County. County approval is required for projects that may result in impacts to "significant trees." Per Chapter 16.34, a permit is needed for trees within the Coastal Zone that meet Definitions 1 or 2, below. A permit is also needed for trees within Sensitive Habitat (Definition 3).

1. *Within the Urban Services Line or Rural Services Line, any tree which is equal to or greater than 20 inches d.b.h. (approximately 5 feet in circumference); any sprout clump of five or more stems each of which is greater than 12 inches d.b.h. (approximately 3 feet in circumference); or any group consisting of five of more trees on one parcel, each of which is greater than 12 inches d.b.h. (approximately 3 feet in circumference).*

2. *Outside the Urban Services Line or Rural Services line, where visible from a scenic road, any beach, or within a designated scenic resource area, any tree which is equal to or greater than 40 inches d.b.h. (approximately 10 feet in circumference); any sprout clump of five or more stems, each of which is greater than 20 inches d.b.h. (approximately 5 feet in circumference); or, any group consisting of ten or more trees on one parcel, each greater than 20 inches d.b.h. (approximately 5 feet in circumference).*

3. *Any tree located in a sensitive habitat as defined in Chapter 16.32. Also see Section 16.34.090(c), exemption of projects with other permits.*

The following work is exempted from all provisions of Chapter 16.34 :

(A) Timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practices Act of 1973 (commencing with Section 4511).

(B) Any activity done pursuant to a valid timber harvest permit, or a notice of timber harvesting, approved pursuant to Chapter 16.52 SCCC.

(C) Any tree removal authorized pursuant to a valid discretionary permit approved pursuant to Chapter 13.10 (Zoning Regulations), Chapter 13.20 (Coastal Zone Regulations), Chapter 14.01 (Subdivision Regulations), Chapter 16.20 (Grading Regulations), Chapter 16.22 (Erosion Control), Chapter 16.30 (Riparian Corridor and Wetlands Protection), Chapter 16.32 (Sensitive Habitat Protection), or Chapter 16.54 SCCC (Mining Regulations).

(D) Removal of tree crops pursuant to agricultural operations. [Ord. 3443 § 1, 1983; Ord. 3341 § 1, 1982].

3.0 METHODS

On December 16-17, 2015; January 20-22, February 10-12, June 15-16, August 15-17, August 24-25, and October 21, 2016; and May 30-June 1, and August 8-9, 2017 the Project Area was traversed on foot to determine (1) plant communities present within the Project Area, (2) whether existing conditions may provide suitable habitat for any special-status plant or wildlife species, and (3) whether sensitive habitats are present. In addition, these surveys included a comprehensive mapping of San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)

middens and seasonally timed surveys for special-status plants. The Project Area for the assessment was defined to include the proposed trail alignment plus an approximately 50-foot buffer on both sides, as well as the proposed parking area adjacent to Empire Grade Road and a 50-foot buffer (Figure 2).

All plant and wildlife species encountered were recorded and are listed in Appendix B. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2017), except where noted. Because of recent changes in classification for many of the taxa treated by Baldwin et al. and the Jepson Flora Project, relevant synonyms are provided in brackets. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, an online soil survey of the Project Area (California Soil Resource Lab 2016) was examined to determine whether any unique soil types that could support sensitive plant communities and/or aquatic features are present in the Project Area. In addition, aerial imagery (Google Earth) of the Project Area was reviewed to determine where sensitive landscape features may occur. Biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) and *A Manual of California Vegetation, Online Edition* (CNPS 2016a). However, in some cases it was necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature.

Mapping of plant communities relied on a high-level analysis of the site based on data from CalVeg (U.S. Forest Service 2009) which were augmented by local experts and the Land Trust of Santa Cruz County to document important local habitats such as sandhills, sandhill parklands, and stands of the Federal Endangered Santa Cruz cypress (*Hesperocyparis abramsiana* var. *abramsiana*) and to reflect the boundaries of urban and cultivated lands (ESA 2012). WRA did not refine the mapping of biological communities; however, WRA did note the occurrence of any sensitive biological communities within the Project Area (see Section 3.1.2). Sensitive biological communities with discrete boundaries (e.g., wetlands and streams) were mapped in the field; however, sensitive communities lacking discrete boundaries (e.g., forest types) were not mapped. Instead, the assessment focused on developing avoidance and minimization measures to prevent adverse impacts to such communities. Biological communities observed within the Project Area were classified as sensitive or non-sensitive as defined by the CEQA and other applicable laws and regulations (see below).

3.1.1 Non-Sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under the CEQA or other state, federal, or local laws, regulations or ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under the CEQA or other applicable federal, state, or local laws, regulations or ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Non-Wetland Waters

The Project Area was surveyed to determine whether any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW are present. The assessment was based primarily on the presence of wetland plant indicators, but may also include any observed indicators of wetland hydrology or wetland soils. Potential wetland areas were identified as areas dominated by plant species with a wetland indicator status[1] of OBL, FACW, or FAC as given on the National Wetlands Plant List (Lichvar et al. 2016). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, algal mats, and oxidized root channels, or indirect (secondary) indicators, such as a water table within two feet of the soil surface during the dry season. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory 1987) and Field Indicators of Hydric Soils in the United States (Natural Resources Conservation Service 2010).

Coastal Act/Local Coastal Program Wetlands

Whereas wetlands regulated under the Clean Water Act or the Porter-Cologne Act are identified based on the presence of three parameters (hydrophytic vegetation, hydric soils, and wetland hydrology), the Coastal Act defines wetlands as those areas meeting any one or more of the three wetland parameters. As such, WRA used the Coastal Act wetland definition to identify potentially jurisdictional wetlands within the portion of the Project Area that occurs within the Coastal Zone. Areas which were dominated by FACW- or OBL-rated vegetation or which contained hydric soils or displayed evidence of wetland hydrology were always treated as wetlands for the purposes of the Coastal Act. Areas which were dominated by FAC-rated vegetation and which were located in a suitable topographic position to support wetland hydrology were also always treated as wetlands for the purposes of the Coastal Act. Because FAC-rated vegetation is by definition equally likely to occur in wetlands and uplands (Lichvar et al. 2016), WRA biologists examined areas dominated by FAC-rated vegetation but which were not located in a typical wetland topographic position on a case by case basis. In those situations, WRA biologists looked for evidence that the vegetation was being supported by wetland hydrology (e.g., the presence of hydric soils, evidence of wetland hydrology, or suitable topographic position) before determining that the area should be considered a wetland for the purposes of the Coastal Act.

Sensitive Terrestrial Biological Communities

Prior to the site visit, aerial photographs, local soil maps, and *A Manual of California Vegetation, Online Edition* (CNPS 2016a) were reviewed to assess the potential for sensitive biological communities to occur in the Project Area. During the site visits, the Project Area was evaluated for the presence of sensitive terrestrial biological communities, including sensitive plant communities recognized by the CDFW and sensitive habitats identified in the General Plan/Local Coastal Program and the Santa Cruz County Code. Communities were identified based on descriptions and membership rules developed by the CDFW and the CNPS (Sawyer et al. 2009 and subsequent online updates). All alliances observed within the Project Area with a State Ranking ("S") of 1 through 3 were considered sensitive biological communities and are described in Section 4.1.2, below. Due to the scale of the Project Area, both its narrow width and its long length, and given the comparatively coarse scale at which vegetation alliances are mapped, it

[1] OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

was not practical or feasible to map discrete boundaries between sensitive terrestrial communities in the Project Area. Instead, the presence of these communities was noted, and potential impacts to such communities were assessed collectively at a programmatic level.

3.2 Special-Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Project Area was evaluated by first determining which special-status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special-status species focused on the Davenport 7.5-minute U.S. Geological Survey (USGS) quadrangle and the six surrounding quadrangles (Año Nuevo, Franklin Point, Big Basin, Castle Rock Ridge, Felton, and Santa Cruz). The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- CNDDB records (CDFW 2016a)
- USFWS quadrangle species lists (USFWS 2016a)
- CNPS Inventory records (CNPS 2016b)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "California Bird Species of Special Concern" (Shuford and Gardali 2008)
- CDFG publication "An Annotated Checklist of Amphibian and Reptile Species of California and Adjacent Waters" (Jennings 2004)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- University of California at Davis California Fish Data and Management Software (PISCES 2016)
- National Marine Fisheries Service Distribution Maps for California Salmonid Species (NMFS 2013)

In addition to these resources, WRA received additional unpublished information regarding the presence of local special-status plant occurrences, including for Rank 4 species which are not tracked in the CNDDB (Nadia Hamey, Big Creek forester, personal communication to Matthew Richmond, April 6, 2016).

3.2.2 Site Assessment

Multiple site visits were made to the Project Area to search for suitable habitats for special-status species. Surveys covered the trail network and parking area, including approximately 50 feet on either side of the proposed trail alignment (25 feet on either side of the alignment for wood rat nest mapping) as well as 50-feet around the parking area. Habitat conditions within these areas were used to evaluate the potential for special-status species to occur there. The potential for each special-status species to occur in the Project Area was evaluated according to the following criteria:

> **Unlikely.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Present. Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently.

Not Observed. Species is identifiable year-round but was not observed during surveys or the survey occurred when the species should have been apparent and identifiable but the species was not observed. These species are assumed to not be present.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special-status species is observed during the site visit, its presence was recorded and is discussed in the following sections.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. If necessary, recognized experts in individual species biology were contacted to obtain the most up-to-date information regarding species biology and ecology.

All special-status species observed during the site visit were documented and are discussed below in Section 4.2. For some species, a site assessment at the level conducted for this report may not be sufficient to determine the presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. In some cases, focused surveys may be sufficient to determine the presence or absence of a species for the purposes of the CEQA. WRA conducted seasonally-timed, focused surveys for special-special status plants documented from the region and focused surveys for San Francisco dusky-footed woodrat. The methods for these surveys are described in the following sections. Special-status species for which further focused or protocol-level surveys may be necessary are described below in Section 6.0.

3.2.3 Special-Status Species Surveys

Special-Status Plants

Surveys for special-status plants were conducted on the dates listed below; surveys were stratified such that each portion of the alignment was subjected to early- (December-February), mid- (May-June), and late-season (August-October) surveys.

Special-Status Plant Survey Dates:

2015	2016	2017
December 16-17	January 20-22	May 30-June 1
	February 10-12	August 8-9
	June 15-16	
	August 15-17, 24-25	
	October 21	

Surveys were conducted by WRA botanists familiar with the plants and vegetation of the Santa Cruz Mountains. Surveys covered the trail segments shown on Figure 2, including an approximately 50-foot buffer on all sides. Surveys were also conducted in the proposed parking and staging area adjacent to Empire Grade Road, including an approximately 50-foot buffer. All areas were traversed on foot and all species encountered were identified to the taxonomic level necessary to determine rarity. Occurrences of rare plants were captured as GPS points (for single plants or closely spaced, small groups of plants) and polygons (for larger or more widely spaced groups of plants).

Anderson's manzanita (*Arctostaphylos andersonii*; CNPS Rank 1B.2) was the only special-status plant observed within the Project Area. To calculate potential impacts to Anderson's manzanita associated with the proposed Project, WRA overlaid Anderson's manzanita point and polygon occurrences over a map of the proposed trail alignment; to give them dimensions, individual manzanita points were assigned an average 5-foot radius based on the average plant size observed in the field. All occurrences of Anderson's manzanita that intersected a 7-foot band representing the width of trail construction (5 feet of trail tread plus 1 foot of vegetation clearance on either side) running down the centerline of the trail alignment were considered to be directly impacted. Such impacts are theoretical given that there is flexibility to move the trail anywhere within the 100-foot-wide band surveyed for this report; however, it gives an indication of the maximum number of individuals that could be impacted.

Special-Status Wildlife

WRA wildlife biologists conducted a general assessment of habitat quality within the Project Area on December 16-17, 2015 and January 20-22 and February 10-12, 2016. Wildlife biologists walked the entirety of the proposed alignment, including an approximately 50-foot buffer on either side of the alignment, to note habitat conditions and document unique features for wildlife.

Concurrent with this assessment, biologists mapped all active San Francisco dusky-footed woodrat middens observed within the Project Area. WRA biologists familiar with the identification of woodrat middens and the biology of the species conducted the surveys. Surveys covered the trail alignments shown on Figure 2; all areas were traversed on foot and woodrat middens located within approximately 25 feet of the proposed trail alignment were mapped using handheld GPS units with sub-meter accuracy. Woodrat middens within the proposed parking area adjacent to Empire Grade Road, including a 50-foot buffer, were also mapped following the same approach. To estimate potential direct impacts to woodrat nests, each nest, or group of nests, was mapped using handheld GPS equipment, and all nests that intersect with a 7-foot band (5 feet of trail tread plus 1 foot of vegetation clearance on either side) running down the centerline of the trail alignment were considered to be directly impacted. Such impacts are theoretical in that there is flexibility to move the trail anywhere within the 50-foot-wide band surveyed for this report.

Within the Project Area, WRA biologists mapped locations of large old-growth trees with unique habitat features that may support special-status wildlife species such as roosting bats. Noted as "wildlife trees", these features had various combinations of exposed snags, open cavities, exfoliating bark, or unique crown formations that may provide good thermal properties for roosting or unique nesting habitat. In addition to WRA's observations, locations of old-growth Douglas fir and redwood trees and stands of old-growth that should be evaluated for the potential to support marbled murrelet have been historically mapped at the site by multiple groups and are shown on the associated special-status wildlife Figures in Appendix A (see ESA 2012 for additional information).

3.2.4 Critical Habitat

To determine whether Critical Habitat for listed plant or wildlife species has been designated within the Project Area, WRA reviewed the USFWS online Critical Habitat mapping tool (USFWS 2016b). For cases in which Critical Habitat has been designated at the site, WRA biologists assessed the area to determine whether it contained the primary constituent elements (PCEs) required by the species in question.

3.4 Protected Trees

WRA did not conduct a tree survey or any other type of assessment to determine whether protected trees occur within the Project Area. In the staging area, native trees were identified by registered professional forester Nadia Hamey and mapped by Fall Creek Engineers. Staging area construction is anticipated to result in the removal of the following native trees with diameter at breast height (DBH) greater than 12 inches: 11 oak tress (including coast live oak, canyon live oak, tanoak): 4 @ 12 inch DBH, 13 inch DBH, 15 inch DBH, 20 inch DBH, 2 @ 18 inch DBH, 19 inch DBH, 36 inch DBH, one Douglas fir: 30 inch DBH and, four madrone:12 inch DBH, 13 inch DBH, 16 inch DBH, 17 inch DBH.

4.0 ENVIRONMENTAL SETTING

The larger San Vicente Redwoods property (i.e., the main parcel) is located in the heart of the Santa Cruz Mountains, situated among a number of other large, protected properties with very limited development. Rural residences occur in small communities adjacent to the site along Empire Grade Road and Pine Flat Road. The Project Area occurs within the North Coast Watersheds, an important area for multi-species benefits conservation identified in the Land Trust of Santa Cruz County's *A Conservation Blueprint* (Mackenzie et al. 2011). The San Vicente Redwoods property is contiguous with a large amount of protected lands including Cal Poly's Swanton Ranch, the Coast Dairies, Bonny Doon Ecological Preserve, Wilder Ranch State Park, and UC Santa Cruz's Natural Reserve (ESA 2012).

The majority of the main parcel and adjacent lands are characterized by dense redwood, coast/canyon live oak, and tanoak forest, with smaller areas of scrub and chaparral habitat. Elevations within the main parcel range from approximately 500 to 2,500 feet above sea level. The Project Area within the main parcel contains a number of east-west trending ridges extending from Empire Grade, transitioning into a north-south trending ridge that dips down into Cotoni Coast Dairies at the southern end of the main parcel. The southern portion of the Project Area burned in 2009, resulting in a mosaic of chaparral and forest regrowth and standing dead trees which provide high value for wildlife. The largest creek on the main parcel is San Vicente Creek, a perennial stream with its headwaters near Empire Grade.

The Laguna parcel is located to the southeast of the main parcel, adjacent to the Bonny Doon Ecological Reserve, home to a number of sensitive plant species adapted to the sandy soils that occur there. The Laguna parcel occurs on a different soil type and supports some sandhills or sand parkland habitat similar to that found on the adjacent Bonny Doon Ecological Reserve, however, the trail network avoids this area. On the Laguna parcel, the Project Area follows a more gentle south-westerly slope along the riparian corridor along Laguna Creek, a perennial creek with its headwaters near Empire Grade. Elevations within the Laguna parcel range from approximately 750 to 1,600 feet above sea level.

Both parcels were historically used for timber harvesting and contain dirt logging roads. Some active logging operations also occur on the main parcel. The main parcel contains portions of a utility road for high-tension electric transmission lines (referred to herein as the "powerline road"). The main parcel also contains a former quarry pit and a private inholding. Otherwise, both parcels are undeveloped and provide ample opportunity for both public access and wildland conservation.

5.0 RESULTS

The following sections present the results and discussion of the biological assessment within the Project Area. Figures showing the results of the assessment area included as Appendix A. Lists of all plant and wildlife species observed within the Project Area are included as Appendix B. An analysis of the potential for special-status plant species to occur within the Project Area is included as Appendix C. Photographs of the Project Area are included as Appendix D.

5.1 Biological Communities

Biological communities documented by ESA (2012) within the larger San Vicente Redwoods property are listed in Table 2 and are shown on Figure 3. These communities span a range of classification types ranging from high-level communities (*sensu* Holland 1986) to more refined vegetation alliances (*sensu* USFS 2009, Sawyer et al. 2009). Many of these communities, or elements of them, are present within the Project Area. Specific vegetation alliances and other biological communities observed by WRA within the Project Area are listed in Table 3. Descriptions of each community observed are provided in the following sections.

In general, the Project Area is dominated by a mix of redwood- and Douglas fir-dominated communities, with inclusions of other conifer and hardwood stands and patches of manzanita chaparral. Although some old-growth trees are present, most areas are dominated by second- or third-growth stands. Some stands appear to be relatively young, with a diverse understory. Other stands are well established and lack substantial understory vegetation. In many areas, it is clear that plant communities are transitioning from species that occur under open, sunny growing conditions to species that occur under dense, closed-canopy conditions. At the southern end of the Project Area within the main parcel, a large tract of forest was burned during 2009 and is currently dominated by a mix of chaparral and forest regrowth. A portion of the Laguna Parcel appears to have been burned in the 2008 Martin fire that affected the Bonny Doon Ecological Reserve; however, the portion of the Project Area that occurs on the Laguna Parcel is located away from the burned area. Limited riparian vegetation was observed in association with ephemeral and intermittent streams observed within the Project Area; often the vegetation adjacent to streams was indiscernible from adjacent upland vegetation. Larger intermittent and perennial streams contained more well-developed riparian vegetation.

In some portions of the Project Area (e.g., along Empire Grade Road and Warrenella Road), a shaded fuel break (*sensu* Agee et al. 2000) has been implemented. In these areas, all non-sensitive understory vegetation is removed and some overstory trees may be thinned. Shaded fuel breaks are thought to reduce fire fuel loads while maintaining habitat for species that prefer cover such as mountain lions. Shaded fuel breaks may also provide other habitat benefits, such as opening habitat for plant species that prefer light shade to open sun such as Anderson's manzanita. Within the Project Area, Anderson's manzanita was flagged and protected from removal. In these areas, Anderson's manzanita may benefit from the removal of dense understory brush and young saplings that can outcompete the species for sunlight and other resources.

Table 2. Coarse-Scale Biological Communities Mapped within the Larger San Vicente Redwoods Property by ESA (2012)

Community Name	Scientific Name[1]
Redwood	*Sequoia sempervirens* Alliance
Redwood-Douglas Fir	*Sequoia sempervirens- Pseudotsuga menziesii* Alliance
Pacific Douglas Fir	*Pseudotsuga menziesii* Alliance
Santa Cruz Cypress	*Callitropsis* [*Cupressus*] *abramsiana* Alliance
Maritime Chaparral	Multiple
Coast Live Oak	*Quercus agrifolia* Alliance
Knobcone Pine	*Pinus attenuata* Alliance
Coastal Scrub	Multiple
Grasslands	Multiple
Sandhills	n/a
Cultivated	n/a
Barren/Rock	n/a
Urban	n/a
Water	n/a

[1]Scientific names from USFS (2009).

Table 3. Biological Communities Observed by WRA within the Project Area

Common Name	Scientific Name[1]	State Rank	Sensitive?
Tree-Dominated Communities			
Madrone Forest	*Arbutus menziesii* Forest Alliance	S3.2	Yes
Tanoak Forest	*Notholithocarpus densiflorus* Forest Alliance	S3.2	Yes
Coulter Pine Woodland (planted)	*Pinus coulteri* Woodland Alliance	S4	No
Douglas Fir Forest	*Pseudotsuga menziesii* Forest Alliance	S4	No
Coast Live Oak Woodland	*Quercus agrifolia* Woodland Alliance	S4	Yes
Canyon Live Oak Forest	*Quercus chrysolepis* Forest Alliance	S5	Yes
Redwood Forest	*Sequoia sempervirens* Forest Alliance	S3.2	Yes
California Bay Forest	*Umbellularia californica* Forest Alliance	S3	Yes
Shrub-Dominated Communities			
Anderson's Manzanita Chaparral[2]	*Arctostaphylos andersonii* Shrubland Alliance[2]	n/a	Yes
Brittle Leaf Manzanita Chaparral	*Arctostaphylos crustacea* Shrubland Alliance	S2	Yes
Aquatic Habitats			
Seasonal Wetland	n/a	n/a	Yes
Shrub-Scrub Wetland	n/a	n/a	Yes
Ephemeral/Intermittent Streams	n/a	n/a	Yes
Developed/Disturbed Areas			
Developed/Disturbed	n/a	n/a	No

[1]Scientific names from CNPS (2016).
[2]Community not described by CNPS (2016).

5.1.1 Non-Sensitive Biological Communities

Non-sensitive biological communities observed within the Project Area include Coulter pine woodland, Douglas fir forest, and developed/disturbed areas. These communities and habitats are described below.

Coulter Pine Woodland (*Pinus coulteri* Woodland Alliance); Rank G4 S4. Coulter pine woodlands typically occur on steep upper slopes and ridges on dry soils. Coulter pine is the dominant tree, with other species such as canyon live oak (*Quercus chrysolepis*) or black oak (*Q. kelloggii*) as subdominants. This community typically occurs from 2,250 to 6,500 feet in elevation and occurs from the San Francisco Bay south into Baja California (Sawyer et al. 2009). No natural stands are known to occur within Santa Cruz County (CNPS 2016a).

Within the Project Area, Coulter pine occurs as planted stands, primarily adjacent to Empire Grade Road and in other locations on the main parcel. The high density of these planted stands has resulted in a dense overstory canopy and a thick layer of pine needles on the forest floor. Understory vegetation is generally lacking in these areas due to the dark conditions resulting from the dense overstory canopy and the smothering effect of the thick layer of pine needles on the forest floor. Areas of planted Coulter pine woodland within the Project Area offer high potential for restoration particularly for Anderson's manzanita.

Douglas Fir Forest (*Pseudotsuga menziesii* Forest Alliance); Rank G5 S4. Douglas fir forests occur in a broad range of topographic positions and aspects and on a variety of substrates extending from the Pacific Northwest south to southern California (Sawyer et al. 2009). The community typically occurs from 2,250 to 5,000 feet in elevation (CNPS 2016a). Due to the wide distribution of this community, co-dominant and non-dominant understory species vary widely.

Within the Project Area, Douglas fir forest occurs as both single-species stands and mixed with other conifers and hardwoods on both the main parcel and the Laguna parcel. In many parts of the Project Area, Douglas fir occurs as a co-dominant with tanoak (*Notholithocarpus densiflorus*) in what has been described as a Douglas fir-tanoak forest (*Pseudotsuga menziesii-Notholithocarpus densiflorus* Forest Alliance; Rank G4 S4), also a non-sensitive community (State Rank S4). In most portions of the Project Area, Douglas fir forest and Douglas fir-tanoak forest occurs in dense stands with limited understory development. In younger stands, the understory is dominated by tanoak and madrone (*Arbutus menziesii*) saplings.

Developed/Disturbed Areas; No Rank. Developed and/or disturbed areas are not described in the literature, but include areas that have been significantly modified by human activity. Within the Project Area, disturbed areas are primarily limited to dirt roads and logging landings. Some of the roads are actively used for utility maintenance and by local residents with properties adjacent to the San Vicente Redwoods property; however, most roads within the Project Area are former logging roads that have been decommissioned. These areas generally lack natural vegetation or are dominated by early seral species, many of which are weedy non-natives. Developed and/or disturbed areas are not considered sensitive under the CEQA.

5.1.2 Sensitive Biological Communities

Sensitive biological communities observed within the Project Area include eight terrestrial communities (madrone forest, tanoak forest, redwood forest, coast live oak woodland, canyon live oak forest, California bay forest, Anderson's manzanita chaparral, and brittle leaf manzanita chaparral) and three aquatic communities (seasonal wetlands, shrub-scrub wetlands, and

streams). These communities and habitats would be considered sensitive under the CEQA and some may also be protected under other federal, state, or local laws (e.g., wetlands and streams).

Sensitive Terrestrial Communities

Madrone Forest (*Arbutus menziesii* Forest Alliance); Rank G4 S3.2. Madrone forests form a network of small stands extending along the west coast from British Columbia to the California border with Mexico (CNPS 2016a). These forests are located within a range of topographic positions and on a variety of soil types (Sawyer et al. 2009).

Within the Project Area, madrone forest occurs as small patches within a larger matrix of mixed coniferous forest primarily on the main parcel. Although only a few areas might be considered true madrone forest, the species occurs in large numbers throughout the Project Area and provides a valuable food source for birds and small mammals. During surveys conducted in early 2016, large numbers of migrating American robins (*Turdus migratorius*) were observed foraging among stands of fruiting madrone. The species responds well to fire, resprouting from burned stumps. This community would be considered sensitive under the CEQA.

Tanoak Forest (*Notholithocarpus densiflorus* Forest Alliance); Rank G4 S3.2. Tanoak forests occur primarily in hilly to mountainous regions from Oregon to Point Conception in southern California (CNPS 2016a). Tanoak forests occur on a range of topographic positions and aspects; however, they are generally restricted to areas with deep, well-drained soil (Sawyer et al. 2009). Tanoak seedlings and saplings are adapted to growth in densely forested areas with low light levels under the canopy (CNPS 2016a). The species responds well to fire, resprouting from burned stumps. Tanoaks produce large seed crops every other year, with mast years in 6-year cycles (CNPS 2016a).

Within the Project Area, tanoak occurs as a dominant understory species in redwood and Douglas fir forests and is the dominant overstory tree in many areas on both the main parcel and the Laguna parcel. Where tanoak is the dominant overstory tree, a dense layer of leaf litter accumulates, preventing the germination and establishment of many understory herbs and shrubs, creating a relatively sparse, low-diversity understory. The widespread distribution of this species within the larger San Vicente Redwoods property undoubtedly provides a valuable food source for many mammals. This community would be considered sensitive under the CEQA.

Coast Live Oak Woodland (*Quercus agrifolia* Woodland Alliance); Rank G5 S4. Coast live oak woodland is known from the outer and inner Coast Ranges and Transverse Ranges, and along the coast from northern Mendocino County south to San Diego County. This community is typically located on terraces, canyon bottoms, slopes, and flats underlain by deep, well-drained sandy or loam substrates with high organic content (Sawyer et al. 2009).

Within the Project Area, coast live oak woodland occurs in limited stands within pockets of other forest types, primarily on the main parcel. Coast live oak appears to co-occur with Canyon live oak (*Quercus chrysolepis*) and potentially with Shreve oak (*Quercus parvula* var. *shrevei*). However, due to the tall size of the trees, WRA biologists were limited to identifying trees using leaves and acorns that were fallen on the ground. Due to the co-occurrence of multiple oak species and potential hybridization, it was difficult to discern the relative dominance of each oak species. In addition, many of the oaks observed by WRA biologists displayed characteristics from multiple species, suggesting that the oaks may be hybridizing. Although coast live oak forest is not considered a sensitive community by the CDFW, it is considered sensitive by Santa Cruz County and would be considered sensitive under the CEQA.

Canyon Live Oak Forest (*Quercus chrysolepis* Forest Alliance); Rank G5 S5. Canyon live oak forest is known to occur throughout California, with the exception of the Modoc Plateau, the Central Valley, and parts of the desert region (CNPS 2016a). The community is known to occur in a wide range of topographic positions, from stream benches and canyon bottoms to steep, rocky slopes on infertile soils (CNPS 2016a). Due to the large range of this community, co-dominant species vary widely based on location within the State.

Within the Project Area, canyon live oak forest occurs in limited stands within pockets of other forest types, primarily on the main parcel. As noted for coast live oak woodland, canyon live oak appears to co-occur with other oaks such as coast live oak or Shreve oak. However, due to the difficulty in reaching fresh leaves and acorns and potential issues with hybridization, it was difficult to discern the relative dominance of each oak species. Although canyon live oak forest is not considered a sensitive community by the CDFW, it is considered sensitive by Santa Cruz County and would be considered sensitive under the CEQA.

Redwood Forest (*Sequoia sempervirens* Forest Alliance); Rank G3 S3.2. Redwood forests are known from extensive, nearly contiguous, stands in the North Coast Ranges and isolated stands in the Central Coast Ranges, from Del Norte County to Santa Barbara County (Sawyer et al. 2009). These forests are typically located on stream terraces, benches, coastal slopes, and canyon bottoms underlain by deep, well-drained loams (Sawyer et al. 2009). The species responds well to fire, resprouting from burned stumps (CNPS 2016a).

Within the Project Area, redwood forest forms the dominant plant community, often co-occurring with subdominant trees such as Douglas fir and tanoak on both the main parcel and the Laguna parcel. The dense overstory canopy of the redwood forest prevents the establishment of a diverse understory community; however, in many areas, the understory is dominated by tanoak saplings and young trees. Although most of the redwoods within the Project Area are second or third growth, some trees are considered old-growth, and many of the second or third growth trees are relatively large and provide valuable wildlife habitat. This community would be considered sensitive under the CEQA.

California Bay Forest (*Umbellularia californica* Forest Alliance); Rank G4 S3. California bay forests are known from the inner and outer Coast Ranges, Transverse Ranges, and Sierra Nevada Foothills from Del Norte County south to San Diego County (Sawyer et al. 2009). This community is typically located on terraces, canyon bottoms, north-facing slopes, and rock outcrops underlain by shallow to deep sand to loam substrates (Sawyer et al. 2009). The species responds well to fire, resprouting from burned stumps (CNPS 2016a).

Within the Project Area, California bay primarily occurs as a subdominant species within other forest types, primarily on the main parcel. Although it does not occur in as high of numbers as species such as tanoak or madrone, California bay is likely an important food source for wildlife within the Project Area. This community would be considered sensitive under the CEQA.

Anderson's Manzanita Chaparral (*Arctostaphylos andersonii* Shrubland Alliance); No Rank. Anderson's manzanita chaparral has not been described in the literature; however, given the widespread distribution of this species within the Project Area and its occurrence in many areas as large, single-species stands, WRA believes that it deserves consideration as its own plant community. Although this community has not been described and does not have an official global or state ranking, the dominant species in this community, Anderson's manzanita, has a California Rare Plant Rank of 1B.2, and therefore, the community should be considered sensitive under the CEQA. As a species, Anderson's manzanita is restricted to the Southern Santa Cruz Mountains (Kauffmann et al. 2015).

Within the Project Area, Anderson's manzanita occurs both as scattered individuals or small groups of individuals and as large, single-species stands, primarily on the main parcel, but also on the Laguna parcel. Because the dominant species in this community is a special-status plant, occurrences of this community were mapped during rare plant surveys. Collectively, these occurrences were estimated to occupy approximately 7.75 acres within the Project Area; this likely represents a small fraction of the total occurrences on the greater San Vicente Redwoods site.

The species is adapted to lightly shaded to open, sunny conditions and is best represented in forest openings and along road cuts within the forest. Where this species occurs under dense overstory canopy, it is experiencing significant mortality; in these areas, it is clear that the species became established under more open, sunny conditions following a timber harvest but is currently dying off due to the subsequent reestablishment of the overstory canopy. In the presence of fire suppression, active management may be required to maintain suitable open habitat for this species. This community would be considered sensitive under the CEQA.

Brittle Leaf Manzanita Chaparral (*Arctostaphylos crustacea* Shrubland Alliance); Rank G2 S2. Although brittle leaf manzanita is not considered a special-status species, as a community it has limited distribution and is therefore considered sensitive. The community occurs in the Coast Ranges, from the San Francisco Bay Area south to near Point Conception, and on the Catalina Islands (CNPS 2016a). Brittle leaf manzanita chaparral occurs in uplands near the coast and in adjacent areas subject to the maritime climate, primarily on nutrient-poor soils derived from sandstone, shale, and granite (CNPS 2016a).

Within the Project Area, this community is composed of the *crinita* subspecies. This community occurs in mixed conifer forest, as well as in open areas on ridges and other high points, primarily on the main parcel, but also on the Laguna parcel. The community typically occurs as small patches with a limited number of individuals; however, in some areas, this community occurs as large, single-species stands. This community would be considered sensitive under the CEQA.

Sensitive Aquatic Communities

The Project Area generally contains steep topography and well-drained soils. The proposed trail alignment occurs primarily on side slopes and ridges, avoiding low spots where water may collect and create wetland conditions. As such, the Project Area contained a relatively limited amount of sensitive aquatic resources. These resources were primarily limited to seasonal to perennial wetlands associated with seeps and compacted portions of old logging roads, as well as stream crossings and associated riparian wetlands. Wetlands, including both three-parameter Corps/RWQCB wetlands and one-parameter Coastal Act Wetlands, documented within or adjacent to the Project Area are shown on Figure 4. Locations where the proposed trail alignment crosses drainages or streams potentially subject to regulatory authority by one or more agency are shown on Figure 5. These features are protected by local, state, and federal laws and would be considered sensitive under the CEQA.

Seeps and Seasonal Wetlands; No Rank. Seeps and seasonal wetlands occur throughout the state in a wide range of topographic settings. As such, vegetation associated with seeps and seasonal wetlands varies greatly across the state. Outside of the Coastal Zone, seeps and seasonal wetlands are mapped following guidance from the U.S. Army Corps of Engineers which requires the presence of three parameters: wetland vegetation, wetland soils, and wetland hydrology. Within the Coastal Zone, wetlands are mapped based on the presence of a single parameter (wetland vegetation, wetland soils, or wetland hydrology; see Section 3.1.2).

A limited number of seeps and seasonal wetlands were observed within the Project Area. These features included hillside and roadside seeps dominated by golden chain fern (*Woodwardia fimbriata*) and a variety of sedge (*Carex* sp.) and rush (*Juncus* sp.) species, as well as compacted portions of old logging roads dominated by sedges and rushes.

Shrub-Scrub Wetlands, No Rank. The Project Area contained a limited number of shrub-scrub wetlands located at stream or drainage crossings. These areas were dominated by wetland- and riparian-associated shrubs such as western azalea (*Rhododendron occidentale*), ocean spray (*Holodiscus discolor*), or hazelnut (*Corylus cornuta*). In many cases, these wetlands lacked strong indicators of wetland hydrology or hydric soils and were considered wetlands only for the purposes of the Coastal Act. In other cases, all three parameters were present and the wetlands were mapped as wetlands for the purposes of the Clean Water Act and other laws. These tended to be larger, more well-developed wetlands associated with streams. These wetlands often had a strong understory dominated by species such as slough sedge (*Carex obnupta*), California spikenard (*Aralia californica*), and golden chain fern.

Ephemeral, Intermittent, and Perennial Streams; No Rank. The Project Area contains a number of ephemeral drainages and intermittent to perennial streams. The headwaters of these streams are typically shallow swales which convey water after major storms, but are differentiated from jurisdictional streams which convey water with greater regularity and for longer duration by the lack of a clear bed and bank, lack of an ordinary high water mark, and lack of any riparian vegetation that is discernably different from the adjacent vegetation. Larger intermittent and perennial streams occur lower in the watershed, and Laguna Creek, a perennial stream, features prominently in the Project Area for the Laguna parcel. These streams often contained more well-developed riparian vegetation.

The Project Area includes 64 crossings of ephemeral drainages and intermittent to perennial streams that would be considered jurisdictional by the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and the California Department of Fish and Wildlife. These crossings are shown on Figure 5. Streams within the Project Area are protected under State and Federal laws and would be considered sensitive under the CEQA.

5.2 Special-Status Species

5.2.1 Special-Status Plants

Based upon a review of the resources and databases given in Section 3.2.1, it was determined that 69 special-status plant species have been documented from the vicinity of the Project Area, exclusive of mosses and lichens. Figure 6 shows special-status plant species that have been documented in the CNDDB within 5 miles of the Project Area (CDFW 2016a). Appendix C summarizes the potential for occurrence for each special-status plant species documented from the vicinity of the Project Area.

One special-status plant species was observed in the Project Area during the assessment site visits: Anderson's manzanita (*Arctostaphylos andersonii*; Rank 1B.2). Other special-status plants, such as Point Reyes horkelia (*H. marinensis*; Rank 1B.2), are known to occur on the greater San Vicente Redwoods Property, but were not observed within the Project Area. Figure 7 shows the special-status plant species that were observed within the Project Area during surveys conducted for this report.

In addition to the two special-status plant species known to occur within the Project Area, 24 additional special-status plant species were originally determined to have a moderate to high

potential to occur in the Project Area based on the presence of potentially suitable habitat and known occurrences of the plants from the immediate vicinity, including reports of some species from within the larger San Vicente Redwoods property:

- Schreiber's manzanita (*Arctostaphylos glutinosa*; Rank 1B.2)
- Ohlone manzanita (*A. ohloneana*; Rank 1B.1)
- Pajaro manzanita (*A. pajaroensis*; Rank 1B.1)
- Kings Mountain manzanita (*A. regismontana*; Rank 1B.2)
- Bonny Doon manzanita (*Arctostaphylos silvicola*; Rank 1B.2)
- Brewer's red maids (*Calandrinia breweri*; Rank 4.2)
- Santa Cruz Mountains pussypaws (*Calyptridium parryi* var. *hesseae*; Rank 1B.1)
- Bristly sedge (*Carex comosa*; Rank 2B.1)
- Deceiving sedge (*Carex saliniformis*; Rank 1B.2)
- Robust spineflower (*Chorizanthe robusta* var. *robusta*; FE, Rank 1B.1)
- Mountain lady's-slipper (*Cypripedium montanum*; Rank: 4.2)
- California bottle-brush grass (*Elymus californicus*, CNPS Rank 4.3)
- Santa Cruz cypress (*Hesperocyparis abramsiana* var. *abramsiana*; FE, SE, Rank 1B.2)
- Butano Ridge cypress (*Hesperocyparis abramsiana* var. *butanoensis*; FE, SE, Rank 1B.2)
- Point Reyes horkelia (*Horkelia marinensis*; Rank 1B.2)
- Arcuate bush-mallow (*Malacothamnus arcuatus*; Rank 1B.2)
- Santa Cruz County monkeyflower (*Mimulus rattanii* ssp. *decurtatus*; Rank 4.2)
- Northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*; Rank 1B.2)
- Dudley's lousewort (*Pedicularis dudleyi*; State Rare, Rank 1B.2)
- Santa Cruz Mountains beard tongue (*Penstemon rattanii* var. *kleei*; Rank 1B.2)
- White-flowered rein orchid (*Piperia candida*; Rank 1B.2)
- Pine rose (*Rosa pinetorum*; Rank 1B.2)
- Hoffmann's sanicle (*Sanicula hoffmannii*; Rank 4.3)
- Rayless ragwort (*Senecio aphanactis*; Rank 2B.2)
- San Francisco campion (*Silene verecunda* ssp. *verecunda*; Rank 1B.2)
- Santa Cruz microseris (*Stebbinsoseris decipiens*; Rank 1B.2)

None of these species were observed during seasonally-timed, focused surveys along the entirety of the proposed alignment and parking and staging areas. The lack of additional special-status plant observations was largely attributed to the dense, closed canopy conditions and deep tanoak leaf litter that dominate a large percentage of the Project Area. Based on the lack of observations, it was determined that these species are unlikely to occur within the Project Area and no additional surveys are recommended. Details about these species are included in Appendix C.

The remaining 43 species documented from the vicinity of the Project Area were determined to be unlikely to occur based on a lack of suitable habitat conditions. In general, these are plants that occur along the immediate coast or that occur in open, sunny habitats such as grasslands, which are generally lacking within the Project Area. Many of these species are also known to occur on specific soil types which are not present within the Project Area such as serpentine soils or Zayante sands (Zayante sands are mapped at the western edge of the larger San Vicente Redwoods property, but do not occur near the Project Area). Finally, many of these species occur in perennially wet marsh or swamp habitats which generally do not occur within the Project Area. These species may have potential to occur within other portions of the larger San Vicente Redwoods property; however, they are unlikely to occur within the Project Area.

Special-status plant species that are present within in the Project Area are discussed below, as are federally listed plant species that were not observed and determined to be not present.

Special-Status Plant Species Present within the Project Area

Anderson's manzanita (*Arctostaphylos andersonii*). Rank 1B.2. Anderson's manzanita is a perennial shrub that occurs in the Santa Cruz Mountains in chaparral and at the openings and edges of broadleaf upland forest and North Coast coniferous forest habitats at elevations from 60 to 760 meters (Baldwin et al. 2012; Kauffmann et al 2015). The species blooms between November and May (CNPS 2016b). During surveys conducted for this report, numerous occurrences of this species were observed within the Project Area, both on the main parcel and the Laguna parcel (Figure 7). In many cases, the species occurs as scattered individuals or small clusters of individuals. However, in some areas, the species occurs as large, single-species stands. In open areas, the shrub is generally healthy in appearance; however, where the species occurs under closed canopy conditions, it is in decline. Many dead or dying individuals were observed within heavily forested portions of the Project Area. It is clear that many occurrences of this species became established under more open, sunny conditions such as after a timber harvest and are now in decline as the forest returns.

Federally Listed Plants that Occur in the Region but are Unlikely to Occur in the Project Area

Marsh sandwort (*Arenaria paludicola*); Federal Endangered, State Endangered, Rank 1B.1. Marsh sandwort is a stoloniferous herb in the pink family (Caryophyllaceae) that blooms from May to August (CNPS 2016b). This species occurs in sandy openings in freshwater or brackish marshes and swamps from 10 to 558 feet in elevation and is known from seven USGS 7.5-minute quadrangles in Los Angeles and San Luis Obispo counties (CDFW 2016a, CNPS 2016b). The species is believed extirpated from San Bernardino, Santa Cruz, and San Francisco counties, and Washington State. This species was determined to be unlikely to occur within the Project Area due to a lack of extant populations within the region and a lack of suitable marsh or swamp habitat within the Project Area.

Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*); Federal Endangered, Rank 1B.1. Ben Lomond spineflower is an annual herb in the buckwheat family (Polygonaceae) that blooms from April to July (CNPS 2016b). The species occurs in maritime ponderosa pine sandhills habitat in six USGS 7.5-minute quadrangles Santa Cruz County (CDFW 2016a, CNPS 2016b). The species is thought to be threatened by sand mining, development, and non-native plants (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area due to a lack of suitable habitat. Suitable habitat for this species may be present within the larger San Vicente Redwoods property, but is not found within the Project Area.

Scotts Valley spineflower (*Chorizanthe robusta* var. *hartwegii*); Federal Endangered, Rank 1B.1. Scotts Valley spineflower is an annual herb in the buckwheat family (Polygonaceae) that blooms from April to July (CNPS 2016b). This variety occurs in meadows and seeps with sandy soils and in valley and foothill grassland on mudstone and Purisima outcrops from 755 to 804 feet in elevation (CDFW 2016a, CNPS 2016b). The species is a California endemic documented from only two USGS 7.5-minute quadrangles in Santa Cruz County (CNPS 2016b). Development and vehicles threaten the variety (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area due to a lack of suitable meadows, seeps, or grasslands.

Robust spineflower (*Chorizanthe robusta* var. *robusta*); Federal Endangered, Rank 1B.1. Robust spineflower is a summer-flowering annual herb in the buckwheat family (Polygonaceae) found on sandy soils in chaparral, coastal dune, coastal scrub, sandy coastal prairie sites, and openings in cismontane woodland communities with coarse soils and relatively sparse ground cover (CDFW 2016a, CNPS 2016b). This species requires sand- or gravel-based soils and is

found at elevations from 10 to 1000 feet. Its blooming period is from April to September, although in years with late fall rains, fruiting structures may be obvious as late as November. It is found in Monterey, Santa Cruz, San Francisco, and San Mateo counties, and is thought to be extirpated in its historic range in Santa Clara and Alameda counties. The species is threatened by development, recreation, mining, and non-native plants (CNPS 2016b). Within the Project Area, this species was originally determined to have potential to occur in openings such as at road crossings. However, this species was not observed during seasonally-timed surveys and it is assumed to be not present.

Santa Cruz wallflower (*Erysimum teretifolium*); Federal Endangered, State Endangered, Rank 1B.1. Santa Cruz wallflower is a perennial herb in the mustard family (Brassicaceae) that blooms from March to July (CNPS 2016b). This species occurs on inland marine sands (Zayante sands) in chaparral and lower montane coniferous forest from 394 to 2001 feet in elevation (CDFW 2016a, CNPS 2016b). The range of this California endemic spans three USGS 7.5-minute quadrangles in Santa Cruz County (CNPS 2016b). Development, sand mining, and vandalism pose serious threats to the species (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area due to a lack of suitable substrate (Zayante sands). Although potentially suitable substrate may be present within the larger San Vicente Redwoods property, it is unlikely to occur within the Project Area.

Santa Cruz cypress (*Hesperocyparis abramsiana* var. *abramsiana*); Federal Endangered, State Endangered, Rank 1B.1. Santa Cruz cypress is an evergreen, coniferous tree in the cypress family (Cupressaceae) with an elevational range of approximately 920 to 2650 feet (CNPS 2016b). This species is not a flowering plant and does not bloom, but produces male and female cones on the same plant and remnants, early cones, and/or open cones of one or both sexes should be visible on reproductive individuals year-round (i.e., the species is identifiable year-round). Santa Cruz cypress occurs in closed-cone coniferous forests, chaparral, and lower montane coniferous forests in areas underlain with sandstone-derived or granitic soils (CDFW 2016a, CNPS 2016b). The species is endemic to California and is known from less than ten natural populations in four USGS quadrangles in San Mateo and Santa Cruz counties (CNPS 2016b). This species may be threatened by development, agriculture, alteration of fire regimes, and introgression from the closely related species Monterey cypress (*H. macrocarpa)* (CNPS 2016b), which is planted as a common ornamental tree in the area. Although this species has been documented from the immediate vicinity of the Project Area along Empire Grade Road, WRA received anecdotal evidence that the population has been extirpated (Nadia Hamey, Big Creek forester, personal communication to Matthew Richmond, April 6, 2016). Moreover, this species is identifiable year-round, but was not observed during surveys within the Project Area. As such, this species was determined to be not present within the Project Area.

Butano Ridge cypress (*Hesperocyparis abramsiana* var. *butanoensis*); Federal Endangered, State Endangered, Rank 1B.1. Butano Ridge cypress is an evergreen, coniferous tree in the cypress family (Cupressaceae) with an elevational range of approximately 920 to 2650 feet (CNPS 2016b). This species is not a flowering plant and does not bloom, but produces male and female cones on the same plant and remnants, early cones, and/or open cones of one or both sexes should be visible on reproductive individuals year-round (i.e., the species is identifiable year-round). Butano Ridge cypress occurs in closed-cone coniferous forests, chaparral, and lower montane coniferous forests in areas underlain with sandstone-derived soils (CDFW 2016a, CNPS 2016b). The species is endemic to California and is known from Butano Ridge (CNPS 2016b), located over 8 miles from the Project Area. This species may be threatened by alteration of fire regimes and recreation (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area based on its hyperlocal occurrence on Butano Ridge. Moreover, the species is identifiable year-round, but was not observed during surveys within the Project Area. As such, this species was determined to be not present within the Project Area.

Santa Cruz tarplant (*Holocarpha macradenia*); Federal Threatened, State Endangered, Rank 1B.1. Santa Cruz tarplant is an annual herb from the sunflower family (Asteraceae) that blooms from June to October (CNPS 2016b). The species is found on grassy coastal terraces at elevations ranging from 33 to 726 feet (CDFW 2016a, CNPS 2016b). Suitable habitats include coastal prairie, coastal scrub, and valley and foothill grasslands (CDFW 2016a, CNPS 2016b). This species often occurs on moderately disturbed, sandy or clay soils (CNPS 2009). However, specific microhabitat preferences for this plant are not well known and some populations described in the CNDDB occur on loamy soils (CDFW 2016a). The only remaining natural occurrences are known from Santa Cruz and Monterey counties, and the species has been largely extirpated from Marin, Contra Costa, and Alameda counties (CNPS 2016b). Extant populations in Solano County are recent re-introductions; most re-introduced populations have failed (CNPS 2016b). This species is severely threatened by urbanization, agriculture, and non-native plants and also depends on appropriate ecological disturbance for persistence in an area, which may be lacking from many areas (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area due to a lack of suitable coastal terrace, coastal prairie, coastal scrub, and valley and foothill grassland habitats.

White-rayed pentachaeta (*Pentachaeta bellidiflora*); Federal Endangered, State Endangered, Rank 1B.1. White-rayed pentachaeta is an annual herb in the sunflower family (Asteraceae) that blooms from March to May (CNPS 2016b). The species occurs in cismontane woodlands and valley and foothill grassland habitats at elevations of approximately 115 - 2050 feet (CDFW 2016a, CNPS 2016b). When occurring in grassy habitats, this species is often found on serpentine-derived substrates (CNPS 2016b). Within other habitats, this species occurs on dry, rocky slopes (CDFW 2016a). White-rayed pentachaeta was known from 12 USGS 7.5-minute quadrangles in Marin, Santa Cruz, and San Mateo counties, but is now presumed extirpated from all historical locations except those in the Woodside quadrangle in San Mateo County. All of the previously known occurrences were lost to development, making this a major threat for the species. This species was determined to be unlikely to occur within the Project Area to a lack of suitable grassland habitat and dry, rocky openings within woodland habitat, in addition to being considered extirpated from the region.

Scotts Valley polygonum (*Polygonum hickmanii*); Federal Endangered, State Endangered, Rank 1B.1. Scotts Valley polygonum is an annual herb in the knotweed family (Polygonaceae) that blooms from May to August (CNPS 2016b). This species occurs on mudstone- and sandstone-derived substrates in valley and foothill grassland habitats from 689 to 820 feet in elevation. This California endemic is only known from two occurrences in Scotts Valley (CDFW 2016a). The species is threatened by development and invasive plants (CNPS 2016b). This species was determined to be unlikely to occur within the Project Area due to a general lack of grassland habitat.

5.2.2 Special-Status Wildlife

Seventy-seven special-status wildlife species have been recorded in the vicinity or have ranges that overlap with the Project Area based on a review of the resources outlined in Section 3.2.1. Figure 8 shows special-status wildlife species documented within 5 miles of the Project Area (CDFW 2016a). Appendix C summarizes the potential for each of these species to occur in the Project Area. Three special-status wildlife species were observed in the Project Area during the site assessment: oak titmouse (*Baeolophus inornatus*; USFWS Bird of Conservation Concern), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*; CDFW Species of Special Concern), and California red-legged frog (*Rana draytonii*; Federal Threatened, CDFW Special of Special Concern). In addition to these three species, six special-status wildlife species were determined to have a high potential to occur in the Project Area, seven special-status wildlife species were determined to have a moderate potential to occur, and it was determined that the

Project Area contains designated Critical Habitat for California red-legged frog (*Rana draytonii*). The remaining 61 species documented from within the vicinity of the Project Area were determined to be unlikely or have no potential to occur. Special-status wildlife species observed during WRA's site visits and significant wildlife life habitat features (i.e., large, complex old-growth trees) that may support special-status species are shown on Figure 9.

Special-Status Wildlife Present within the Project Area

Oak titmouse (*Baeolophus inornatus*); USFWS Bird of Conservation Concern. This relatively common species is a year-round resident throughout much of California, including most of the coastal slope, the Central Valley, and the western Sierra Nevada foothills. In addition, the species may also occur in residential settings where landscaping provides foraging and nesting habitat. Its primary habitat is woodland dominated by oaks. Local populations have adapted to woodlands of pines and/or junipers in some areas (Cicero 2000). Oak titmouse nests in tree cavities, usually natural cavities or those excavated by woodpeckers, although they may partially excavate their own cavities (Cicero 2000). Seeds and arboreal invertebrates comprise the bird's diet. This species was observed foraging within various forest and edge habitat throughout the Project Area. Impacts to this species may be considered significant under the CEQA.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*); CDFW Species of Special Concern. This subspecies of the dusky-footed woodrat occurs in the Coast Ranges between San Francisco Bay and the Salinas River (Matocq 2003). Occupied habitats are variable and include forest, woodland, and chaparral habitats, including riparian areas. Woodrats feed on woody plants, but will also consume fungi, grasses, flowers, and acorns. Foraging occurs on the ground and in bushes and trees. This species constructs robust stick houses/structures, also referred to as middens, in areas with moderate cover and an understory containing woody debris. Breeding takes place from December to September. Individuals are active year-round and are generally nocturnal.

This species was observed within the Project Area and large stick houses (i.e., middens) were found to be prolific throughout the Project Area, but concentrated in the northern portion of the main parcel. Middens were commonly found in every terrestrial/upland biological community within the Project Area, and were frequently encountered in high density. Surveyors mapped 1,815 middens within 25-feet on either side of the proposed trail alignment and within the proposed parking area and an associated 25-foot buffer (Figure 9). Based on the representative densities of woodrat middens within the Project Area (approximately 8.7 middens per acre), it is estimated that the greater San Vicente Redwoods site may harbor as many as 74,000 woodrat nests. Based on a 5-foot wide trail and 1 foot of vegetation clearance on either side (7 feet total disturbance), it is estimated that up to 144 woodrat middens could be directly impacted by trail construction. However, such impacts are theoretical given that there is flexibility to move the trail anywhere within the 50-foot-wide band surveyed for this report. Impacts to dusky-footed woodrat species must be considered under the CEQA; however, given the large number of middens potentially present at the site and the minor number of middens that would be directly impacted by trail construction, such impacts would clearly not threaten the existence of the species at the site and therefore should not be considered significant under the CEQA.

California red-legged frog (*Rana draytonii*); Federal Threatened, CDFW Species of Special Concern. The California red-legged frog (CLRF) is dependent on suitable aquatic, estivation, and upland habitats. During the rainy season, starting with the first rainfall in late fall, red-legged frogs disperse away from their estivation sites to seek suitable breeding habitat. Dispersal is more prevalent during wet weather such as during rain or heavy fog. Aquatic and breeding habitats are characterized by dense, shrubby, riparian vegetation and deep, still or slow-moving

water. Breeding occurs between late November and late April. California red-legged frogs estivate (a period of inactivity similar to hibernation) during the dry months in small mammal burrows, moist leaf litter, incised stream channels, and large cracks in the bottom of dried ponds.

This species has been documented to occur within the larger San Vicente Redwoods property, and the Project Area contains Critical Habitat for the species (Unit SCZ-1; see Section 4.2.3 for a discussion of CRLF Critical Habitat). A CRLF occurrence from 1997 is located adjacent to the Project Area, and there are many additional documented occurrences within 2 miles of the Project Area (CDFW 2016a). Although no suitable breeding habitat was observed (i.e., no slow or standing water with adequate depth to support breeding), the Project Area provides potential dispersal and aquatic non-breeding habitat that may support the species. During a June 2017 site visit WRA biologists observed an adult CRLF in a shallow pool along an existing road within the proposed alignment (Figure 9). The Project Area is located within dispersal distance of known occurrences. Although the species is unlikely to breed within the Project Area, it may occur seasonally, during dispersal events.

Special-Status Wildlife with High Potential to Occur within the Project Area

Townsend's big-eared bat, (*Corynorhinus townsendii townsendii*); State Candidate, CDFW Species of Special Concern, WBWG High Priority. This species ranges throughout western North America, from British Columbia to central Mexico. Its local distribution is strongly associated with the presence of caves, but roosting also occurs within human-made structures, including mines and buildings. While many bats species wedge themselves into tight cracks and crevices, big-eared bats hang from walls and ceilings in the open. Males roost singly during the spring and summer months whereas females aggregate at maternity roosts to give birth in the spring. Females roost with their young until late summer or early fall, until the young become independent, flying and foraging on their own. In central and southern California, hibernation roosts tend to be composed of small aggregations of individuals (Pierson and Rainey 1998). Foraging typically occurs along edge habitats near streams and wooded areas, where moths are the primary prey (WBWG 2015). This species has been documented roosting within cave habitat in close proximity to the Project Area and there are numerous occurrences documented within 5 miles of Project Area (CDFW 2016a). Therefore, the species was determined to have a high potential to occur within the Project Area. Impacts to this species could be considered significant under the CEQA.

Marbled murrelet (*Brachyramphus marmoratus*); Federal Threatened, State Endangered. The marbled murrelet is a small seabird that breeds up to 30 miles inland from the coast on large limbs of redwood and Douglas fir trees. At sea, it feeds on small fish near the shore and travels from nesting sites to feed at the coast at dawn and dusk during the breeding season. Breeding requirements for this species are not well documented in the southern portion of its range; however, it appears that dense, humid coastal forests of old-growth trees are necessary for breeding. The breeding range of the marbled murrelet in California is considered to be split, with the majority of the population breeding within the extreme northwest portion of its range (i.e., Oregon border south to Eureka) and a smaller population breeding south of San Francisco (Pillar Point south to Santa Cruz) (Small 1994).

There are numerous occurrences of this species documented throughout the Santa Cruz Mountains, the closest of which are located approximately 1 mile to the west and 1.9 miles to the east of the Project Area (CDFW 2016a). Critical Habitat for the species is also located approximately 1.2 miles south (Unit CA-15) and 2.4 miles north (Unit CA-14-b). Within the Project Area, several stands of old-growth redwood occur and provide potentially suitable nesting habitat

for the species. Several large old-growth trees with complex canopy structures have also been documented within the Project Area and are shown on Figure 9. Therefore, although the species has not been documented within the Project Area, nor does the Project Area contain Critical Habitat, the presence of trees that could support potentially suitable nesting habitat and the proximity of known occurrences and designated Critical Habitat gives this species a high potential to occur within the greater Project Area.

Vaux's swift (*Chaetura vauxi*); CDFW Species of Special Concern. The Vaux's swift is a summer resident in California, breeding on the coast from central California northward and in the Cascade and Sierra Nevada ranges. Nesting occurs in large, accessible, chimney-like tree cavities that allow birds to fly within the cavity directly to secluded nest sites. Such cavities usually occur in conifers, especially old-growth redwoods (Shuford and Gardali 2008). Chimneys and similar human-made substrates are also used for nesting. This species is highly aerial and forages widely for insects in areas of open airspace. During migration, nocturnal roosting occurs communally and favored sites may host thousands of individuals. Within the Project Area, large stands of coniferous forest with complex canopies and snags occur throughout and provide potentially suitable nesting and foraging habitat. Due to presence of available nesting and foraging habitat, this species was determined to have a high potential to occur within the Project Area.

Allen's hummingbird (*Selasphorus sasin*); USFWS Bird of Conservation Concern. Allen's hummingbird, common in many portions of its range, is a summer resident along the majority of California's coast and a year-round resident in portions of coastal southern California and the Channel Islands. Breeding occurs in association with the coastal fog belt, and typical habitats used include coastal scrub, riparian habitat, woodland and forest edges, and eucalyptus and cypress groves (Mitchell 2000). The species feeds on nectar, as well as insects and spiders. Within the Project Area, mature oaks, riparian woodland, and edge habitat provide potentially suitable nesting habitat, and thus, the species was determined to have a high potential to occur.

Nuttall's woodpecker (*Picoides nuttallii*); USFWS Bird of Conservation Concern. Nuttall's woodpecker, common in much of its range, is a year-round resident throughout most of California, west of the Sierra Nevada Range. Typical habitat is oak or mixed woodland, and riparian areas (Lowther 2000). Nesting occurs in tree cavities, principally those of oaks and larger riparian trees. Nuttall's woodpecker also occurs in older residential settings and orchards where trees provide suitable foraging and nesting habitat. This species forages on a variety of arboreal invertebrates. Within the Project Area, mature oaks and riparian woodland provide potentially suitable nesting habitat, and thus, the species was determined to have a high potential to occur.

Olive-sided flycatcher (*Contopus cooperi)*; USFWS Bird of Conservation Concern, CDFW Species of Special Concern. This species is found within the coniferous forest biome, most often associated with forest openings, forest edges near natural openings (e.g., meadows, canyons, rivers) or human-made openings (e.g., harvest units), or open to semi-open forest stands (Altman and Sallabanks 2000). The species is most numerous in montane coniferous forests where tall trees overlook canyons, meadows, lakes, or other open terrain. Within the Project Area, mixed conifer, redwood, pine forest, and edge habitats may provide suitable nesting habitat for this species. The species has also been observed frequently along roads surrounding the Project Area (eBird 2016). Therefore, this species was determined to have a high potential to occur within the Project Area.

Special-Status Wildlife with Moderate Potential to Occur within the Project Area

Hoary bat (*Lasiurus cinereus*); WBWG Medium Priority. Hoary bats are highly associated with forested habitats in the western United States, particularly in the Pacific Northwest. They are

a solitary species and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches, usually at the edge of a clearing. Roosts are typically located 10 to 30 feet above the ground. They have also been documented roosting in caves, beneath rock ledges, in woodpecker holes, in grey squirrel nests, under driftwood, and clinging to the side of buildings, although the latter behavior is not typical. Hoary bats are thought to be highly migratory; however, wintering sites and migratory routes have not been well documented. This species tolerates a wide range of temperatures and has been captured at air temperatures between 0 and 22 degrees Celsius. Hoary bats probably mate in the fall, with delayed implantation leading to birth in May through July. They usually emerge late in the evening to forage, typically from just over one hour after sunset to after midnight. This species reportedly has a strong preference for moths, but is also known to eat beetles, flies, grasshoppers, termites, dragonflies, and wasps (WBWG 2015). This species has been documented to occur within 3.75 miles of the Project Area (CDFW 2016a). Within the Project Area, mature conifer and broadleaf trees have the potential to support roosting sites. Therefore, this species was determined to have a moderate potential to occur within the Project Area.

Pallid bat (*Antrozous pallidus*); CDFW Species of Special Concern, WBWG High Priority. Pallid bats are distributed from southern British Columbia and Montana to central Mexico and east to Texas, Oklahoma, and Kansas. This species occurs in a number of habitats ranging from rocky, arid deserts to grasslands and into higher-elevation coniferous forests. They are most abundant in the arid Sonoran life zones below 6,000 feet in elevation, but have been found at elevations of up to 10,000 feet in the Sierra Nevada. Pallid bats often roost in colonies of between 20 and several hundred individuals. Roosts are typically located in rock crevices, tree hollows, mines, caves, and a variety of human-made structures, including vacant and occupied buildings. Tree roosting has been documented in large conifer snags, inside basal hollows of redwoods and giant sequoias, and within cavities in large oak trees. Pallid bats are primarily insectivorous, feeding on large prey that is usually taken on the ground, but also sometimes in flight. Prey items include arthropods such as scorpions, ground crickets, and cicadas (WBWG 2015). This species has been documented from within 3.75 miles of the Project Area (CDFW 2016a). Cavities within large, mature trees within the Project Area may provide potential roost habitat for pallid bat. Additionally, higher-quality rock outcroppings and cave features that may have the potential to support roosting sites are known to occur within the larger San Vicente Redwoods property, in close proximity to the Project Area. Therefore, this species was determined to have a moderate potential to occur within the Project Area.

Western red bat (*Lasiurus blossevillii*); CDFW Species of Special Concern, WBWG High Priority. This species is highly migratory and broadly distributed, ranging from southern Canada through much of the western United States. Western red bats are believed to make seasonal shifts in their distribution, although there is no evidence of mass migrations (Pierson et al. 2006). They are typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly located in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas, possibly in association with riparian habitat (particularly willows, cottonwoods, and sycamores) (Pierson et al. 2006). It is believed that males and females maintain different distributions during pupping, where females take advantage of warmer inland areas and males occur in cooler areas along the coast. The Project Area contains potentially suitable maternity roosting habitat within riparian habitats along streams. Suitable foraging habitat is supported within and adjacent to streams throughout the Project Area. Although perennial streams and associated well-developed riparian habitat are not present within the Project Area, the species may utilize the Project Area for roosting and foraging, and therefore was determined to have a moderate potential to occur.

Silver-haired bat (*Lasionycteris noctivagans*); WBWG Medium Priority. Silver-haired bats occur in temperate conifer, mixed-conifer, and deciduous forests from southern Alaska to northeastern Mexico. Females form maternity roosts almost exclusively inside hollows or under loose bark of large trees and may switch roosts multiple times (WBWG 2015). Hibernation occurs in trees, rock crevices, leaf litter, in and under buildings, and in caves and mines. Foraging occurs above the tree canopy where the silver-haired bat preys on insects. Silver-haired bats are known to migrate south in the winter, although overwintering at northern latitudes has also been documented (WBWG 2015). The Project Area may contain potentially suitable maternity roosting habitat within mixed conifer forest. Suitable foraging habitat may be supported within and adjacent to streams throughout the Project Area. Therefore, this species was determined to have a moderate potential to occur.

Fringed myotis (*Myotis thysanodes*), WBWG High Priority. The fringed myotis ranges through much of western North America from southern British Columbia, Canada, south to Chiapas, Mexico and from Santa Cruz Island in California, east to the Black Hills of South Dakota. This species is found in desert scrubland, grassland, sage-grass steppe, old-growth forest, and subalpine coniferous and mixed deciduous forests. Oak and pinyon-juniper woodlands are most commonly used. The fringed myotis roosts in colonies from 10 to 2,000 individuals, although large colonies are rare. Caves, buildings, underground mines, crevices in cliff faces, and bridges are used for maternity and night roosts, whereas hibernation has only been documented in buildings and underground mines. Tree-roosting has also been documented in Oregon, New Mexico, and California (WBWG 2015). Within the Project Area, roosting habitat may occur in the large stands of conifer and hardwood forest habitat; however, higher quality roost habitat may be found in cave and cliff habitats that occur near the San Vicente Quarry in the southern portion of the larger site. The species is likely to forage over the Project Area, and based on the proximity to roost habitat, the species was determined to have a moderate potential to occur.

Ring-tailed cat (*Bassariscus astutus*); CDFW Fully Protected Species. The ring-tailed cat is an uncommon but widespread resident of California, excluding the Central Valley, south to Mexico. This species is found in remote riparian habitats, rocky canyons, and stands of forest and shrub habitats that contain trees, brush, and rock crevices for cover. This species is also usually found within 0.6 mile of water (Zeiner et al. 1990). Hollow trees, snags, rock crevices, and other cavities are used for cover and nesting. Ring-tailed cats are primarily carnivorous and mostly nocturnal. Within the Project Area, wooded habitat of varying composition could support the species and its foraging needs. The Project Area is also surrounded by large tracts of undeveloped forest, which provides a habitat corridor for the species. Although perennial water sources were not observed within the Project Area, seasonal streams may make portions of the Project Area more suitable under during different periods of the year. Based on these conditions, it was determined that this species has a moderate potential to occur.

Purple martin (*Progne subis*); CDFW Species of Special Concern. Purple martin is an uncommon summer resident in California, occurring in woodlands and low-elevation hardwood and coniferous forests. It usually feeds on insects captured in flight 100 to 200 feet above the ground. Purple martin nests in cavities often located in tall, isolated trees or snags in open forest or woodland habitats. The Project Area contains large tracts of coniferous forest that may provide suitable nesting habitat for this species. This species has been observed east of the Project Area, in the Bonny Doon Ecological Reserve (eBird 2016). Foraging habitat is also likely to be supported above the tree canopy above Project Area. Due to the dominance of coniferous forest habitat within the Project Area, this species was determined to have a moderate potential to occur.

Mountain Lion and Wildlife Corridors

While not protected by the CESA or the ESA, the 1990 California Wildlife Protection Act prohibits sport hunting of mountain lion (*Puma concolor*) in California. These top predators serve an important ecological role within the region, and while mountain lion are primarily solitary, individuals exhibit localized approaches to foraging and spatial use (Allen et al. 2015). Mountain lion are active year-round and tend to hunt and move between the hours of dawn and dusk; however, mountain lions have been found to opportunistically hunt during daytime hours when prey is available (Allen et al. 2015). This carnivore is primarily an ambush hunter, and feeds mainly on black-tailed deer, but will also take a number of species including rabbit, rodents, turkey, and various smaller predators including coyote and raccoon. Mountain lions are capable of breeding any time of year, but kittens are typically born in June or July in dens such as a shallow cave, rock overhang, or area of dense vegetation.

Mountain lions maintain large home ranges, with females utilizing areas 3 to 12 square miles and males occupying habitats from 25 to 96 square miles (CDFW 2016a). Population densities for mountain lions have been found to vary from 0.37 individuals per 100 square kilometers in resource-limited portions of Utah up to 3.6 individuals per 100 square kilometers in coastal California (Allen et al. 2015). Whereas home range size and habitat use vary based on prey availability, illegal hunting has also been found to result in lower population densities (Allen et al. 2015).

The species is well documented within the Santa Cruz Mountains, as UC Santa Cruz and the CDFW have collaborated on tracking studies with radio-collared individuals to better understand their movement and the status of the population. Sign from this species (i.e., scrapes, tracks, and scat) was observed during WRA's fieldwork, and the Santa Cruz Puma Project has documented radio-collard individuals moving through the Project Area.

The Project Area is known to support mountain lions and is located within an area identified by the CDFW as a wildlife corridor and part of the essential connectivity for this species (CDFW 2014). Maintaining large, interconnected tracks of contiguous forest habitats allows the movement of mountain lion, their prey, and other native species. Because of the ecological importance mountain lion play within the region and the critical role wildlife corridors play in facilitating the movement of native species, wildlife corridors are considered a significant resource under the CEQA, and the potential impact of the Project on wildlife corridors is discussed in more detail in Section 6.3.7.

Federally Listed Wildlife that Occur in the Region but are Unlikely to Occur in the Project Area

Federally listed species that have been documented to occur within the vicinity or adjacent to the Project Area but which are unlikely to occur there include: least Bell's vireo (*Vireo bellii pusillus*), steelhead Central California Coast DPS (*Oncorhynchus mykiss*), and Central California Coast Ecologically Significant Unit (ESU) of Coho salmon (*Oncorhynchus kisutch*). These species are discussed below (also see Appendix C).

Least Bell's vireo (*Vireo bellii pusillus*); Federal Endangered, State Endangered, CDFW Species of Special Concern. This subspecies of Bell's vireo is a neotropical migrant and summer resident in California and northern Baja California, wintering in southern Baja California (Brown 1993). Nesting occurs in riparian areas in the vicinity of water or in dry river bottoms. Nests are often located along margins of bushes or on twigs projecting into pathways, usually on species such as willow, coyote brush, or mesquite. This vireo was once common in lowland riparian habitats throughout California but declined precipitously during the twentieth century

(USFWS 1998). By the time its federal listing in 1986, the population was restricted to an estimated 300 pairs in southern California, primarily in San Diego County (USFWS 1998). The population has increased since that time, with the number of nesting territories in the state in 2006 estimated to be approximately ten times greater than in 1986 (USFWS 2006). However, the distribution of the vireo at that time remained almost entirely within southern California (USFWS 2006). This species was determined to be unlikely to occur within the Project Area due to the absence of suitable riparian and scrub habitats required by the species for nesting. Furthermore, the species is not known to nest or occur within the Santa Cruz Mountains.

Steelhead - Central California Coast DPS (*Oncorhynchus mykiss irideus*), Federal Threatened. The Central California Coast distinct population segment (DPS) of steelhead includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. Steelhead typically migrate to marine waters after spending two years in freshwater, although they may stay in freshwater for up to seven years. They then reside in marine waters for 2 or 3 years prior to returning to their natal stream to spawn as 4- or 5-year-olds. Steelhead adults typically spawn between December and June. In California, females typically spawn two times before they die. Preferred spawning habitat for steelhead includes perennial streams with cool to cold water, high dissolved oxygen levels, and fast-flowing water. Abundant riffle areas (i.e., shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding. This species is known to occur within the mainstem of San Vicente Creek, up to the quarry tunnel and the lower reaches of Mill Creek; however, partial fish passage barriers, narrow, steep channels, and the ephemeral nature of the streams within the Project Area make it unlikely for this species to occur (ESA 2012; Ross Taylor and Associates 2004). Similarly, a natural fish passage barrier on Laguna Creek, downstream of the Laguna Parcel, precludes the presence of steelhead in that reach of Laguna Creek Ross Taylor and Associates 2004). Given these reasons, it was determined that steelhead are unlikely to occur within the Project Area.

Coho Salmon - Central California Coast ESU (Oncorhynchus kisutch), Federal Endangered, State Endangered. The Central California Coast ESU of Coho salmon includes all naturally spawned populations of Coho salmon (and their progeny) in California streams from the Eel River to Aptos Creek, including the Russian River and its tributaries, excluding the Sacramento-San Joaquin River Basin. Coho salmon typically migrate in late fall to early winter to spawn in smaller coastal streams. Spawning migration, known as "runs", occur throughout the year. Spawning occurs mainly between November and January, but can occur as late as March during drought conditions. Juveniles may spend several years in the freshwater habitat before migrating to the ocean. Most adult fish return "home", maintaining fidelity to their natal stream. Preferred spawning habitat for Coho salmon is small freshwater streams with cool to cold water temperature, medium to small gravel substrate, and high dissolved oxygen levels at the head of a riffle where water changes from laminar flow to turbulent flow (providing greater dissolved oxygen). Abundant riffle areas (i.e., shallow areas with gravel substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding. This species is known to occur within the mainstem of San Vicente Creek, up to the quarry tunnel and the lower reaches of Mill Creek; however, fish passage barriers, narrow, steep channels, and the ephemeral nature of the streams make the Project Area unsuitable for the species (ESA 2012). Similarly, a natural fish passage barrier on Laguna Creek prevents the occurrence of Coho salmon within the Laguna parcel (Ross Taylor and Associates 2004).

5.2.3 Critical Habitat

Based on WRA's review of the USFWS Critical Habitat Mapper (USFWS 2016b), it was determined that the Project Area contains Critical Habitat for CRLF. There are four physical and biological features, formerly referred to as PCEs, that are considered to be essential for the conservation or survival of a species. The features for the CRLF include: aquatic breeding habitat; non-breeding aquatic habitat; upland habitat; and dispersal habitat (USFWS 2010).

Aquatic breeding habitat consists of low-gradient fresh water bodies, including natural and manmade (e.g., stock) ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds. It does not include deep water habitat, such as lakes and reservoirs. Aquatic breeding habitat must hold water for a minimum of 20 weeks in most years. This is the average amount of time needed for egg, larval, and tadpole development and metamorphosis so that juveniles can become capable of surviving in upland habitats (USFWS 2010).

Aquatic non-breeding habitat may or may not hold water long enough for this species to hatch and complete its aquatic life cycle, but it provides shelter, foraging, predator avoidance, and aquatic dispersal habitat for juvenile and adult CRLF. These waterbodies include plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period. The third habitat type is upland habitats, which include areas within 300 feet of aquatic and riparian habitat and are composed of grasslands, woodlands, and/or vegetation that provides shelter, forage, and predator avoidance. Upland habitat can include structural features such as boulders, rocks, and organic debris (e.g., downed trees), as well as small mammal burrows and moist leaf litter (USFWS 2010). Finally, dispersal habitat includes accessible upland or riparian habitats between occupied locations within 0.7 mile of each other that allow for movement between these sites. Although California red-legged frog is highly aquatic, this species has been documented to make overland movements of several hundred meters and up to one mile during a winter/spring wet season in Northern California (Bulger et al. 2003, Fellers and Kleeman 2007) and 2,860 meters (1.8 miles) in the central California coast (Rathbun and Schneider 2001).

The Project Area does not contain aquatic breeding habitat for CRLF; however, the Project Area may provide dispersal habitat to off-site breeding features. Additionally, intermittent drainages within the Project Area may be considered seasonal aquatic non-breeding habitat by the USFWS; associated areas within 300 feet of seasonal aquatic non-breeding habitat would be considered upland foraging habitat.

5.3 Protected Trees

Although a tree survey was not conducted for this report, any tree located within one of the sensitive habitats described in Section 4.1.2 may be protected by the County. A tree removal permit may be required for the removal of such trees.

6.0 PROJECT DESCRIPTION

The Draft Public Access Plan outlines a site-wide, programmatic approach to public access for recreation at the San Vicente Redwoods. The Plan outlines goals and policies related to public access, access plans for recreation, an implementation plan, and design and maintenance guidelines. This report focuses on the trail network and attendant features described in the Draft Public Access Plan (PlaceWorks 2018), and more specifically on the trail segments shown on Figure 2.

Under the Draft Public Access Plan, a network of approximately 38 miles of trails will be constructed as part of the overall proposed Project. The trail network will include a combination of single- and multi-use trails which will allow public access for the following allowable uses:

- Hiking
- Biking
- Horse riding
- Dog walking (on-leash only)
- Picnicking and small group gatherings
- Nature observation

These uses will be allowed during daylight hours only, except on a limited basis by permit.

Prohibited uses will include:

- Smoking
- Unpermitted alcohol use
- Fire making
- Collecting
- Hunting
- Fishing
- Off-road vehicles or motorized dirt biking
- Rock climbing
- Rappelling
- Caving

Key design goals for the development of the trail network include the following:

- Provide for a variety of experiences through different habitats
- Concentrate loop trails in the northern part of the property, where they can be accessed from the Empire Grade staging area(s)
- Establish through-trails connecting the Empire Grade staging areas down to the Coast Dairies property
- Provide buffers around private property
- Accommodate other property uses, including timber harvest and research uses
- Avoid, to the extent possible: neighbor views, safety hazards, and impacts to sensitive resources including water sources, mountain lions, and cultural resources
- Allow for sustainable trail grades and orientation. Use of existing roads as recreational trails should be limited to roads identified as suitable (grades under 15 percent and without fall-line alignment) where possible, and new trail construction should emphasize narrow trails and should result in separate use trails

The Draft Public Access Plan will be implemented in two phases: an initial 10-mile set of multi-use trails easily accessible from the proposed parking and staging area adjacent to Empire Grade Road. Hiking, horse riding, and mountain biking would be allowed on the Phase I trails, with dog walking limited to a frontage trail that parallels Empire Grade Road. Implementation of the Phase I trails is expected to occur over a 1- to 3-year period. Phase II will include approximately 9-11 additional miles of trails to be implemented over a 2- to 3-year period, as well as an expansion of

the staging and parking area adjacent to Empire Grade Road. Phase III will include approximately 16-19 additional miles of trails over a 2- to 3-year period.

During the phased implementation of the Draft Public Access Plan, trail use for all phases will be approximately 35% horse/hike, 40% horse/bike, 25% hike/horse/bike with 1.5 miles of the hike/horse/bike trails allowing dog walking.

In conjunction with the construction of the Phase I trails, a staging area will be constructed along Empire Grade Road, as shown on Figure 2. The staging area will initially have space for at least 45 cars and may be expanded in later phases of the proposed Project. Staging areas may include entry gates, signage, informational kiosks, benches, picnic area/gathering area, trash and recycling receptacles, dog-courtesy stations and restrooms (composting or pump-out toilets).

Trail dimensions will be determined based on the type (or use) of trail as shown on Table 4. Additional details regarding specific design specifications or construction methods are provided in the Draft Public Access Plan. Most trail construction will occur by hand with limited use of heavy machinery or vehicles; the use of the latter would be limited to areas with existing vehicular access (e.g., on former logging roads). However, it is expected that construction of the parking area adjacent to Empire Grade Road will entail the use of standard construction machinery and equipment.

Table 4. Trail Dimensions by Type

Trail Type	Constructed Tread Width	Vegetation Clearance
Accessible Trails	5 feet +	2 feet horizontal 10 feet vertical
Multi-Use Trails	5 feet +	1 foot horizontal 10 feet vertical
Equestrian and Hiking Trails	2 to 5 feet	1 foot horizontal 10 feet vertical
Mountain Biking and Hiking Trails	2 to 4 feet	1 foot horizontal 10 feet vertical

7.0 POTENTIAL IMPACTS, MINIMIZATION, AND AVOIDANCE MEASURES

As described in Section 5.0, the proposed Project entails the construction of approximately 38 miles of recreational trails and an associated 4.7-acre parking area. To the extent feasible, trails and the parking area have been located in non-sensitive habitat and have been designed to have minimal impact on the land and the sensitive biological resources that may occur there. Although the proposed Project covers a large amount of undeveloped land in an area with a rich diversity of biological resources, the proposed Project is relatively minimal in scope and is not expected to result in significant adverse impacts to sensitive resources. The following sections discuss potential impacts to sensitive biological resources associated with the proposed trail alignment (including both initial construction and subsequent use and maintenance) and provide recommended avoidance and minimization measures. With the implementation of these measures, WRA believes that the proposed Project will not result in significant adverse impacts to the environment.

7.1 Sensitive Biological Communities

A range of sensitive terrestrial and aquatic biological communities occur within the Project Area, including: madrone forest, tanoak forest, coast live oak woodland, canyon live oak forest, redwood forest, California bay forest, Anderson's manzanita chaparral (not described in the literature), brittle leaf manzanita chaparral, seasonal wetlands, shrub-scrub wetlands, and streams (including limited riparian vegetation). The proposed trail network has the potential to impact these communities through both initial trail construction and subsequent use and maintenance.

7.1.1 Sensitive Terrestrial Communities

Biology Impact 1

The proposed trail network and staging area have the potential to directly impact sensitive terrestrial communities through removal of vegetation and grading activities during construction, as well as by subsequent damage (e.g., trampling) from pedestrians, cyclists, equestrians, or dogs. The proposed Project also has potential to indirectly impact sensitive terrestrial communities through compaction, erosion, and other disturbances caused by pedestrians, cyclists, horses, or dogs. This may include the introduction of invasive weeds or plant diseases (e.g., sudden oak death or other *Phytophthora*-related diseases) which could adversely affect susceptible species. With the implementation of the minimization measures listed below, WRA believes that the project will not result in any significant adverse impacts to sensitive terrestrial communities within the Project Area.

Biology Minimization Measure 1A

Given the widespread nature of sensitive terrestrial communities, protective fencing or flagging is not practical or feasible (fencing or flagging is recommended for occurrences of Anderson's manzanita chaparral due its dual role as a special-status plant; see Section 6.2). However, to minimize impacts to sensitive vegetation, the work area, including any staging areas, should be minimized to the fullest extent feasible and trails should be the minimum width necessary to support the proposed use (i.e., hiking, cycling, horse riding) as defined in the Draft San Vicente Redwoods Public Access Plan (PlaceWorks 2018).

Biology Minimization Measure 1B

To minimize inadvertent impacts to sensitive vegetation, all construction personnel should be educated on the sensitivity of the biological communities and species at the site and the importance of minimizing impacts to vegetation outside of the work area. This should occur prior to the start the construction for each phase of trail and staging area construction during a pre-construction environmental awareness training by a qualified, County-approved biologist and given to all construction personnel working on the proposed Project. A designated staff member from the contractor's crew should provide follow-up training to any employees who begin work after the initial pre-construction training.

The training should include a photograph and/or description of sensitive communities and species at the site, measures being taken to avoid or reduce impacts to the community, reporting and follow-up actions if sensitive communities are impacted, and the worker's responsibility under the applicable environmental regulation(s).

Biology Minimization Measure 1C

To minimize removal of sensitive vegetation, trails should be routed around sensitive vegetation to the fullest extent feasible. At a minimum, the full width of the trail (i.e., the full extent of

vegetation removal and ground disturbance during construction) should avoid the dripline of sensitive vegetation, with greater separation between the trail and sensitive vegetation being preferred. If trails are re-routed, they should be re-routed downslope of any sensitive vegetation to avoid causing erosion or sedimentation issues which could be detrimental to sensitive vegetation. If other considerations such as slope or soil stability make it impossible to avoid sensitive vegetation, a qualified, County-approved biologist should develop appropriate mitigation measures based on the type of sensitive vegetation, the size of the impact, and the likelihood of success with various mitigation approaches such as transplantation, propagation, or habitat enhancement. Mitigation measures for unavoidable impacts should be approved by the County prior to any removal of sensitive vegetation.

Biology Minimization Measure 1D

To avoid the introduction of invasive weeds or plant pathogens that could adversely impact sensitive vegetation, prior to arriving on the site all equipment and vehicles shall be inspected to ensure they are clean of any dirt or debris.

Biology Minimization Measure 1E

To minimize both construction-related and post-construction impacts to sensitive vegetation, trail design should incorporate the best available technology and industry-standard Best Management Practices (BMPs) to minimize the potential for detrimental impacts such as erosion or sedimentation and to minimize the need for future maintenance. Specific standards (including standard details) for trail construction are provided in the Draft San Vicente Redwoods Public Access Plan (PlaceWorks 2018).

Biology Minimization Measures 1F

To minimize effects on sensitive vegetation from erosion and sedimentation due to construction activities, all disturbed ground should be stabilized concurrent with trail construction. Stabilization methods may include: compacting the soil[1], covering disturbed soils with duff and leaf litter as well as branches removed for construction of trails, revegetation using appropriate native plant species, or use of other standard erosion control measures such as weed-free straw or hydromulch. If disturbed areas are to be revegetated, only native plants appropriate for the habitat should be used as outlined in Biology Minimization Measure 1H. If other erosion control materials are to be used, they should be certified weed-free and as otherwise specified in Biology Minimization Measures 1I.

Biology Minimization Measure 1G

To minimize the introduction of invasive plants or plant pathogens that could threaten sensitive vegetation, parking and staging areas should include signage or other materials aimed at instructing the general public on the potential threats associated with invasive plants, plant pathogens, and other pests of concern. These materials should include basic prevention methods that the general public can implement such as inspecting shoes and pet fur for weed seeds or avoiding the movement of plant material or soil from one area to another. This education signage should be in place prior to opening the trails for public access and should be maintained annually by the Public Access Manager to ensure that signage is not obstructed and is legible at all times.

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[1] Although compaction may be used with any of the other soil stabilization measures, it is only suitable for use on its own on trail surfaces which typically would not be treated with other erosion control materials.

Biology Minimization Measure 1H

To minimize the introduction of invasive plant species and/or plant pathogens which could adversely impact sensitive vegetation, any restoration or landscape plantings (e.g., plantings around the proposed parking/staging area) should use native species appropriate for plant communities found at the site. To the extent feasible, plant material should be salvaged from trail construction activities at the site. If not possible, plant material should be propagated by a reputable nursery with protocols in place for minimizing the potential spread of *Phytophthora* or other plant diseases. Any propagated plant material should be sourced from as close to the site as possible, ideally from within the site itself.

Biology Minimization Measure 1I

To avoid the introduction of weed seed or plant pathogens that could adversely impact sensitive vegetation, the importation of soils for construction of the parking/staging area or other parts of the Project Area should be minimized to the fullest extent feasible. To the extent feasible, soils should be salvaged from onsite before being imported from offsite. If it is necessary to import soils, they should be certified weed-free and from a County-approved source with protocols in place for minimizing the potential spread of *Phytophthora* or other plant diseases.

Biology Minimization Measure 1J

To minimize impacts to sensitive vegetation from use of the trail network, the Trail Maintenance System should be implemented as described in Chapter 6 of the Draft San Vicente Redwoods Public Access Plan. The Trail Maintenance System includes an annual monitoring program aimed at identifying maintenance issues (e.g., erosion) and other problems (e.g., nuisance trash areas or other impacts from trail users). The Trail Maintenance System should include specific methods for routinely documenting and implementing the necessary maintenance by the Public Access Manager.

7.1.2 Sensitive Aquatic Communities

Biology Impact 2

The proposed trail network and staging area have the potential to directly affect sensitive aquatic communities that may be protected by the Clean Water Act or other Federal, State, or local laws through removal of vegetation, placement of fill, or other grading activities that could impact wetlands, the bed and bank of streams, or riparian vegetation. The proposed Project also has potential to indirectly impact sensitive aquatic communities through increased rates of erosion and sedimentation, the introduction of invasive weeds, and other disturbances from trail users or trail maintenance. The proposed trail network may entail minor impacts to vegetation within the buffers of Environmentally Sensitive Habitats protected under the County of Santa Cruz LCP; however, passive recreational trails are an allowed use within the riparian corridor. With the implementation of the minimization measures listed below, WRA believes that the proposed trail network will not have a significant adverse impact to any wetlands, streams, or their buffers/riparian corridor.

Biology Minimization Measure 2A

To minimize adverse impacts to sensitive aquatic communities, implement Biology Minimization Measures 1A through 1J.

Biology Minimization Measure 2B

To the extent feasible, wetlands and streams should be avoided by trail and staging area construction by a minimum of 100 feet. The jurisdictional boundaries of wetlands, within the 100-foot survey buffer, should be re-flagged in the field prior to construction by a qualified, County-approved individual and trails should be routed around these areas when possible. Trails should be routed downslope of wetland areas, if possible, to avoid the potential for detrimental erosion or sedimentation. When not possible, trails should be sited to avoid altering any obvious source of wetland hydrology and should be sloped downhill crossways so no water accumulates and instead flows off immediately. This avoids concentration of stormwater into "gutters" which then have to be discharged via water bars.

Crossings of regulated streams should be appropriately located to minimize impacts to riparian vegetation and to minimize the potential for long-term impacts to the stream. Trails should be routed in areas with less riparian vegetation to minimize the need for vegetation removal in these areas. Trails should also be located in areas that will minimize the potential for detrimental erosion or sedimentation. Stream crossings should be designed to minimize trail erosion following the specific standards for trail construction provided in the Draft Public Access Plan (PlaceWorks 2018). Crossings should be designed to freespan the channel and should ideally be anchored above the top of bank. In some locations however, hardened crossings that include work below the top of bank may be the least impactful approach.

Crossings of regulated streams that avoid work below the ordinary high water mark do not require a permit from the United States Army Corps of Engineers. However, such crossings may require notification to the California Department of Fish and Wildlife (CDFW), the Regional Water Quality Control Board (RWQCB), and the County, even if located above the top of bank. If the CDFW, RWQCB, or County issue authorizations for such work, the measures included in any such authorizations should be incorporated into the proposed Project design.

Biology Minimization Measure 2C

Where wetlands or streams cannot be avoided, appropriate approvals from the United States Army Corps of Engineers (for impacts to regulated wetlands or areas below the ordinary high water mark of regulated streams) and/or the Regional Water Quality Control Board and the California Department of Fish and Wildlife (for impacts to regulated wetlands, riparian vegetation, or areas below the top of bank of regulated streams) should be secured prior to initiating work in these areas. Additional County approvals may be required under the Riparian Corridor and Wetlands Protection Ordinance. The measures included in any such authorizations should be incorporated into the proposed Project design.

Biology Minimization Measure 2D

To prevent erosion or sedimentation during construction, appropriate Best Management Practices (BMPs) (e.g., silt fencing, wattles, sterile straw, hydromulch, geotextile fabrics, sediment traps, drainage swales, or sand bag dikes) should be installed around wetlands and streams. All materials should be certified weed-free and must be constructed of natural materials. No plastic monofilament netting may be used. The exact location and configuration of BMPs should be determined by the contractor based on specific Project site conditions and the type of work being conducted. BMPs should remain in place until all disturbed ground has been stabilized either through compaction, re-vegetation, or other methods provided for in Biology Minimization Measure 1F.

Biology Minimization Measure 2E

Any fueling or maintenance of equipment or vehicles should be conducted at a minimum of 100 feet from any wetland or stream. A spill containment kit should be maintained at any fueling or maintenance area. Any spills should be cleaned as soon as feasibly possible and all resulting materials should be disposed of properly. All construction vehicles should be inspected daily for leaks of oil, hydraulic fluid, or other potentially hazardous materials by a qualified, construction-crew member and drip pans should be placed under parked vehicles during prolonged periods of disuse (e.g., during evenings and weekends).

7.2 Special-Status Plant and Wildlife Species

7.2.1 Special-Status Plants

One special-status plant species is known to occur within the Project Area: Anderson's manzanita (Rank 1B.2). Based on the current alignment, there is potential for impacting up to 0.54 acre of Anderson's manzanita. These impacts are based on a 7-foot band of disturbance (5-foot trail tread plus 1 foot of vegetation clearance on either side) located down the centerline of the trail alignment and may not reflect actual impacts due to the potential for reducing the width of the trail in critical areas and for re-routing the trail alignment anywhere within the 100-foot-wide band surveyed for this report. It is anticipated that the flexibility built into the trail alignment will help to minimize impacts to Anderson's manzanita.

The proposed Project has the potential to impact Anderson's manzanita through both initial trail construction and subsequent use and maintenance. Suitable measures for avoiding, minimizing, or mitigating impacts to Anderson's manzanita, are provided below.

Biology Impact 3

The proposed trail network and staging area have the potential to directly impact Anderson's manzanita through direct vegetation removal and grading activities, as well as by subsequent damage (e.g., trampling) from pedestrians, cyclists, horses, or dogs. The proposed Project also has potential to indirectly impact Anderson's manzanita through compaction and other disturbances caused by pedestrians, cyclists, horses, or dogs. This may include the introduction of invasive weeds or plant diseases (e.g., sudden oak death or other *Phytophthora*-related diseases) which could adversely affect susceptible species. With the implementation of the minimization measures listed below, WRA believes that the proposed trail network will not have a significant adverse impact to Anderson's manzanita.

Biology Minimization Measure 3A

Implement Biology Minimization Measures 1A-1J.

Biology Minimization Measure 3B

Where work will occur within 10 feet of a special-status plant to be preserved, orange construction fencing (or similar) should be installed at the edge of the work area and no work should occur beyond the fence. If such occurrences of special-status plants occur downslope from the work area, silt fencing should be installed at the edge of the work area to prevent soil or other materials from being transported downslope where they may impact special-status plants.

Biology Minimization Measure 3C

To the extent feasible and practicable, occurrences of special-status plants should be avoided by re-routing the trail alignment. At a minimum, the full width of the trail (i.e., the full extent of vegetation removal) should avoid the dripline of any special-status shrubs and should avoid special-status herbs by a minimum of 10 feet. If trails are re-routed, they should be re-routed downslope, where feasible, of any special-status plants to avoid causing erosion or sedimentation issues which could be detrimental to special-status plants. If not feasible then re-route the drainage away from the special-status plants. If other considerations such as slope or soil stability make it impossible to avoid special-status plants, a qualified, County-approved biologist should develop appropriate mitigation measures based on the species in question, the size and type of the anticipated impact, and the likelihood of success with various minimization approaches approved by the CNPS (1998) including:

(a) Avoiding the impact altogether by not taking a certain action

(b) Minimizing impacts by limiting the degree or magnitude of the action

(c) Rectifying the impact by repairing, rehabilitating or restoring the impacted environment

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the Project

(e) Compensating for the impact by replacing or providing substitute resources or environments (for example Anderson's manzanita habitat enhancement could be used to offset impacts on-site near disturbance areas by the removal of overstory trees, including non-native trees)

7.2.2 Special-Status Wildlife

Two special-status wildlife species were observed within the Project Area: San Francisco dusky-footed woodrat and oak titmouse. An additional 13 special-status wildlife species were determined to have moderate to high potential to occur there. The proposed Project has the potential to impact these wildlife species through both initial trail construction and subsequent use and maintenance.

Special-Status Bats

Biology Impact 4

The proposed trail network and staging area have the potential to directly impact special-status bats with the potential to occur within the Project Area through direct tree removal and grading activities. Tree removal and roost disturbance could occur during vegetation clearing associated with the establishment of parking and multi-use trail areas. Additionally, the operation of loud machinery in the immediate vicinity of a maternity roost site could impact the species by causing the parent to abandon the roost or induce elevated stress levels for the individuals occupying the maternity site. Although there are potential direct and indirect impacts to roost habitat associated with the Project, the clearing of vegetation may actually improve foraging habitat in locations that are currently too dense for bats to forage within. With the implementation of the minimization measures listed below, WRA believes that the proposed trail network will not have a significant adverse impact to any special-status bats.

Biology Minimization Measure 4A

Potentially significant impacts to roosting special-status bats may be minimized through avoiding disturbance to active roost sites. If any tree removal, regardless of size, or trimming is required, it is recommended to take place between September and October. This window falls outside of both the maternity and hibernation period for bats and avoids the breeding bird window (see Biology Minimization Measure 5A, below). Tree removal can take place during this period without a breeding bird or bat roost survey, although a tree removal permit may still be necessary.

Biology Minimization Measure 4B

If removal of large trees (diameter at breast height >12 inches) occurs during the bat roosting season (November through August), these trees should be inspected by a qualified, County-approved biologist for the presence of bat roosts. Potential bat roosts include large oak trees, riparian trees, exfoliating bark, tree cavities, and snags. If a maternity roost is detected, up to a 200-foot buffer should be placed around the maternity site until the bats are no longer utilizing the site. Non-maternity roost sites can be removed under the direction of a qualified, County-approved biologist.

Biology Minimization Measure 4C

Any large tree (diameter at breast height >12 inches) that will be removed should be left on the ground for 24 hours before being taken offsite or being chipped. This period will allow any day-roosting bats the opportunity to leave before the tree is either removed from the area or is chipped.

Biology Minimization Measure 4D

Consultation with the California Department of Fish and Wildlife (CDFW) should be initiated to determine appropriate mitigation measures if roosts are disturbed; this should be conducted by a qualified, County-approved biologist and any mitigation measures required by the CDFW should be implemented under the guidance of the same biologist.

Special-Status Birds and Other Avian Species

Biology Impact 5

Several species of special-status birds were observed or were determined to have the potential to occur within the Project Area; they include: oak titmouse, Vaux's swift, Nuttall's woodpecker, Allen's hummingbird, olive-sided flycatcher, and purple martin. (In addition to these species, marbled murrelet may also occur within the Project Area; however, impacts and minimization for this species is discussed under Biology Impact 6.)

The proposed Project will entail minor amounts of vegetation removal which has the potential to impact potential nesting and foraging habitat for avian species. The operation of construction machinery during the breeding season could also cause disturbance to breeding birds and could impact nesting activity. Indirect impacts to nesting birds may also occur as increased noise and human disturbance will occur as hikers, cyclists, horses, and dogs utilize various trail segments. Special-status and other native bird species are protected during the nesting season by the Migratory Bird Treaty Act and the California Fish and Game Code, as well as the California Environmental Quality Act. Potential significant impacts to nesting special-status birds may be minimized through avoiding disturbance to active nests through implementation of the following measures.

Biology Minimization Measure 5A

If construction, vegetation removal, or ground disturbance activities occur during the breeding season (February 1 to August 31), pre-construction breeding bird surveys should be conducted by a qualified individual within 14 days of the start of these activities to avoid disturbance of active nests, eggs, and/or young.

Biology Minimization Measure 5B

If construction, vegetation removal, or ground disturbance activities stop or lapse for a period of 14 days or more during the breeding season, a follow-up breeding bird survey should be conducted to ensure no new breeding activity has occurred within the anticipated work area. Outside of the breeding season, no pre-construction breeding bird survey would be required for construction, vegetation removal, or ground disturbance activities.

Biology Minimization Measure 5C

If nesting birds are located, an exclusion zone in which no construction activities would be allowed should be established around any active nests of any avian species protected by the Migratory Bird Treaty Act and California Fish and Game Code until a qualified, County-approved biologist has determined that all young have fledged. Suggested exclusion zone distances differ depending on species, location, and placement of nest, and should be at the discretion of the approved biologist based on the species in question, the proximity of the nest to the work area, and the type of work being conducted (e.g., use of hand tools versus gas-operated machinery).

Marbled Murrelet

Biology Impact 6

Marbled murrelet may occur within stands of old-growth forest with complex canopy such as shown on Figure 9. However, these areas have not been evaluated for their potential to support marbled murrelet following United States Fish and Wildlife Service protocols and it is unknown whether they represent potential habitat for marbled murrelet. If the species is present, the operation of construction machinery during the breeding season could result in disturbance to breeding individuals and could impact nesting activity. Additionally, although direct impacts to this species from vegetation and tree removal are unlikely, the species may still be impacted from a resulting increase in edge habitat and the presence of trash or food waste from trail users. An increase in edge habitat and/or food waste can result in an increased occurrence of corvids, including Steller's jay (*Cyanocitta stelleri*), which can increase nest predation and reduce reproductive success. This may be particularly prevalent in or around the parking lot and picnic areas where trash and food scraps are more likely to concentrate. Potential significant impacts to marbled murrelet may be minimized through the measures listed below. Informal consultation with the United States Fish and Wildlife Service (USFWS) should be initiated and any additional measures recommended by the USFWS should be implemented as part of the project.

Biology Minimization Measure 6A

During construction, all workers should ensure that food scraps, paper wrappers, food containers, cans, bottles, and other trash from the construction area is deposited in wildlife-proof trash containers. The trash containers should not be left open and unattended overnight.

Biology Minimization Measure 6B

Ensure the Public Access Plan includes specific measures that include the installation of animal-proof trash receptacles and describe specific methods for routine trash pickup and ongoing monitoring by the Public Access Manager to ensure that trash removal occurs at a frequency sufficient to prevent trash overflow at the receptacles.

Biology Minimization Measure 6C

Educational signage should be placed within the parking lot and at picnic areas informing the public to remove trash and food waste. Signage should provide information on the marbled murrelet and the impact that corvid and avian predators can have on nest sites. This education signage should be in place prior to opening the trails for public access and should be routinely maintained by the Public Access Manager to ensure that signage is not obstructed and is legible at all times.

Biology Minimization Measure 6D

Picnic locations should be located outside of old-growth stands.

San Francisco Dusky-Footed Woodrat

Biology Impact 7

The proposed trail network and staging area have the potential to directly impact San Francisco dusky-footed woodrat through mortality and destruction of their large stick nests, potentially containing young, that could occur during vegetation removal, grubbing, grading, or other ground-disturbing activities. Potential indirect impacts to woodrats may include increased predation through increased access for predators, such as raccoon or coyote. Predators may also be attracted to food waste and trash created by trail users, particularly within the picnic and parking lot areas. Multi-use trail and parking lot areas will also introduce domestic animals including dogs to the Project Area, which could disturb nests by marking their scent or direct destruction of nests in close proximity to multi-use trails. The Draft Public Access Plan (PlaceWorks 2018) limits dogs to the proposed 1.5-mile-long Northern Frontage Trail that parallels Empire Grade Road.

San Francisco dusky-footed woodrat middens are found in very high numbers throughout all portions of the Project Area. Approximately 1,815 woodrat middens were mapped within the Project Area; based on the representative densities (8.7 middens per acre) observed across the 38 miles of trail surveyed for this report, it is estimated that the greater San Vicente Redwoods property may support up to 74,000 woodrat middens. Based on the current trail alignment, it is estimated that 144 middens may be directly impacted; this represents less than 0.2% of the estimated population of the greater site.

As with all impacts to special-status species discussed in this Biological Resources Assessment, these impacts are theoretical in that they are based on a 7-foot-wide area of disturbance running down the center of the proposed trail alignment shown on Figure 2; by strategically aligning the trail within the survey corridor, these impacts may be reduced or avoided. While some direct impacts to woodrat nests may be unavoidable, this would not be considered a significant impact as the species is prolific at the site and suitable habitat is abundant within both the Project Area and the greater San Vicente Redwoods. Minimization measures listed below are recommended to reduce impacts to woodrat to a less-than-significant level.

Biology Minimization Measure 7A

Implement Biology Minimization Measures 1A, 1B, 6A, and 6B.

Biology Minimization Measure 7B

A pre-construction survey of the parking lot area should be conducted by a qualified, County-approved biologist to flag and delineate any woodrat middens within the planned disturbance footprint. During construction of the parking lot, a biological monitor should be onsite to ensure vegetation and ground disturbance with heavy equipment should not impact those delineated resources. When avoidance of woodrat middens is not possible, the qualified, County-approved biologist should dismantle the nest in accordance with Minimization Measure 7D.

Biology Minimization Measure 7C

During construction and trail installation, a qualified, County-approved biologist or trained designee from the contractor's crew should identify woodrat middens located along the trail alignment. If the latter, a qualified, County-approved biologist should provide the training prior to the start of each construction phase. To the extent feasible and practicable, the trail alignment should avoid woodrat middens by re-routing the trail alignment. The trail should avoid woodrat nests. To accomplish this, a qualified member of the contractor's crew should be trained in the identification of woodrat nests and this person should be responsible for making minor adjustments to the trail alignment during construction to avoid woodrat nests. Where is not possible to avoid all woodrat nests, impacts to woodrats and their middens implementation of Minimization Measure 7D would be required.

Biology Minimization Measure 7D

When construction of the trail alignment or the parking area will result in a direct impact to a woodrat midden, a qualified, County-approved biologist should dismantle the nest and scatter the nest material a minimum of 10 feet outside of the trail alignment or the footprint of the parking area. If young are encountered during the dismantling process, the material should be placed back on the nest and the nest should remain unmolested for three weeks in order to give the young enough time to mature and leave of their own accord. After three weeks, the nest dismantling process may resume.

Biology Minimization Measure 7E

For trail segments where dogs on leash are permitted, educational signage should be posted to inform trail users of woodrats, their middens, and the importance of keeping dogs on trails and away from the structures. This educational signage should be in place prior to opening the trails for public access and should be routinely maintained by the Public Access Manager to ensure that signage is not obstructed and is legible at all times.

California Red-Legged Frog

Biology Impact 8

The proposed trail network and staging area have the potential to directly impact California red-legged frog (CRLF) which may disperse through the Project Area. Furthermore, the Project Area contains Critical Habitat for the species. The development of stream crossings and the associated vegetation and ground clearing activities may impact or impede CRLF movement. Indirect impacts to CRLF may include increased predation through increased access for predators, such

as raccoon or coyote. Predators may also be attracted to food waste and trash created by hikers within the picnic and parking lot areas.

Impacts to CRLF and the species Critical Habitat may also occur if aquatic features are degraded through increased rates of erosion and sedimentation, the introduction of invasive weeds, and other disturbances from trail users or trail maintenance. Minimization measures listed below are recommended to prevent impacts to CRLF and to maintain the physical or biological features of the species Critical Habitat. If these measures are implemented, no take is expected to occur during the proposed Project. Consultation with the United States Fish and Wildlife Service (USFWS) may still be required due to the presence of Critical Habitat; however, the physical and biological features of the species' Critical Habitat is anticipated to remain unchanged with the Project. If consultation with the USFWS is required, and additional measures by the USFWS are warranted, those measures should be implemented with the Project in addition to those identified below.

Biology Minimization Measure 8A

Implement Biology Minimization Measures 2B through 2E.

Biology Minimization Measure 8B

For stream crossings and areas within 100 feet of wetted features, pre-construction surveys by a qualified, County-approved biologist should be performed immediately prior to the start of any ground-disturbing activities. If California red-legged frog (CRLF) are found within the Project Area, all work should cease within the immediate vicinity (approximately 25-feet around the work area) until the individual(s) have been allowed to leave the Project Area on their own. If CRLF cannot passively leave the Project Area, work should cease and the United States Fish and Wildlife Service (USFWS) should be contacted by the approved biologist to determine the appropriate course of action. The approved biologist should then implement the appropriate course of action as determined by the USFWS.

Biology Minimization Measure 8C

Because dusk and dawn are often the times when California red-legged frog (CRLF) are most active and likely to disperse, all construction activities should cease one half hour before sunset and should not begin prior to one half hour before sunrise. Furthermore, no mechanized work should occur during significant rain events, defined here as 0.25 inch or greater within a 24 hour period, when CRLF are more likely to disperse and occur within the Project Area.

Wildlife Corridors

Biology Impact 9

The Project Area is located within the western portion of an important wildlife corridor, as identified by the California Department of Fish and Wildlife's (CDFW) essential connectivity network mapping project (CDFW 2014). Wildlife corridors and essential connectivity areas have been mapped by the CDFW to include the Project Area and continuing through to the north, east, and southeast (CDFW 2014). The proposed trail network and staging area have the potential to impact wildlife migration, including mountain lion, through the introduction of new human disturbance and increased noise. New scents will also occur as multi-use trails allow horses and dogs to access the area. The Project will not, however, result in the development of any physical structures or barriers that would restrict or prevent wildlife migration (i.e., no new roads, large fences, urban development, etc.). Mountain lion and other native species often utilize trail

networks, and the development of trails within the Project Area is not anticipated to result in an impact to wildlife corridors or movement.

Biology Minimization Measure 9

The proposed Project is not anticipated to impact wildlife corridors within Santa Cruz County, and therefore no additional minimization measures are recommended.

7.3 Protected Trees

Biology Impact 10

The proposed trail network and staging area have the potential to directly impact trees protected under the Santa Cruz County Tree Protection Ordinance. Protected trees include trees within any of the sensitive habitats defined by the Santa Cruz County Municipal Code (see Section 2.3).

Biology Minimization Measure 10

All tree removals should adhere to the County's tree protection ordinance. Tree removal should be conducted by a licensed arborist or a registered professional forester using industry-standard best management practices (BMPs) to prevent the spread of invasive weeds or plant pathogens and avoid damage to vegetation to be retained.

8.0 CONCLUSION

Based on the results of this Biological Resources Assessment, it was determined that the Project Area contains sensitive resources which could be adversely impacted by the proposed Project. Elements of at least eight sensitive terrestrial biological communities and three sensitive aquatic biological communities were observed within the areas designated for trail construction. One special-status plant, Anderson's manzanita, was determined to be present. Based on a lack of observations during seasonally-timed surveys, it was determined that other special-status plants are unlikely to occur within the Project Area. Two special-status wildlife species were determined to be present, San Francisco dusky-footed woodrat and oak titmouse, and another 13 special-status wildlife species were determined to have moderate to high potential to occur. Additionally, the Project Area contains designated Critical Habitat for CRLF.

Although the proposed Project covers a large amount of wild lands containing a high diversity of biological resources, the proposed Project is relatively minimal in scope and is not expected to result in significant adverse impacts to sensitive resources. Due to the significant efforts that have gone into understanding ecology of the property (ESA 2012) and developing the proposed trail network (PlaceWorks 2018), areas with the most sensitive resources have been avoided and large tracts of wild land will remain off limits to public access. When implemented appropriately, the proposed trail network and the associated recreational, research, and educational activities are compatible with the conservation and long-term maintenance of sensitive biological resources. To this effect, the alignment of the trail and the specific construction methods proposed will largely avoid sensitive resources and will reduce the potential for long-term adverse impacts. With the implementation of the minimization measures included in Section 6.0, as well as the detailed management actions listed in the Draft Public Access Plan, it is anticipated that any potential impacts to sensitive biological resources associated with the Project will be reduced to a less-than-significant level.

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APPENDIX A

PROJECT FIGURES

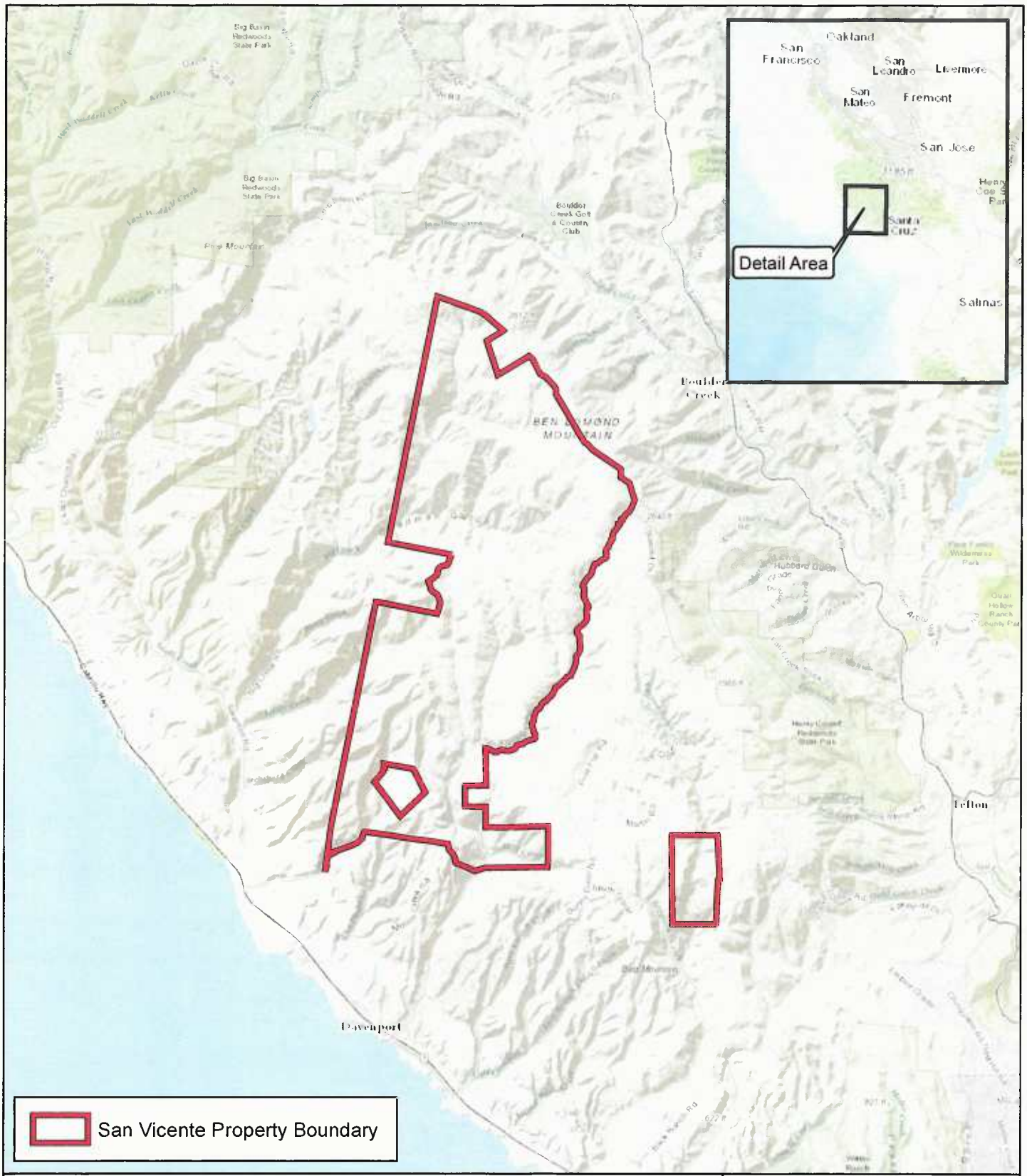

Figure 1. Location Map

San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 0.5 1 2 Miles

wra
ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 11/8/2016
Map Prepared By: sgillespie
Base Source: Esri World Topo
Data Source(s): WRA

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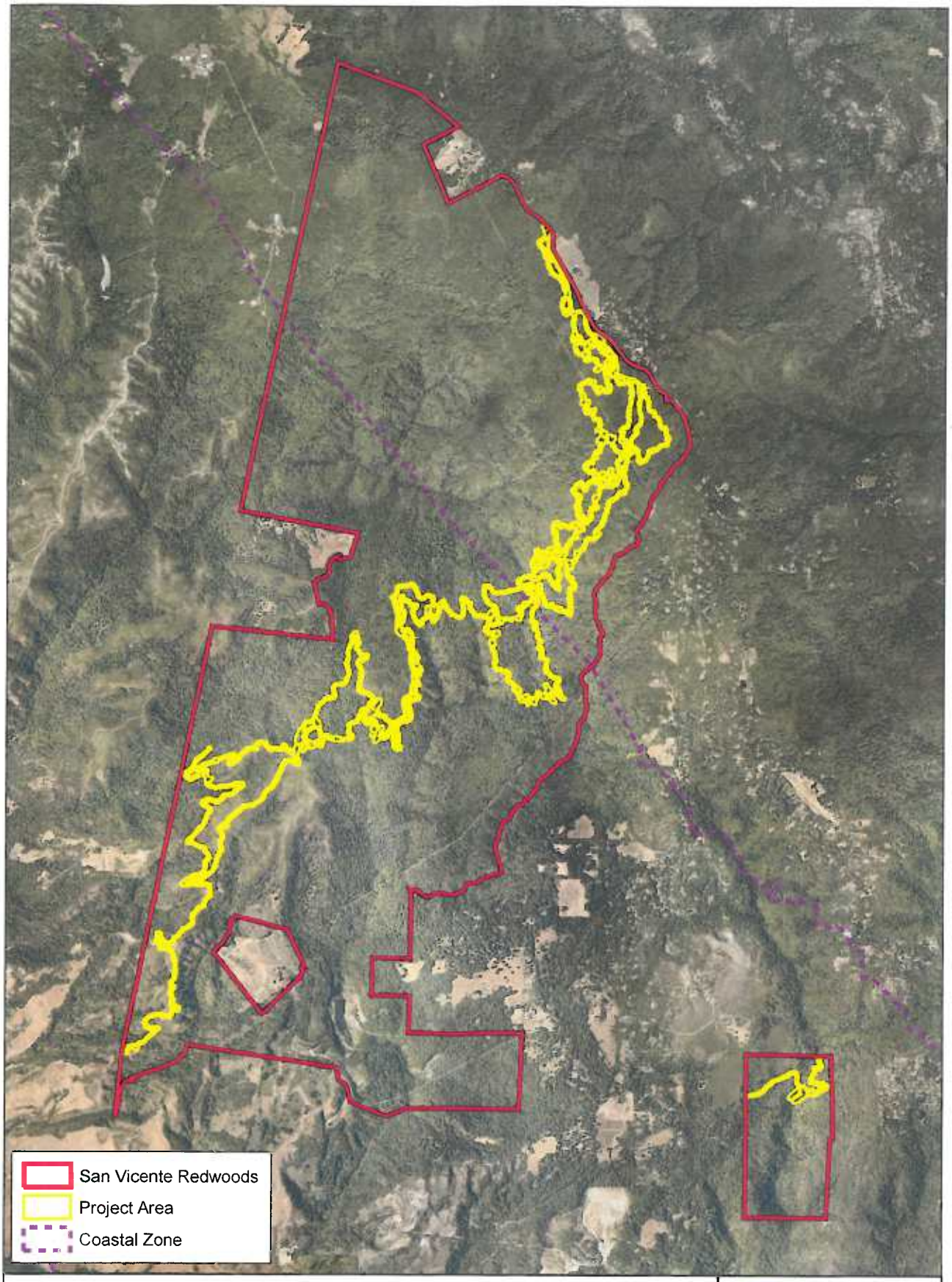

Figure 2. Overview of Project Area

DRAFT

San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 1,500 3,000 6,000 Feet

wra
ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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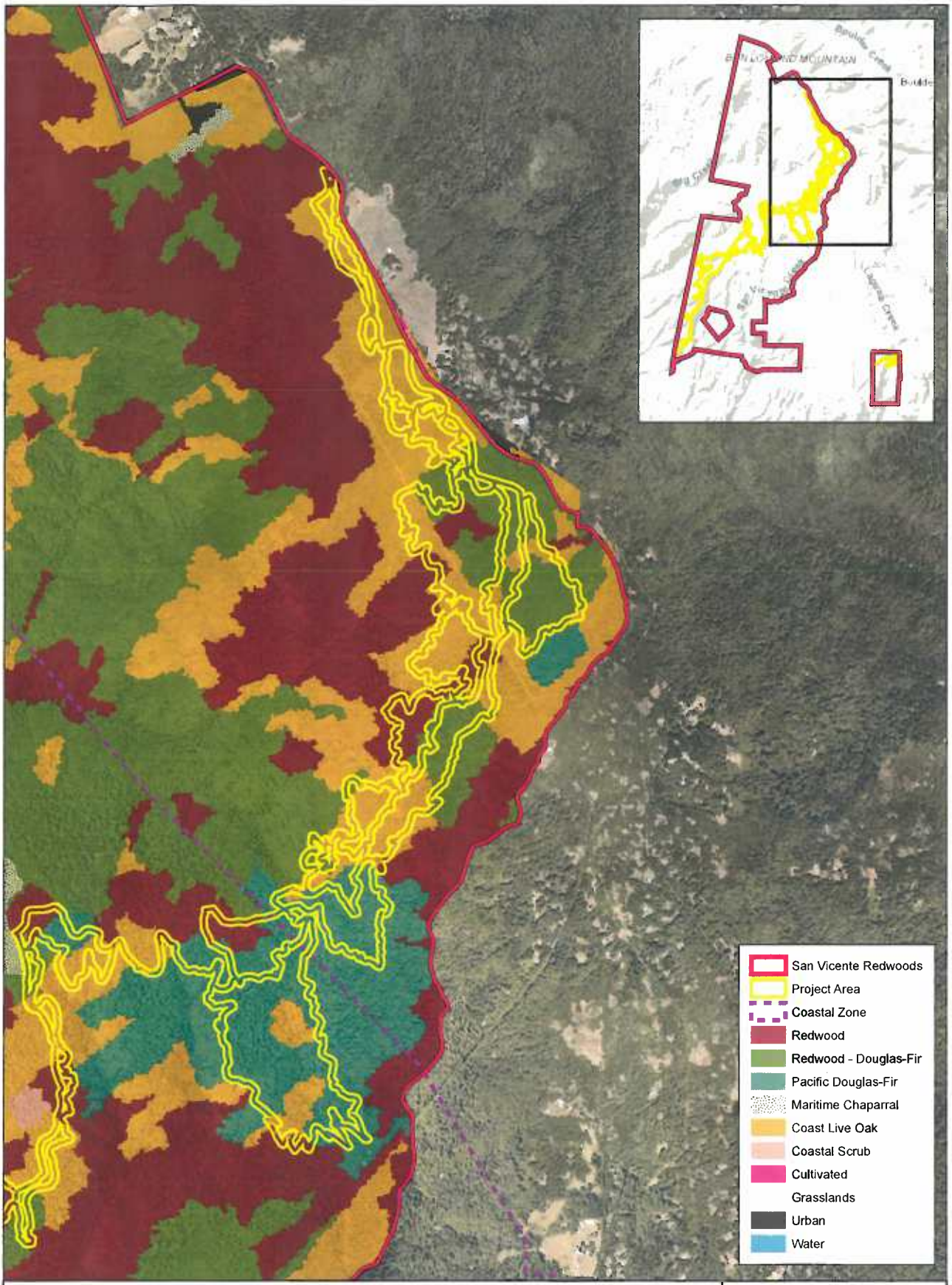

Figure 3A. Biological Communities North

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ENVIRONMENTAL CONSULTANTS

San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 5001,000 2,000 Feet

Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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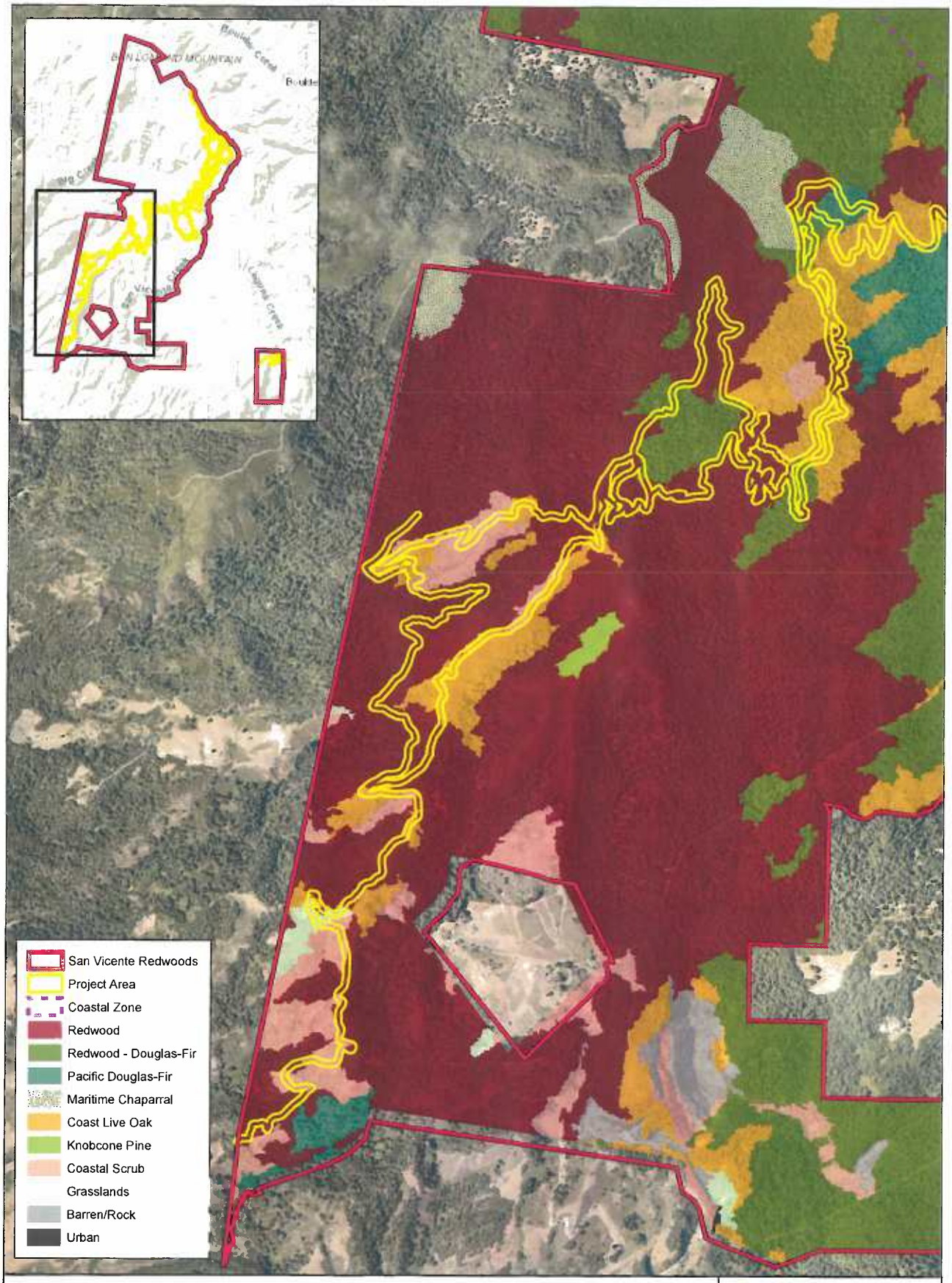

Figure 3B. Biological Communities South

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 5001,000 2,000
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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

Path: L:\Acad 2000 Files\22000\22287\GIS\ArcMap\2018\Fig3B_BioCommSouth.mxd

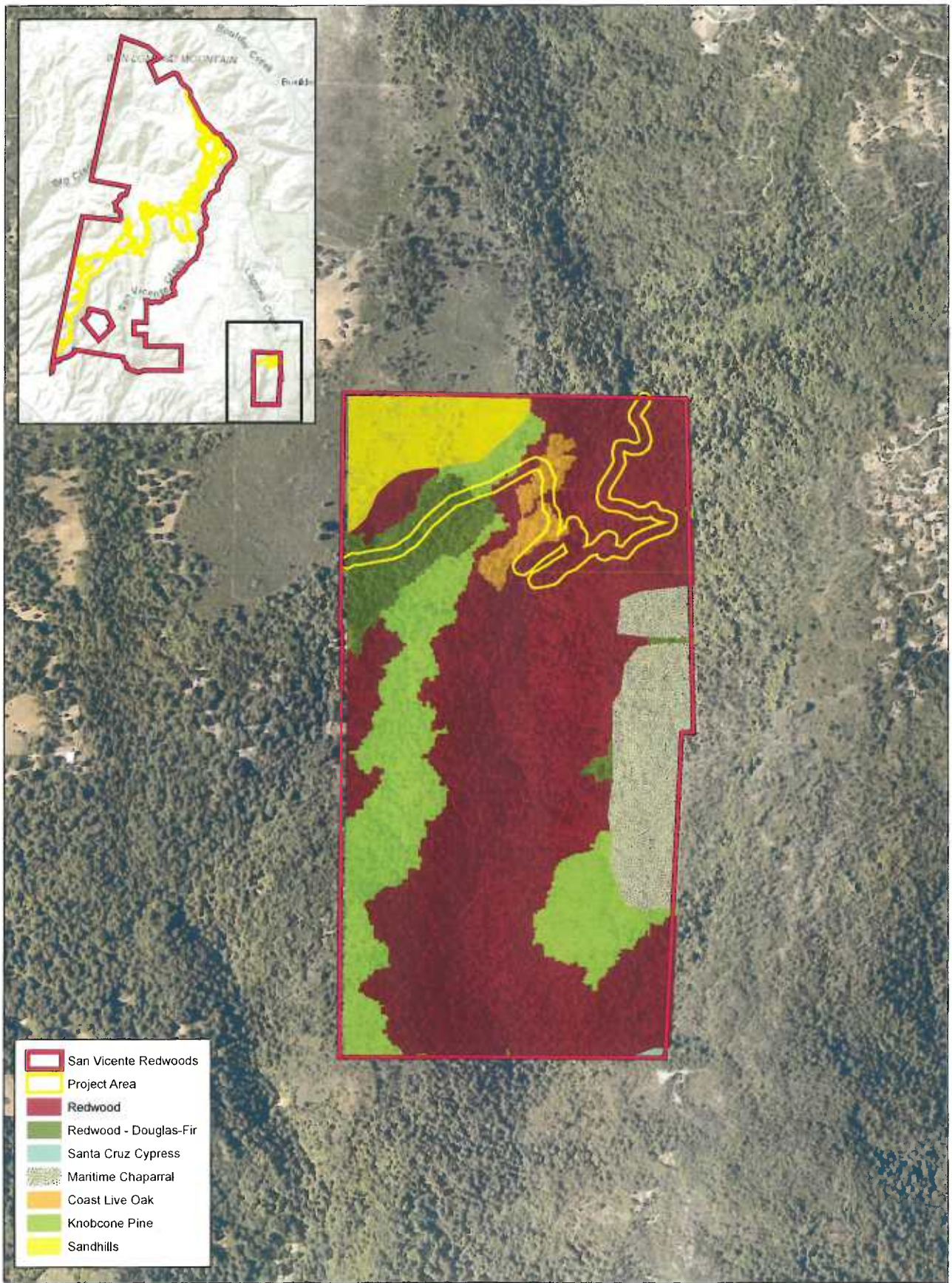

Figure 3C. Biological Communities Laguna Parcel

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Data Source(s): WRA, DCE, SCCBP

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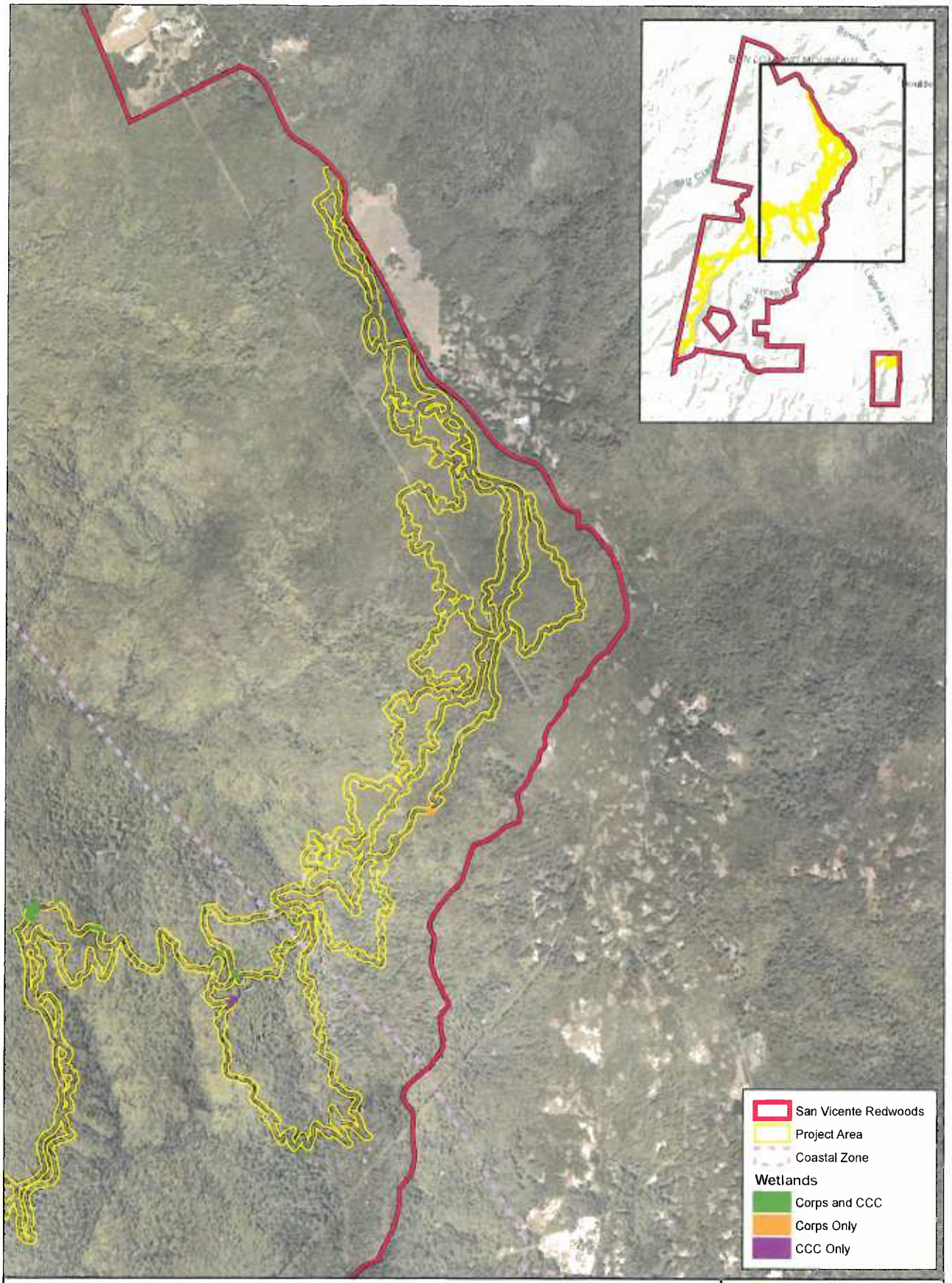

Figure 4A. Wetlands North

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Data Source(s): WRA, DCE, SCCBP

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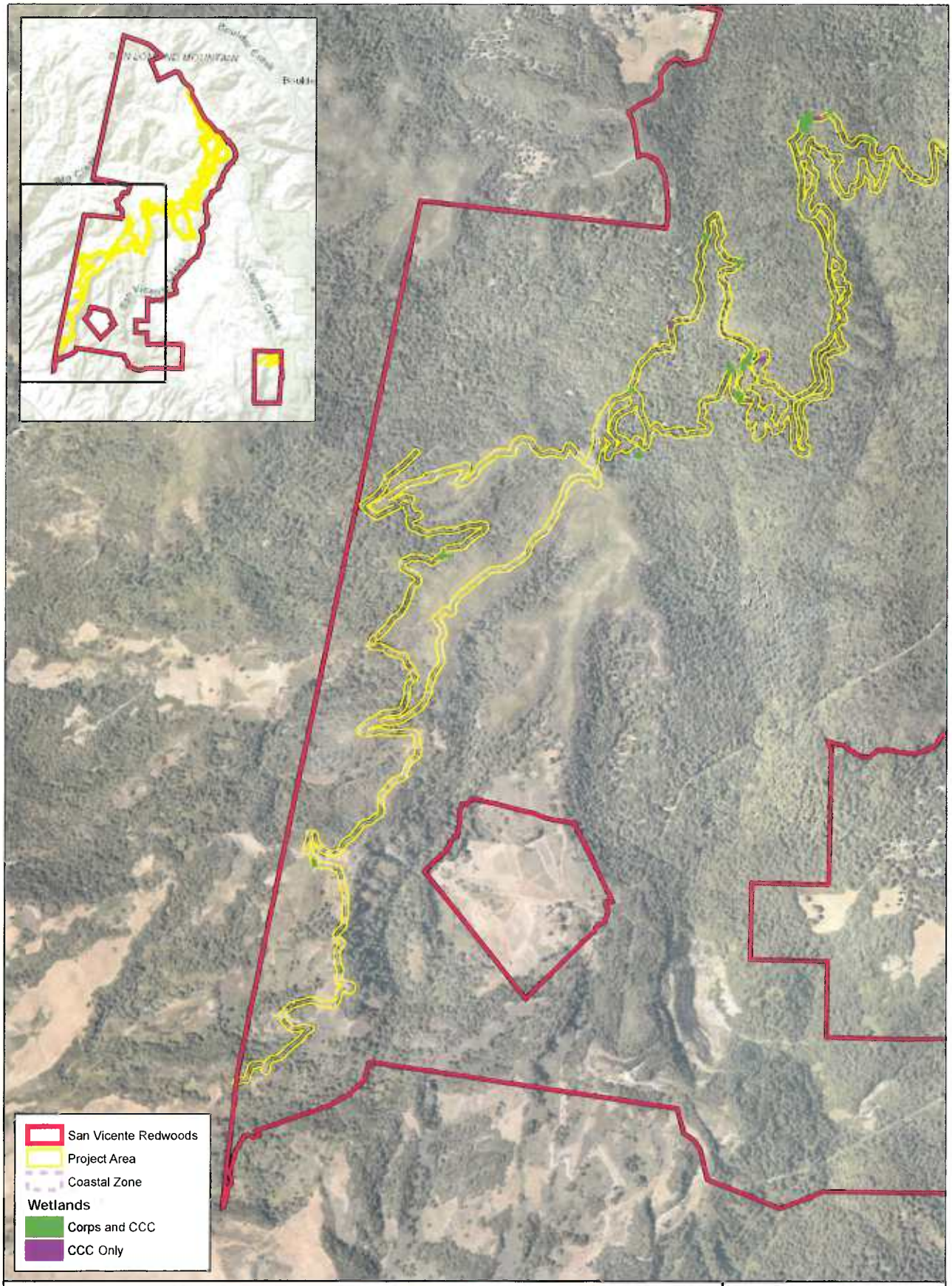

Figure 4B. Wetlands South

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San Vicente Redwoods
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Santa Cruz County, California

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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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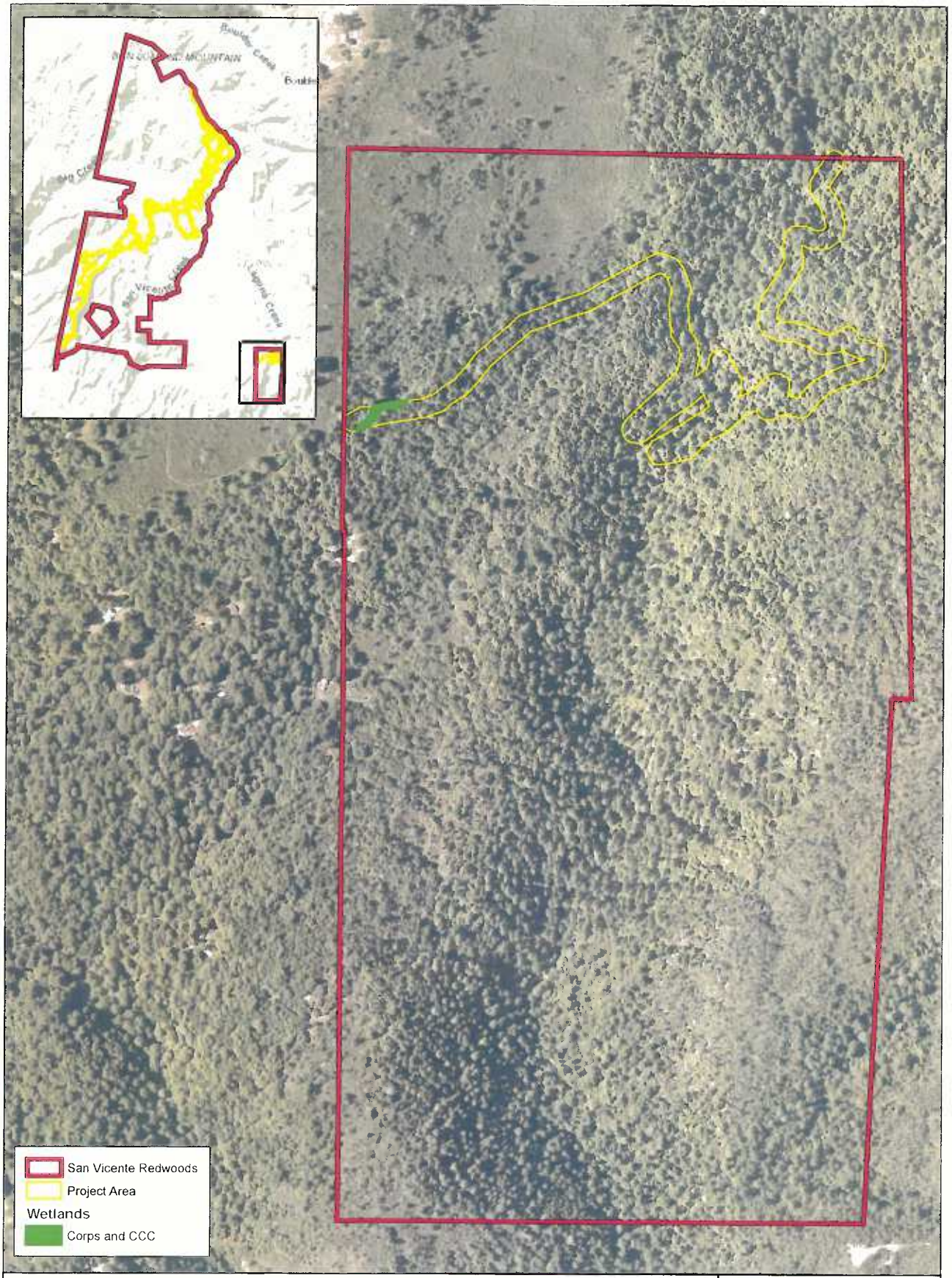

Figure 4C. Wetlands Laguna Parcel

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

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Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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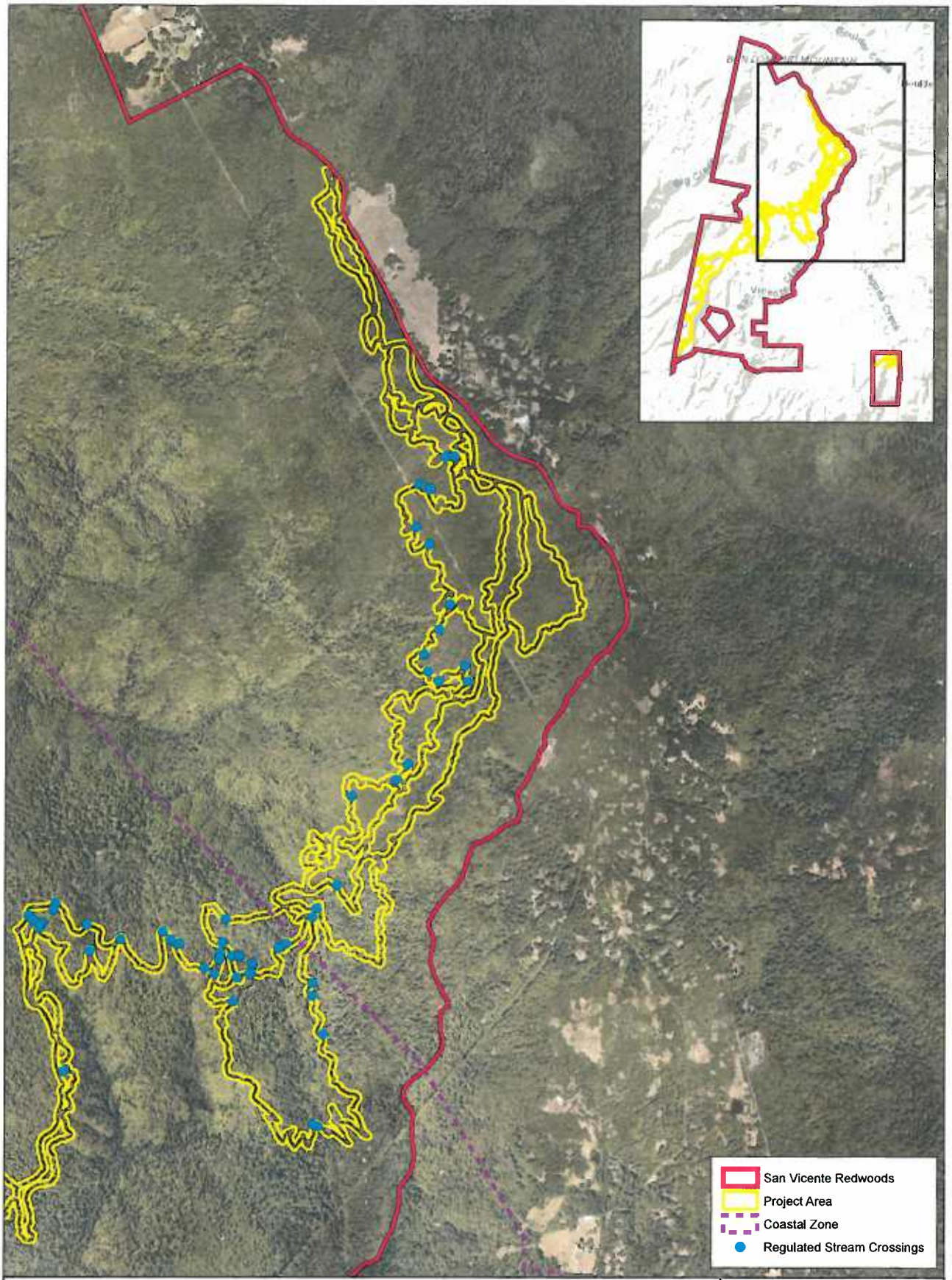

Figure 5A.Regulated Stream Crossings North

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Santa Cruz County, California

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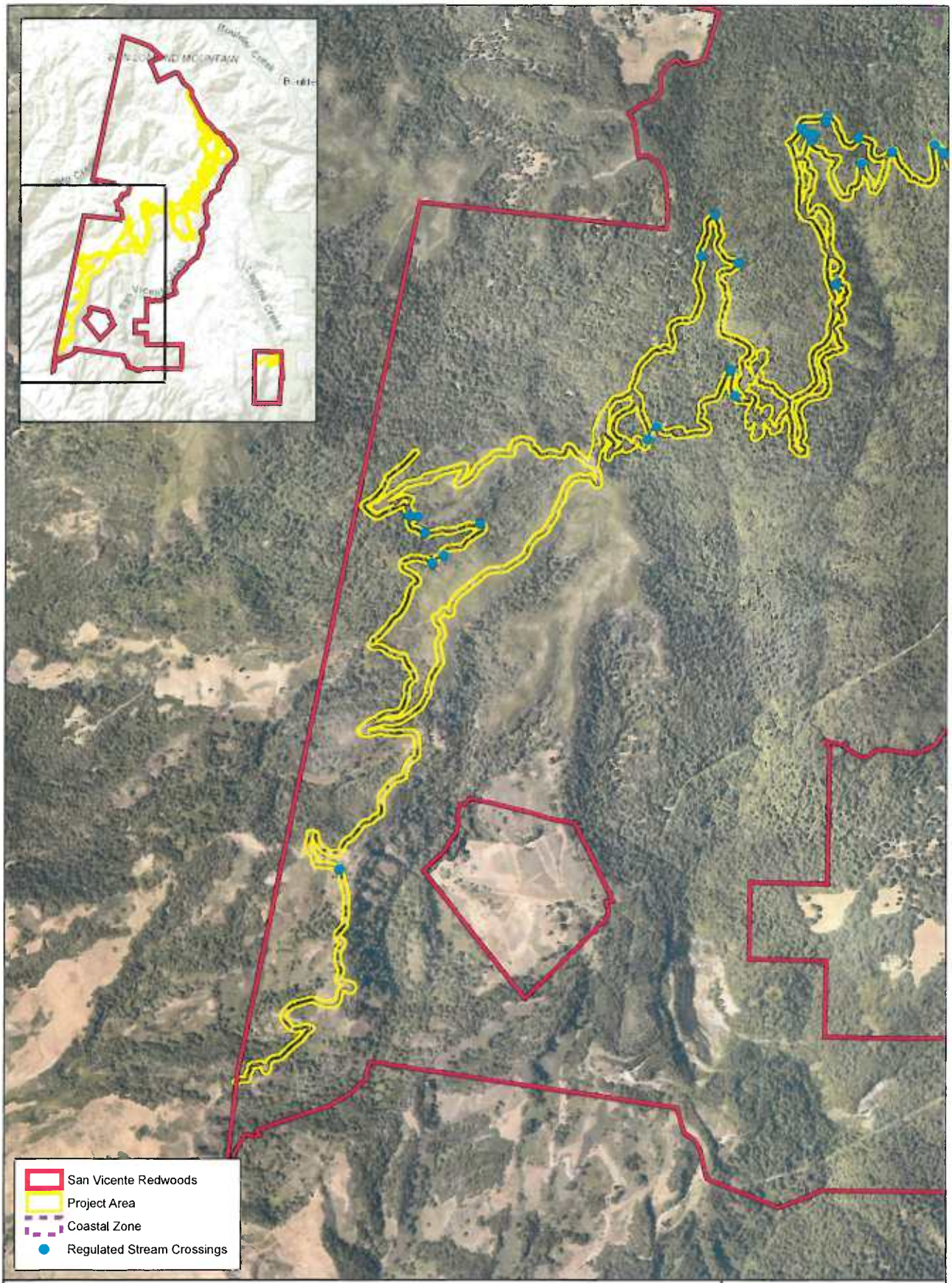

Figure 5B. Regulated Stream Crossings South

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

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Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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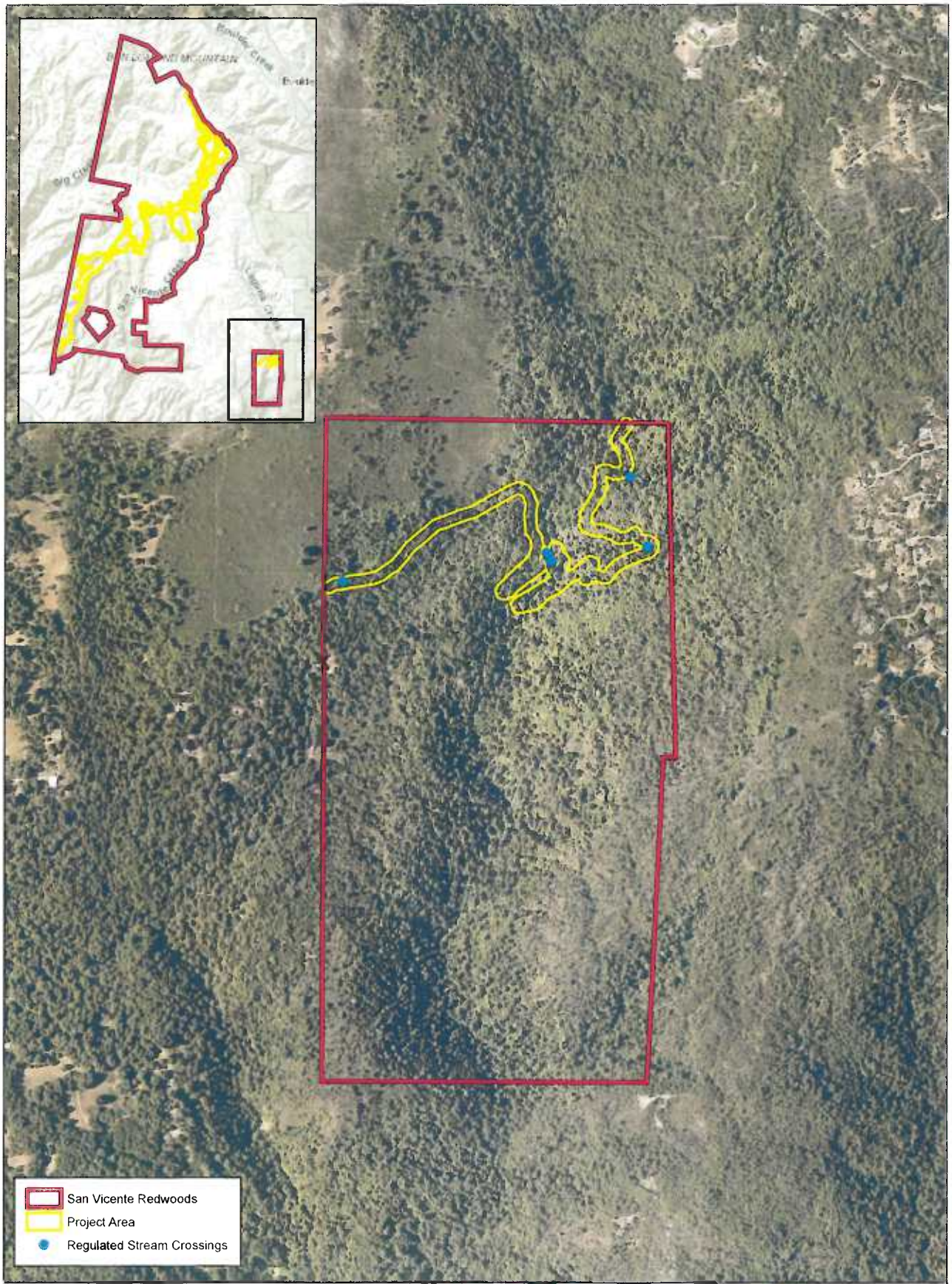

Figure 5C. Regulated Stream Crossings Laguna Parcel DRAFT

San Vicente Redwoods
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Santa Cruz County, California

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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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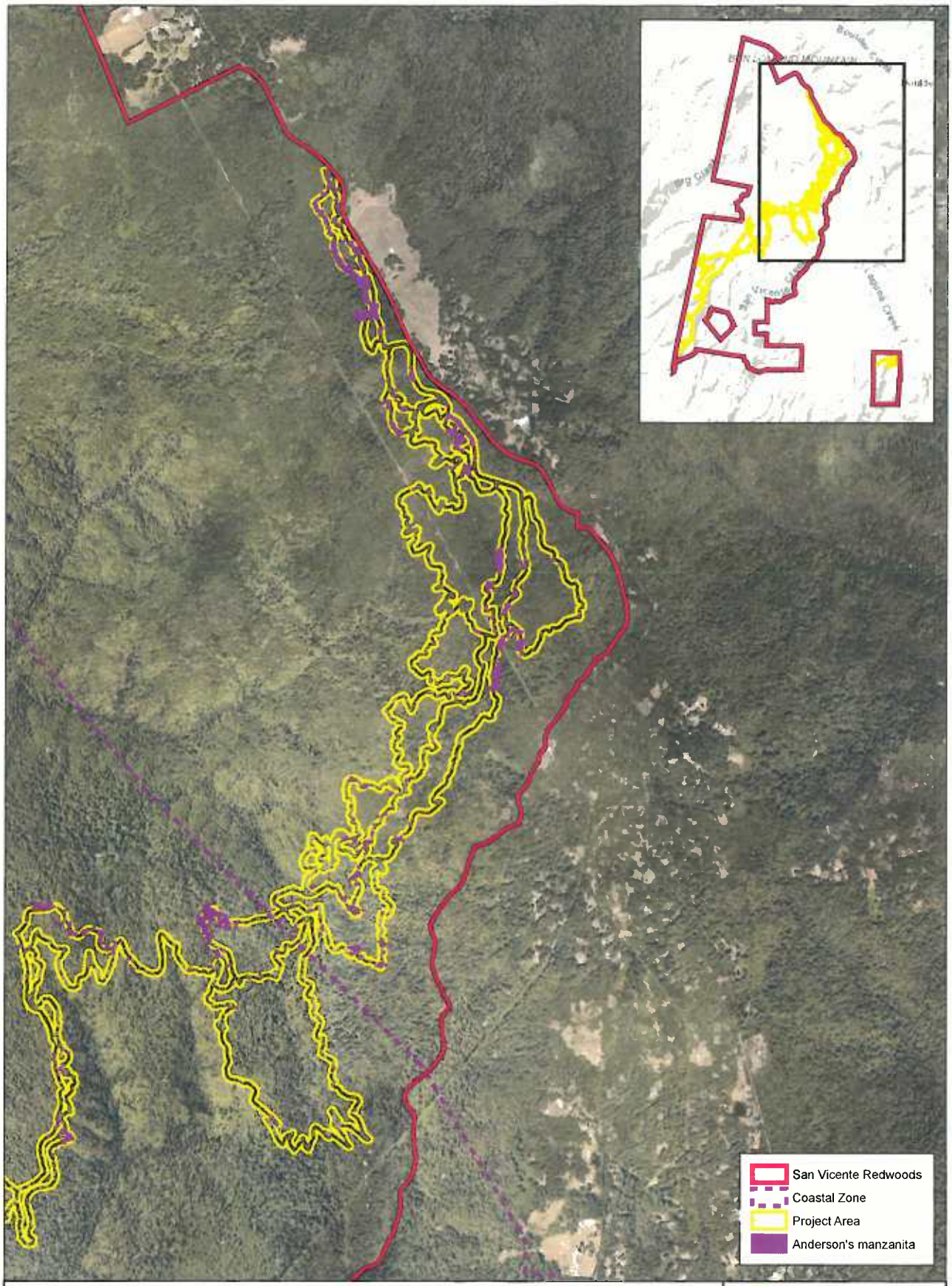

Figure 7A. Special-Status Plant Species North

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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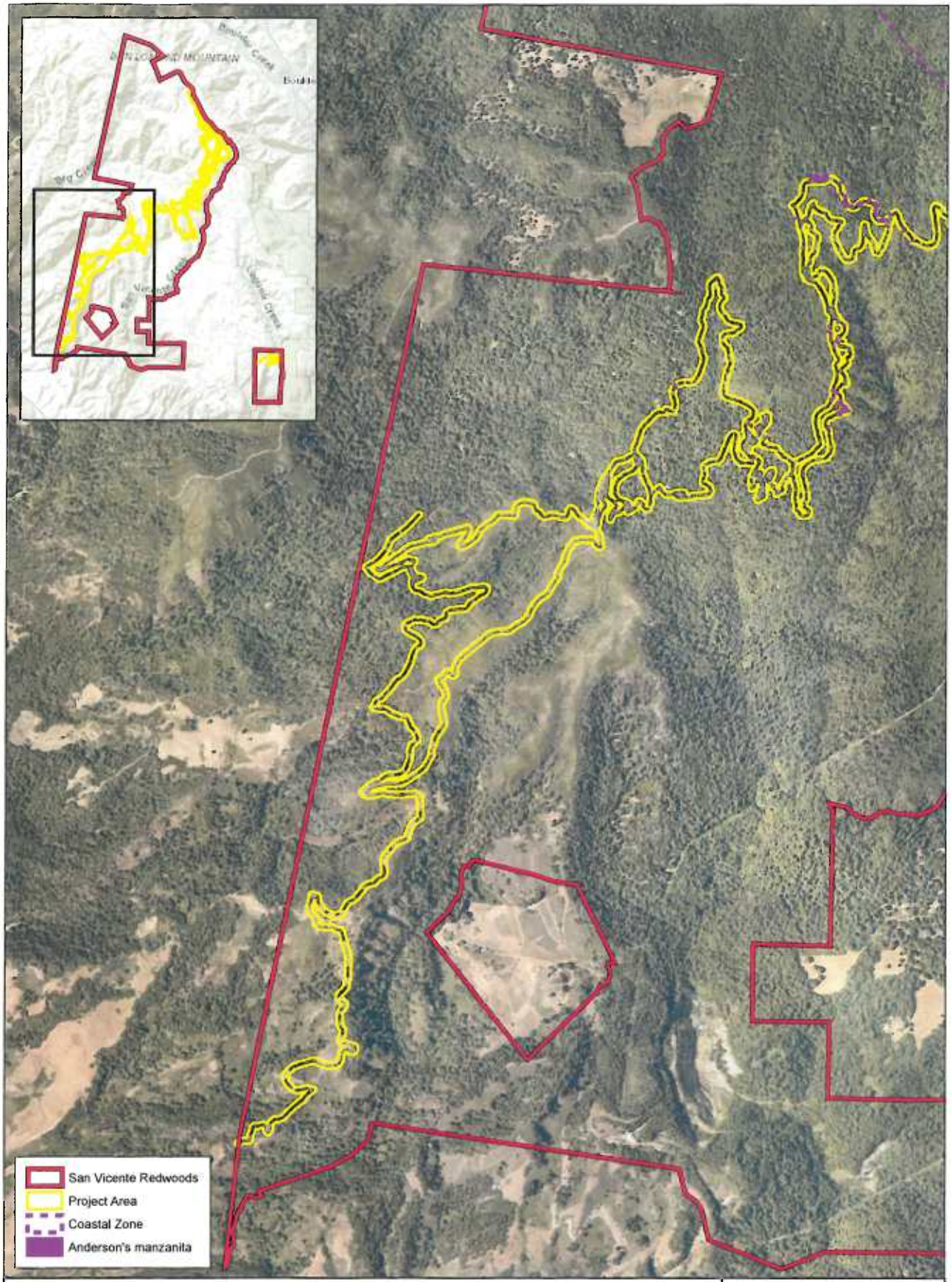

Figure 7B. Special Status Plants South

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San Vicente Redwoods
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Santa Cruz County, California

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Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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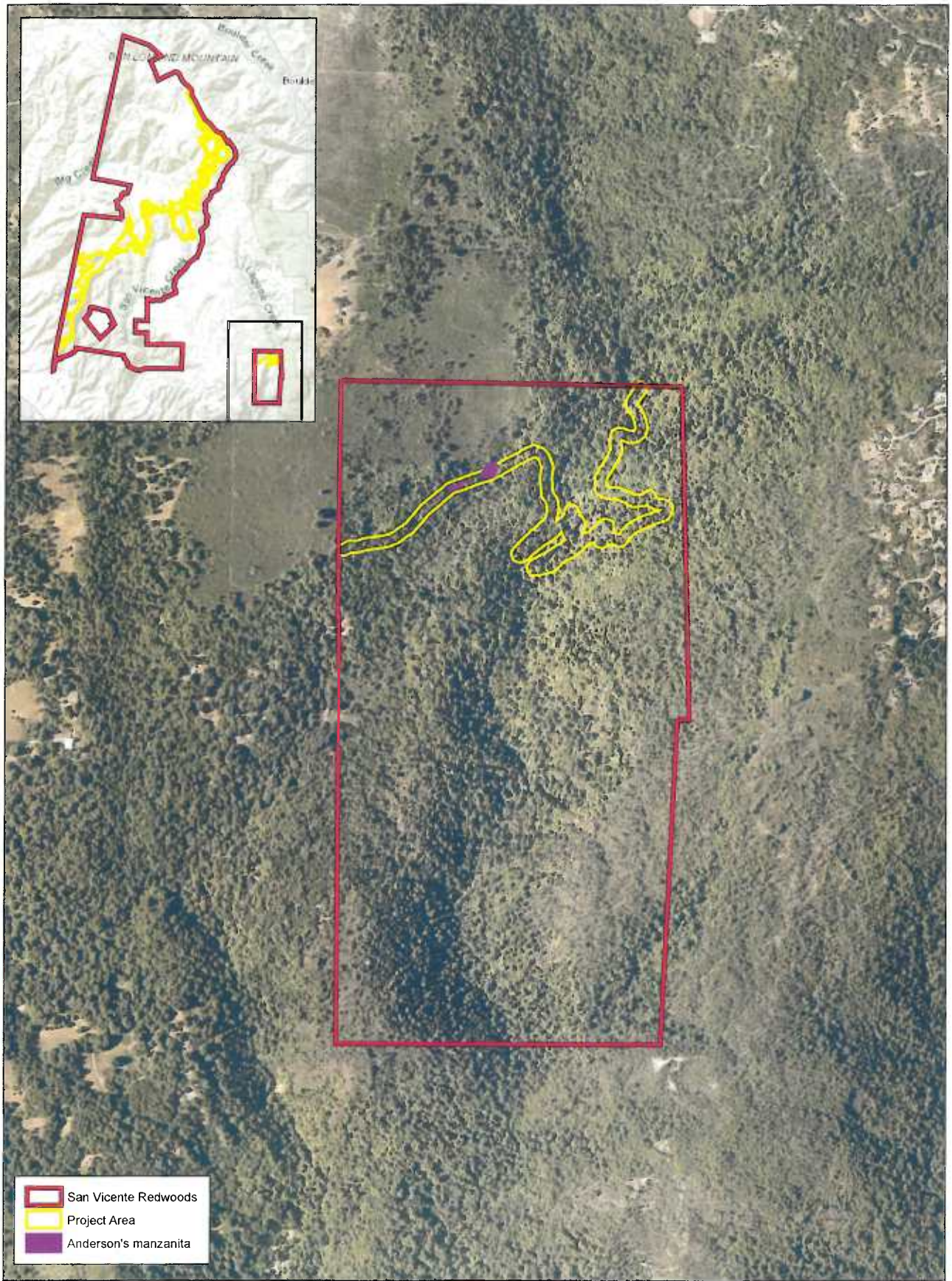

Figure 7C. Special Status Plants Laguna Parcel

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San Vicente Redwoods
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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
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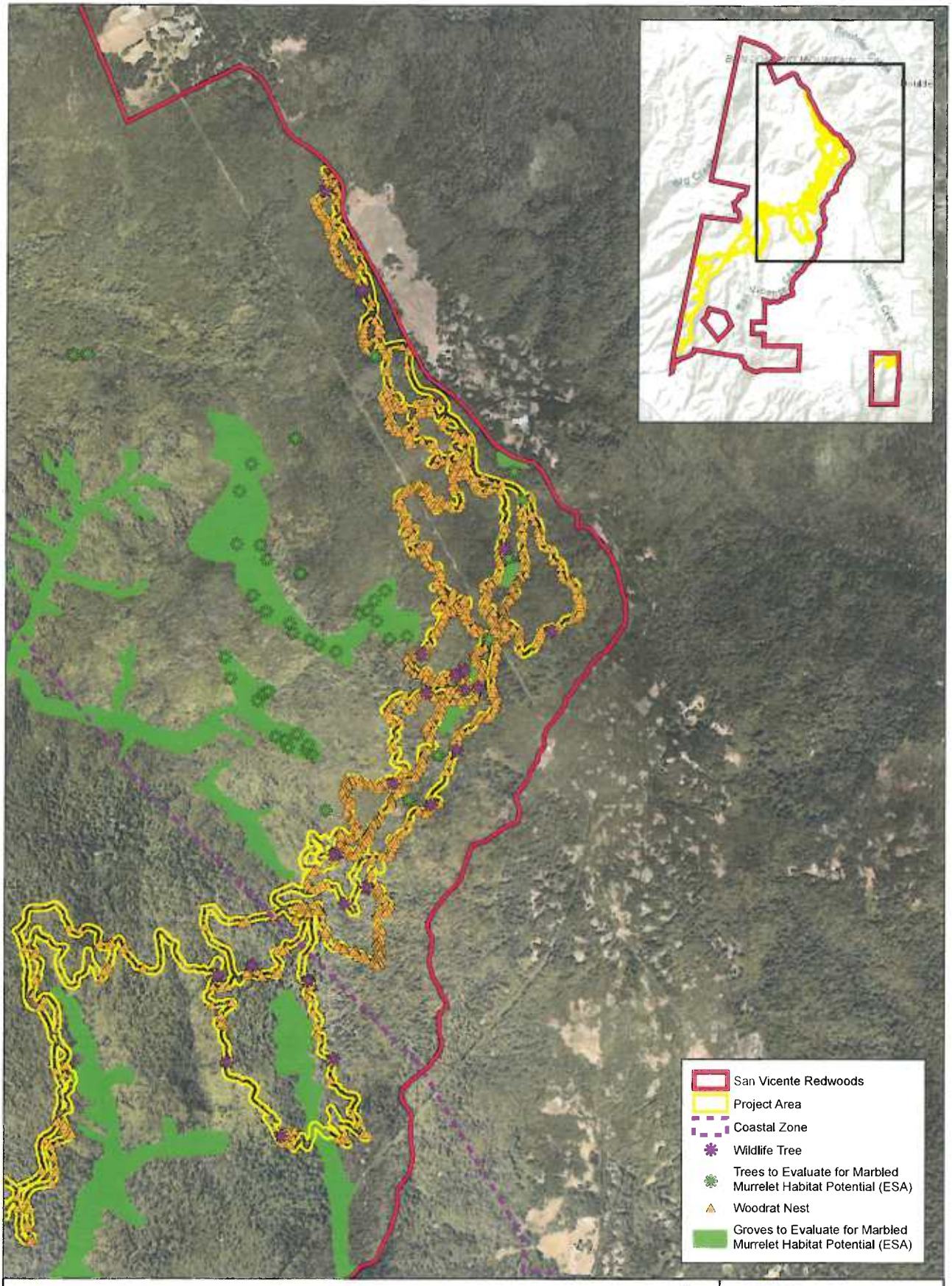

Figure 9A. Special-Status Wildlife Species North

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 5001,000 2,000 Feet

Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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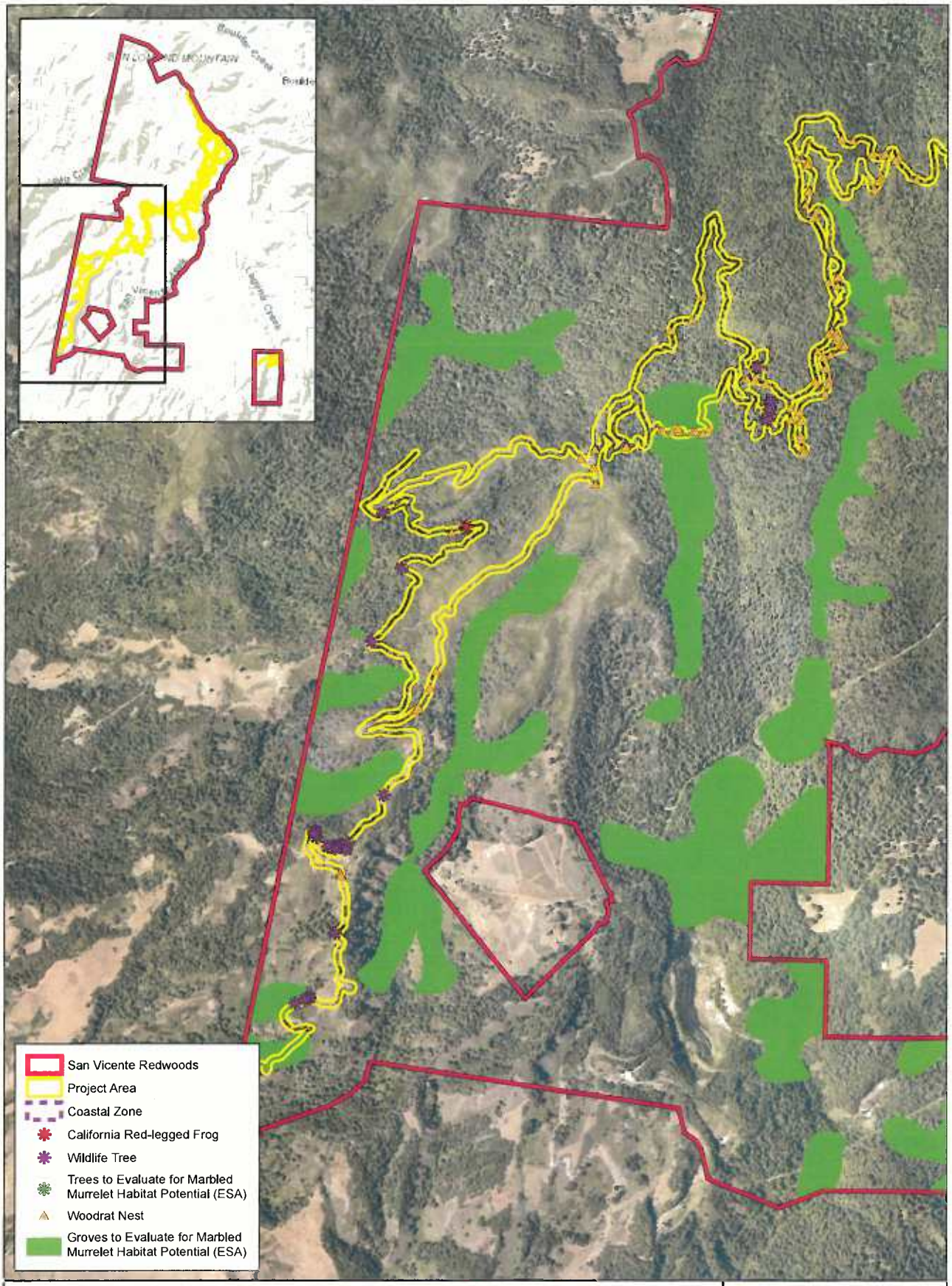

Figure 9B. Special Status Plants South

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

0 5001,000 2,000 Feet

Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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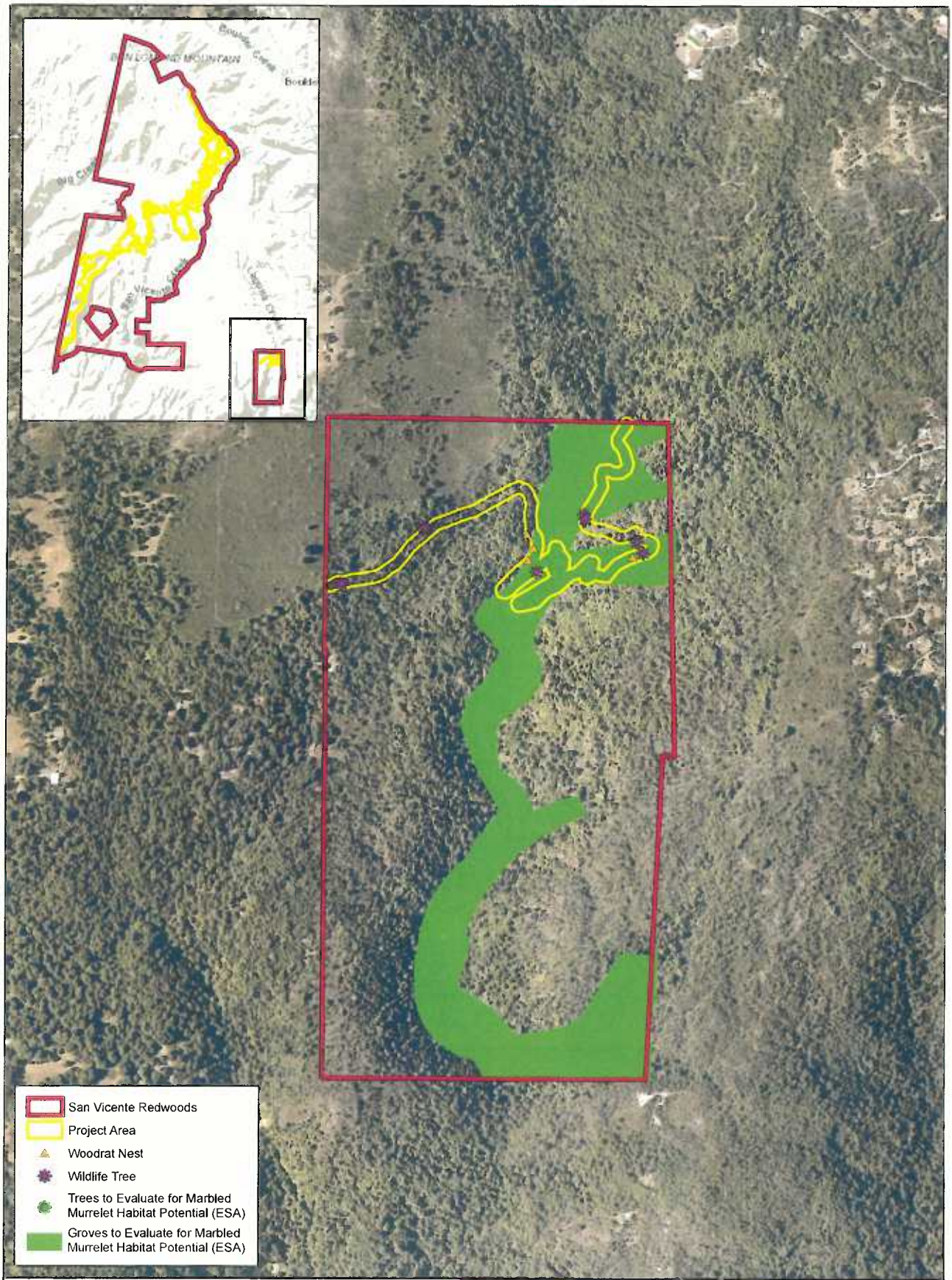

Figure 9C. Special Status Wildlife Laguna Parcel

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San Vicente Redwoods
Draft Public Access Plan
Santa Cruz County, California

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Map Prepared Date: 4/23/2018
Map Prepared By: SGillespie
Base Source: Esri World Imagery
Data Source(s): WRA, DCE, SCCBP

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APPENDIX B

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix B1. Plant species observed within the Project Area for the San Vicente Redwoods Public Access Plan (PlaceWorks 2018) during surveys conducted by WRA biologists on December 16-17, 2015, January 20-22, February 10-12, June 15-16, August 15-17 and 24-25, and October 21, 2016, and May 30-June 1 and August 8-9, 2017. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2017).

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Acacia dealbata	Silver wattle	non-native (invasive)	tree, shrub	-	Moderate
Acer macrophyllum	Bigleaf maple	native	tree	-	-
Achillea millefolium	Yarrow	native	perennial herb	-	-
Acmispon americanus var. americanus	Spanish lotus	native	annual herb	-	-
Acmispon glaber	Deerweed, california broom	native	perennial herb	-	-
Acmispon heermannii var. orbicularis	Round leaved heermann's lotus	native	perennial herb	-	-
Acmispon parviflorus	Hill lotus	native	annual herb	-	-
Adenostoma fasciculatum	Chamise	native	tree, shrub	-	-
Agoseris grandiflora	Giant mountain dandelion	native	perennial herb	-	-
Agrostis sp.	-	-	-	-	-
Aira caryophyllea	Silvery hairgrass	non-native (invasive)	annual grass	-	-
Anaphalis margaritacea	Pearly everlasting	native	perennial herb	-	-
Anisocarpus madioides	Woodland madia	native	perennial herb	-	-
Aralia californica	California spikenard	native	perennial herb	-	-
Arbutus menziesii	Madrono	native	tree	-	-
Arctostaphylos andersonii	Anderson's manzanita	native	shrub	Rank 1B.2	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Arctostaphylos crustacea ssp. crinita	Crinite manzanita	native	shrub	-	-
Arnica discoidea	Rayless arnica	native	perennial herb	-	-
Artemisia californica	Coastal sage brush	native	shrub	-	-
Artemisia douglasiana	California mugwort	native	perennial herb	-	-
Asarum caudatum	Creeping wild ginger	native	perennial herb	-	-
Asyneuma prenanthoides	California harebell	native	perennial herb	-	-
Athyrium filix-femina var. cyclosorum	Western lady fern	native	fern	-	-
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate
Baccharis pilularis ssp. consanguinea	Coyote brush	native	shrub	-	-
Brachypodium distachyon	Purple false brome	non-native (invasive)	annual, perennial grass	-	Moderate
Briza maxima	Rattlesnake grass	non-native (invasive)	annual grass	-	Limited
Briza minor	Little rattlesnake grass	non-native	annual grass	-	-
Bromus carinatus	California bromegrass	native	perennial grass	-	-
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	-	Moderate
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	-	Limited

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Bromus laevipes	Narrow flowered brome	native	annual, perennial grass	-	-
Bromus racemosus	Smooth brome	non-native	perennial grass	-	-
Calochortus albus	White fairy lantern	native	perennial herb	-	-
Calyptridium monandrum	Common pussypaws	native	annual herb	-	-
Calystegia macrostegia ssp. cyclostegia	Coast morning glory	native	perennial herb, vine	-	-
Calystegia purpurata ssp. purpurata	Smooth western morning glory	native	perennial herb	-	-
Camissoniopsis hirtella	Hairy sun cup	native	annual herb	-	-
Cardamine hirsuta	Hairy bitter cress	non-native	annual herb	-	-
Carduus pycnocephalus ssp. pycnocephalus	Italian thistle	non-native (invasive)	annual herb	-	Moderate
Carex barbarae	Valley sedge	native	perennial grasslike herb	-	-
Carex globosa	Round fruit sedge	native	perennial grasslike herb	-	-
Carex leptopoda	Slender-footed sedge	native	perennial grasslike herb	-	-
Carex obnupta	Slough sedge	native	perennial grasslike herb	-	-
Carex tumulicola	Split awn sedge	native	perennial grasslike herb	-	-
Castilleja affinis ssp. affinis	Wight's indian paint brush	native	perennial herb	-	-
Ceanothus leucodermis	Chaparral whitethorn	native	shrub	-	-
Ceanothus papillosus	Wartleaf ceanothus	native	shrub	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Ceanothus thyrsiflorus var. thyrsiflorus	Blue blossom	native	tree, shrub	-	-
Centaurea melitensis	Tocalote	non-native (invasive)	annual herb	-	Moderate
Centaurium tenuiflorum	Slender centaury	non-native	annual herb	-	-
Cephalanthera austiniae	Phantom orchid	native	perennial herb	-	-
Cerastium glomeratum	Large mouse ears	non-native	annual herb	-	-
Chlorogalum pomeridianum var. pomeridianum	Common soaproot	native	perennial herb	-	-
Chorizanthe diffusa	Diffuse spineflower	native	annual herb	-	-
Chrysolepis chrysophylla var. chrysophylla	Golden chinquapin	native	tree, shrub	-	-
Cirsium brevistylum	Indian thistle	native	perennial herb	-	-
Cirsium occidentale	Western thistle	native	perennial herb	-	-
Cirsium vulgare	Bull thistle	non-native (invasive)	perennial herb	-	Moderate
Claytonia parviflora	Narrow leaved miner's lettuce	native	annual herb	-	-
Claytonia perfoliata	Miner's lettuce	native	annual herb	-	-
Clinopodium douglasii	Yerba buena	native	perennial herb	-	-
Clintonia andrewsiana	Red clintonia	native	perennial herb	-	-
Collomia heterophylla	Varied leaved collomia	native	annual herb	-	-
Conium maculatum	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate
Corallorhiza maculata	Summer coral root	native	perennial herb	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass	-	High
Corylus cornuta ssp. californica	Beaked hazelnut	native	shrub	-	-
Crassula connata	Sand pygmy weed	native	annual herb	-	-
Crocanthemum scoparium	Bisbee Peak Rushrose	native	shrub	-	-
Croton setiger	Turkey-mullein	native	perennial herb	-	-
Cryptantha sp.	Cryptantha	native	annual herb	-	-
Cuscuta sp.	Dodder	-	annual herb	-	-
Cynoglossum grande	Houndstongue	native	perennial herb	-	-
Cynosurus echinatus	Dogtail grass	non-native (invasive)	annual grass	-	Moderate
Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	-
Dactylis glomerata	Orchardgrass	non-native (invasive)	perennial grass	-	Limited
Daucus pusillus	Wild carrot	native	annual herb	-	-
Deinandra increscens ssp. increscens	Grassland tarweed	native	annual herb	-	-
Dendromecon rigida	Bush poppy	native	shrub	-	-
Dichelostemma capitatum ssp. capitatum	Wild hyacinth	native	perennial herb	-	-
Digitalis purpurea	Foxglove	non-native (invasive)	perennial herb	-	Limited
Drymocallis glandulosa	Sticky cinquefoil	native	perennial herb	-	-
Dudleya lanceolata	Southern California dudleya	native	perennial herb	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Elymus glaucus	Blue wildrye	native	perennial grass	-	-
Epilobium canum	California fuchsia, zauschneria	native	perennial herb	-	-
Epilobium ciliatum	Slender willow herb	native	perennial herb	-	-
Epilobium minutum	Minute willowherb	native	annual herb	-	-
Epipactis helleborine	Helleborine	non-native	perennial herb	-	-
Equisetum telmateia ssp. braunii	Giant horsetail	native	fern	-	-
Ericameria arborescens	Golden fleece	native	shrub	-	-
Erigeron canadensis	Canada horseweed	native	annual herb	-	-
Eriodictyon californicum	Yerba santa	native	shrub	-	-
Eriogonum nudum	Naked buckwheat	native	shrub	-	-
Eriophyllum confertiflorum	Yellow yarrow	native	shrub	-	-
Eriophyllum lanatum	Wooly sunflower	native	perennial herb	-	-
Eriophyllum staechadifolium	Lizard tail	native	perennial herb	-	-
Erodium botrys	Big heron bill	non-native (invasive)	annual herb	-	-
Erodium cicutarium	Coastal heron's bill	non-native (invasive)	annual herb	-	Limited
Eschscholzia californica	California poppy	native	annual, perennial herb	-	-
Eurybia radulina	Roughleaf aster	native	perennial herb	-	-
Festuca bromoides	Brome fescue	non-native	annual grass	-	-
Festuca californica	California fescue	native	perennial grass	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Festuca myuros	Rattail sixweeks grass	non-native (invasive)	annual grass	-	-
Festuca perennis	Italian rye grass	non-native	annual, perennial grass	-	-
Festuca rubra	Red fescue	native	perennial grass	-	-
Fragaria vesca	Wild strawberry	native	perennial herb	-	-
Frangula californica	California coffeeberry	native	shrub	-	-
Fumaria parviflora	Fine leaved fumitory	non-native	annual herb	-	-
Galium aparine	Cleavers	native	annual herb	-	-
Galium californicum	California bedstraw	native	perennial herb	-	-
Galium porrigens	Climbing bedstraw	native	vine, shrub	-	-
Gamochaeta ustulata	Featherweed	native	perennial herb	-	-
Garrya elliptica	Coast silk tassel	native	tree, shrub	-	-
Gastridium phleoides	Nit grass	non-native	annual grass	-	-
Gaultheria shallon	Salal	native	shrub	-	-
Genista monspessulana	French broom	non-native (invasive)	shrub	-	High
Helenium puberulum	Sneezeweed	native	perennial herb	-	-
Heracleum maximum	Common cowparsnip	native	perennial herb	-	-
Heteromeles arbutifolia	Toyon	native	shrub	-	-
Heterotheca sessiliflora ssp. bolanderi	Golden aster	native	perennial herb	-	-
Heuchera micrantha	Alum root	native	perennial herb	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Hieracium albiflorum	White flowered hawkweed	native	perennial herb	-	-
Holcus lanatus	Common velvetgrass	non-native (invasive)	perennial grass	-	Moderate
Holodiscus discolor	Oceanspray	native	shrub	-	-
Hulsea heterochroma	Red rayed hulsea	native	perennial herb	-	-
Hypericum perforatum ssp. perforatum	Klamathweed	non-native	perennial herb	-	-
Hypochaeris glabra	Smooth cats ear	non-native (invasive)	annual herb	-	Limited
Hypochaeris radicata	Hairy cats ear	non-native (invasive)	perennial herb	-	Moderate
Iris fernaldii	Fernald's iris	native	perennial herb	-	-
Juncus bufonius	Common toad rush	native	annual grasslike herb	-	-
Juncus effusus ssp. pacificus	Pacific rush	native	perennial grasslike herb	-	-
Juncus hesperius	Coast or bog rush	native	perennial grasslike herb	-	-
Juncus patens	Spreading rush	native	perennial grasslike herb	-	-
Lathyrus vestitus	Common pacific pea	native	perennial herb	-	-
Lepechinia calycina	Pitcher sage	native	shrub	-	-
Linum bienne	Flax	non-native	annual herb	-	-
Logfia gallica	Narrowleaf cottonrose	non-native	annual herb	-	-
Lonicera hispidula	Pink honeysuckle	native	vine, shrub	-	-
Lupinus albifrons var. collinus	Silver bush lupine	native	shrub	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Lupinus bicolor	Bicolored lupine	native	annual, perennial herb	-	-
Lupinus succulentus	Arroyo lupine	native	annual herb	-	-
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	-
Lysimachia latifolia	Pacific starflower	native	perennial herb	-	-
Madia gracilis	Gumweed	native	annual herb	-	-
Maianthemum racemosum	Feathery false lily of the valley	native	perennial herb	-	-
Marah fabacea	California man-root	native	perennial herb, vine	-	-
Melica geyeri	Geyer's onion grass	native	perennial grass	-	-
Melica imperfecta	Coast range melic	native	perennial grass	-	-
Mimulus aurantiacus	Sticky monkeyflower	native	shrub	-	-
Mimulus moschatus	Musk monkeyflower	native	perennial herb	-	-
Mimulus pilosus	Snouted monkeyflower	native	annual herb	-	-
Monardella villosa	Coyote mint	native	perennial herb	-	-
Morella californica	California wax myrtle	native	shrub	-	-
Myosotis latifolia	Wide leaved forget-me-not	non-native (invasive)	perennial herb	-	Limited
Navarretia squarrosa	Skunkweed	native	annual herb	-	-
Nemophila parviflora	Small flowered nemophila	native	annual herb	-	-
Notholithocarpus densiflorus var. densiflorus	Tanoak	native	tree, shrub	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Nuttallanthus texanus	Blue toadflax	native	annual, perennial herb	-	-
Orobanche fasciculata	Pinyon broomrape	native	perennial herb (parasitic)	-	-
Osmorhiza berteroi	Sweetcicely	native	perennial herb	-	-
Oxalis corniculata	Creeping wood sorrel	non-native (invasive)	perennial herb	-	-
Oxalis oregana	Redwood sorrel	native	perennial herb	-	-
Panicum sp.	-	-	-	-	-
Pellaea andromedifolia	Coffee fern	native	fern	-	-
Pentagramma triangularis	Gold back fern	native	fern	-	-
Perideridia kelloggii	Yampah	native	perennial herb	-	-
Phacelia malvifolia	Stinging phacelia	native	annual herb	-	-
Phacelia rattanii	Rattan's phacelia	native	annual herb	-	-
Pinus attenuata	Scrub pine	native	tree	-	-
Pinus coulteri	Coulter pine	native	tree	-	-
Pinus ponderosa	Yellow pine	native	tree	-	-
Piperia elegans ssp. elegans	Elegant piperia	native	perennial herb	-	-
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb	-	Limited
Polygala californica	Milkwort	native	perennial herb	-	-
Polypogon interruptus	Ditch beard grass	non-native	perennial grass	-	-
Polystichum munitum	Western sword fern	native	fern	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Prosartes hookeri	Drops of gold	native	perennial herb	-	-
Prunella vulgaris	Self heal	native	perennial herb	-	-
Pseudognaphalium californicum	Ladies' tobacco	native	annual, perennial herb	-	-
Pseudognaphalium luteoalbum	Jersey cudweed	non-native	annual herb	-	-
Pseudognaphalium ramosissimum	Pink cudweed	native	biennial herb	-	-
Pseudotsuga menziesii var. menziesii	Douglas fir	native	tree	-	-
Pteridium aquilinum var. pubescens	Western bracken fern	native	fern	-	-
Quercus agrifolia var. agrifolia	Coast live oak	native	tree	-	-
Quercus chrysolepis	Gold cup live oak	native	tree	-	-
Quercus parvula var. shrevei	Shreve's oak	native	tree	-	-
Quercus wislizeni var. wislizeni	Interior live oak	native	tree, shrub	-	-
Rhododendron occidentale	Western azalea	native	tree, shrub	-	-
Ribes sp.	Currant, gooseberry	native	shrub	-	-
Rosa gymnocarpa var. gymnocarpa	Wood rose	native	shrub	-	-
Rubus leucodermis	White bark raspberry	native	shrub	-	-
Rubus parviflorus	Thimbleberry	native	vine, shrub	-	-
Rubus ursinus	California blackberry	native	vine, shrub	-	-
Rumex acetosella	Sheep sorrel	non-native (invasive)	perennial herb	-	Moderate
Rumex salicifolius	Willow leaved dock	native	perennial herb	-	-
Rupertia physodes	Common rupertia	native	perennial herb	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Rytidosperma penicillatum	Purple awned wallaby grass	non-native (invasive)	perennial grass	-	Limited
Salix scouleriana	Scouler willow	native	tree, shrub	-	-
Sambucus nigra ssp. caerulea	Blue elderberry	native	shrub	-	-
Sambucus racemosa var. racemosa	Red elderberry	native	shrub	-	-
Scirpus microcarpus	Mountain bog bulrush	native	perennial grasslike herb	-	-
Scrophularia californica	California bee plant	native	perennial herb	-	-
Senecio minimus	Coastal burnweed	non-native (invasive)	annual, perennial herb	-	-
Sequoia sempervirens	Coast redwood	native	tree	-	-
Sisyrinchium bellum	Blue eyed grass	native	perennial herb	-	-
Solanum douglasii	Douglas' nightshade	native	perennial herb	-	-
Solanum umbelliferum	Blue witch	native	shrub	-	-
Solidago velutina ssp. californica	California goldenrod	native	perennial herb	-	-
Sonchus asper ssp. asper	Sow thistle	non-native (invasive)	annual herb	-	-
Sonchus oleraceus	Sow thistle	non-native	annual herb	-	-
Stachys rigida var. quercetorum	Rough hedgenettle	native	perennial herb	-	-
Stephanomeria exigua ssp. coronaria	White plume wirelettuce	native	annual herb	-	-
Stipa pulchra	Purple needle grass	native	perennial grass	-	-
Symphoricarpos mollis	Snowberry	native	shrub	-	-
Symphyotrichum subspicatum	Douglas aster	native	perennial herb	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Torilis arvensis	Field hedge parsley	non-native (invasive)	annual herb	-	Moderate
Toxicodendron diversilobum	Poison oak	native	vine, shrub	-	-
Toxicoscordion fremontii	Fremont's star lily	native	perennial herb	-	-
Trifolium angustifolium	Narrow leaved clover	non-native	annual herb	-	-
Trifolium campestre	Hop clover	non-native	annual herb	-	-
Trifolium dubium	Shamrock	non-native	annual herb	-	-
Trifolium glomeratum	Clustered clover	non-native	annual herb	-	-
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb	-	Limited
Trifolium microcephalum	Small head clover	native	annual herb	-	-
Trifolium variegatum	Variegated clover	native	annual herb	-	-
Trifolium willdenovii	Tomcat clover	native	annual herb	-	-
Trillium chloropetalum	Giant wakerobin	native	perennial herb	-	-
Trillium ovatum ssp. ovatum	Western wakerobin	native	perennial herb	-	-
Umbellularia californica	California bay	native	tree	-	-
Urtica dioica	Stinging nettle	native	perennial herb	-	-
Vaccinium ovatum	Evergreen huckleberry	native	shrub	-	-
Verbascum thapsus	Woolly mullein	non-native (invasive)	perennial herb	-	Limited
Verbascum virgatum	Wand mullein	non-native	perennial herb	-	-
Verbena lasiostachys var. lasiostachys	Vervain	native	perennial herb	-	-
Vicia hassei	Hasse's vetch	native	vine	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	Cal-IPC Status[2]
Vicia sativa	Spring vetch	non-native	annual herb, vine	-	-
Viola ocellata	Western heart's ease	native	perennial herb	-	-
Viola sempervirens	Redwood violet	native	perennial herb	-	-
Whipplea modesta	Modesty	native	vine, shrub	-	-
Woodwardia fimbriata	Western chain fern	native	fern	-	-
Zeltnera muehlenbergii	Muehlenberg's centaury	native	annual herb	-	-

[1]Key to Rarity Status

FE	Federal Endangered
FT	Federal Threatened
SE	State Endangered
ST	State Threatened
SR	State Rare
Rank 1B.1	CNPS Rank 1B.1: Rare, threatened, or endangered in California and elsewhere (seriously threatened in California)
Rank 1B.2	CNPS Rank 1B.2: Rare, threatened, or endangered in California and elsewhere (moderately threatened in California)
Rank 2B.1	CNPS Rank 2B.1: Rare, threatened, or endangered in California, but more common elsewhere (seriously threatened in California)
Rank 2B.2	CNPS Rank 2B.2: Rare, threatened, or endangered in California, but more common elsewhere (moderately threatened in California)
Rank 3.1	CNPS Rank 3.1: Plants about which more information is needed - A review list (seriously threatened in California)
Rank 3.2	CNPS Rank 3.2: Plants about which more information is needed - A review list (moderately threatened in California)
Rank 4.2	CNPS Rank 4.2: Plants of limited distribution - A watch list (moderately threatened in California)
Rank 4.3	CNPS Rank 4.3: Plants of limited distribution - A watch list (not very threatened in California)

[2]Key to Cal-IPC Status

High	These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
Moderate	These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
Limited	These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Appendix B2. Wildlife species observed within the Project Area for the San Vicente Redwoods Public Access Plan (PlaceWorks 2018) during surveys conducted by WRA biologists on December 16-17, 2015, January 20-22, February 10-12, June 15-16, August 15-17 and 24-25, and October 21, 2016, and May 30-June 1 and August 8-9, 2017.

Common Name	Species
MAMMALS	
mountain lion	*Puma concolor*
black-tailed deer	*Odocoileus hemionus*
coyote	*Canis latrans*
mole	*Scapanus spp.*
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*
Western grey squirrel	*Sciurus griseus*
BIRDS	
American robin	*Turdus migratorius*
Anna's Hummingbird	*Calypte anna*
chestnut-backed chickadee	*Poecile rufescens*
dark-eyed junco	*Junco hyemalis*
Eurasian collared-dove	*Streptopelia decaocto*
oak titmouse	*Baeolophus inornatus*
pileated woodpecker	*Dryocopus pileatus*
Steller's jay	*Cyanocitta stelleri*
Townsend's warbler	*Setophaga townsendii*
western scrub-jay	*Aphelocoma californica*
AMPHIBIANS	
California slender salamander	*Batrachoseps attenuatus*
black salamander	*Aneides flavipunctatus*

APPENDIX C

POTENTIAL FOR SPECIAL-STATUS SPECIES TO OCCUR IN THE PROJECT AREA

Appendix C. Potential for special-status species to occur in the Project Area. List compiled from the California Department of Fish and Wildlife (CDFW) Natural Diversity Database, U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory search of the Franklin Point, Big Basin, Año Nuevo, Davenport, Felton, Castle Rock Ridge, and Santa Cruz USGS 7.5 minute quadrangles and a review of other CDFW lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990).

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Plants				
Blasdale's bent grass *Agrostis blasdalei*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Elevation ranges from 20 to 490 feet (5 to 150 meters). Blooms May-Jul.	**Unlikely.** Although the Project Area is located within 2 miles of an occurrence of this species, the Project Area does not contain coastal bluff scrub, coastal dune, or coastal prairie habitat.	No further action recommended for this species.
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 1640 feet (3 to 500 meters). Blooms Mar-Jun.	**Unlikely.** Although this species has been documented less than 2 miles to the west of the Project Area, the Project Area lacks suitable grassy openings required to support this species.	No further action recommended for this species.
coast rockcress *Arabis blepharophylla*	Rank 4.3	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub/rocky. Elevation ranges from 10 to 3610 feet (3 to 1100 meters). Blooms Feb-May.	**Unlikely.** Although the Project Area contains suitable broadleaved upland forest habitat, it does not contain the open, rocky habitat required by this species.	No further action recommended for this species.
Anderson's manzanita *Arctostaphylos andersonii*	Rank 1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest/openings, edges. Elevation ranges from 200 to 2490 feet (60 to 760 meters). Blooms Nov-May.	**Present.** This species was observed in the Project Area.	See Section 7.0 of the BRA for recommended avoidance, minimization, and mitigation measures for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Schreiber's manzanita *Arctostaphylos glutinosa*	Rank 1B.2	Closed-cone coniferous forest, chaparral; on diatomaceous shale. Elevation ranges from 560 to 2250 feet (170 to 685 meters). Blooms (Nov), Mar-Apr.	**Not Observed.** This species has been documented adjacent to the west of the Project Area on siliceous shale soil, which is also present in the Project Area. However, all *Arctostaphylos* species observed within the Project Area were identified to species level; *A. glutinosa* was not observed. It is assumed this species is not present.	No further action recommended for this species.
Ohlone manzanita *Arctostaphylos ohloneana*	Rank 1B.1	Closed-cone coniferous forest, coastal scrub/siliceous shale. Elevation ranges from 1480 to 1740 feet (450 to 530 meters). Blooms Feb-Mar.	**Not Observed.** This species has been documented adjacent to the west of the Project Area on siliceous shale soil, which is also present in the Project Area. However, all *Arctostaphylos* species observed within the Project Area were identified to species level; *A. ohloneana* was not observed. It is assumed this species is not present.	No further action recommended for this species.
Pajaro manzanita *Arctostaphylos pajaroensis*	Rank 1B.1	Chaparral (sandy). Elevation ranges from 100 to 2490 feet (30 to 760 meters). Blooms Dec-Mar.	**Not Observed.** Although this species is reported in the CNDDB to occur within the larger San Vicente Redwoods property, all *Arctostaphylos* species observed within the Project Area were identified to species level, and *A. pajaroensis* was not observed. It is assumed that this species is not present.	No further action recommended for this species.
Kings Mountain manzanita *Arctostaphylos regismontana*	Rank 1B.2	Broadleaved upland forest, chaparral, north coast coniferous forest/granitic or sandstone. Elevation ranges from 1000 to 2400 feet (305 to 730 meters). Blooms Jan-Apr.	**Not Observed.** All *Arctostaphylos* species observed within the Project Area were identified to species level; *A. regismontana* was not observed. It is assumed that this species is not present.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Bonny Doon manzanita *Arctostaphylos silvicola*	Rank 1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest/inland marine sands. Elevation ranges from 390 to 1970 feet (120 to 600 meters). Blooms Jan-Mar.	**Not Observed.** All *Arctostaphylos* species observed within the Project Area were identified to species level; *A. silvicola* was not observed. In addition, the Project Area does not contain suitable Zayante coarse sands required to support this species. It is assumed that this species is not present.	No further action recommended for this species.
marsh sandwort *Arenaria paludicola*	FE, SE, Rank 1B.1	Marshes and swamps (freshwater or brackish)/sandy, openings. Elevation ranges from 10 to 560 feet (3 to 170 meters). Blooms May-Aug.	**Unlikely.** The Project Area does not contain suitable open marsh or swamp habitat and the species is thought to be extirpated from Santa Cruz County.	No further action recommended for this species.
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	Rank 1B.2	Coastal dunes (mesic), coastal scrub, marshes and swamps (coastal salt, streamsides). Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms Apr-Oct.	**Unlikely.** The Project Area does not contain suitable coastal marsh, swamp, or other saline mesic habitats required to support this species. The Project Area is also outside of the known elevation range for this species.	No further action recommended for this species.
Brewer's calandrinia *Calandrinia breweri*	Rank 4.2	Disturbed or burned sites on sandy or loamy soils in chaparral or coastal scrub. Elevation ranges from 30 to 4000 feet (10-1220 meters). Blooms Jan-Jun.	**Unlikely.** This species was originally determined to have potential to occur in open, disturbed areas such as along the powerline road; however, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Santa Cruz Mountains pussypaws *Calyptridium parryi var. hesseae*	Rank 1B.1	Chaparral, cismontane woodland/sandy or gravelly, openings. Elevation ranges from 1000 to 5020 feet (305 to 1530 meters). Blooms May-Aug.	**Unlikely.** This species has been documented in the vicinity and was originally determined to have potential to occur in suitable sandy openings in chaparral and cismontane woodland habitat. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
swamp harebell *Campanula californica*	Rank 1B.2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (freshwater), north coast coniferous forest/mesic. Elevation ranges from 0 to 1330 feet (1 to 405 meters). Blooms Jun-Oct.	**Unlikely.** The Project Area does not contain suitable bog, marsh, or other mesic habitats required to support this species and the nearest known occurrence is located over 8 miles away.	No further action recommended for this species.
bristly sedge *Carex comosa*	Rank 2B.1	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland. Elevation ranges from 0 to 2050 feet (0 to 625 meters). Blooms May-Sep.	**Unlikely.** This species was originally determined to have potential to occur along streams within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
deceiving sedge *Carex saliniformis*	Rank 1B.2	Coastal prairie, coastal scrub, meadows and seeps, marshes and swamps (coastal salt)/mesic. Elevation ranges from 10 to 750 feet (3 to 230 meters). Blooms Jun (Jul).	**Unlikely.** This species was originally determined to have potential to occur along streams within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
johnny-nip *Castilleja ambigua var. ambigua*	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pool margins. Elevation ranges from 0 to 1430 feet (0 to 435 meters). Blooms Mar-Aug.	**Unlikely.** The Project Area does not contain suitable openings in coastal prairie, coastal scrub, marsh, swamp, grassland, or other mesic habitats required to support this species.	No further action recommended for this species.
Ben Lomond spineflower *Chorizanthe pungens var. hartwegiana*	FE, Rank 1B.1	Lower montane coniferous forest (maritime ponderosa pine sandhills). Elevation ranges from 300 to 2000 feet (90 to 610 meters). Blooms Apr-Jul.	**Unlikely.** The Project Area does not contain suitable ponderosa pine sandhill habitat or Zayante coarse sands required to support this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Scotts Valley spineflower *Chorizanthe robusta var. hartwegii*	FE, Rank 1B.1	Meadows and seeps (sandy), valley and foothill grassland (mudstone and purissima outcrops). Elevation ranges from 750 to 800 feet (230 to 245 meters). Blooms Apr-Jul.	**Unlikely.** The Project Area does not contain suitable open grassland habitat necessary to support this species.	No further action recommended for this species.
robust spineflower *Chorizanthe robusta var. robusta*	FE, Rank 1B.1	Chaparral (maritime), cismontane woodland (openings), coastal dunes, coastal scrub/sandy or gravelly. Elevation ranges from 10 to 980 feet (3 to 300 meters). Blooms Apr-Sep.	**Unlikely.** Although most of the Project Area is dominated by dense forest which is not suitable for this species, this species was originally determined to have potential to occur in openings at road crossings such as along the powerline alignment may have potential to support this species. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Franciscan thistle *Cirsium andrewsii*	Rank 1B.2	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub/mesic, sometimes serpentine. Elevation ranges from 0 to 490 feet (0 to 150 meters). Blooms Mar-Jul.	**Unlikely.** Although the Project Area may contain suitable habitat elements, it does not contain mesic sites on serpentine soils. Additionally, the nearest known occurrence is over 8 miles from the Project Area.	No further action recommended for this species.
Santa Clara red ribbons *Clarkia concinna ssp. automixa*	Rank 4.3	Chaparral, cismontane woodland. Elevation ranges from 300 to 4920 feet (90 to 1500 meters). Blooms (Apr), May-Jun (Jul).	**Unlikely.** Although the Project Area contains suitable habitat elements, the nearest known occurrences are located over 10 miles away on the eastern slopes of the Santa Cruz Mountains. No occurrences are known from the western slopes.	No further action recommended for this species.
San Francisco collinsia *Collinsia multicolor*	Rank 1B.2	Closed-cone coniferous forest, coastal scrub/sometimes serpentine. Elevation ranges from 100 to 820 feet (30 to 250 meters). Blooms (Feb), Mar-May.	**Unlikely.** The Project Area lacks suitable closed cone coniferous forest or coastal scrub necessary to support this species. In addition, the Project Area is located above the known elevation range of this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
branching beach aster *Corethrogyne leucophylla*	Rank 3.2	Closed-cone coniferous forest, coastal dunes. Elevation ranges from 10 to 200 feet (3 to 60 meters). Blooms May-Dec.	**Unlikely.** The Project Area lacks suitable closed cone coniferous forest or coastal dunes and is located above the known elevation range for this species.	No further action recommended for this species.
clustered lady's-slipper *Cypripedium fasciculatum*	Rank 4.2	Lower montane coniferous forest, north coast coniferous forest/usually serpentine seeps and streambanks. Elevation ranges from 330 to 7990 feet (100 to 2435 meters). Blooms Mar-Aug.	**Unlikely.** Although the Project Area contains streams, they are located high in the watershed and do not support the hydrology required by this species. In addition, no serpentine seeps occur within the Project Area.	No further action recommended for this species.
mountain lady's-slipper *Cypripedium montanum*	Rank 4.2	Broadleaved upland forest, cismontane woodland, lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 610 to 7300 feet (185 to 2225 meters). Blooms Mar-Aug.	**Unlikely.** This species was originally determined to have potential to occur in broadleaved upland forest, cismontane woodland, and lower montane coniferous forest within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
California bottle brush *Elymus californicus*	Rank 4.3	Moist openings in mixed evergreen/redwood forest and oak/riparian forest. Elevation ranges from 50-155 feet (15-47 meters). Blooms May-Nov.	**Moderate Potential.** This species was originally determined to have potential to occur in moist openings in forested habitats within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Ben Lomond buckwheat *Eriogonum nudum var. decurrens*	Rank 1B.1	Chaparral, cismontane woodland, lower montane coniferous forest (maritime ponderosa pine sandhills)/sandy. Elevation ranges from 160 to 2620 feet (50 to 800 meters). Blooms Jun-Oct.	**Unlikely.** The Project Area does not contain suitable Ponderosa pine sandhill habitat required to support this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
sand-loving wallflower *Erysimum ammophilum*	Rank 1B.2	Chaparral (maritime), coastal dunes, coastal scrub/sandy, openings. Elevation ranges from 0 to 200 feet (0 to 60 meters). Blooms Feb-Jun.	**Unlikely.** The Project Area does not contain suitable sandy openings in maritime chaparral, coastal dunes, or coastal scrub required to support this species and the nearest known occurrence is located over 8 miles from the Project Area.	No further action recommended for this species.
Santa Cruz wallflower *Erysimum teretifolium*	FE, SE, Rank 1B.1	Chaparral, lower montane coniferous forest/inland marine sands. Elevation ranges from 390 to 2000 feet (120 to 610 meters). Blooms Mar-Jul.	**Unlikely.** Although the Project Area may contain suitable habitat elements, it does not contain Zayante coarse sands necessary to support this species.	No further action recommended for this species.
stinkbells *Fritillaria agrestis*	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/clay, sometimes serpentine. Elevation ranges from 30 to 5100 feet (10 to 1555 meters). Blooms Mar-Jun.	**Unlikely.** The Project Area does not contain suitable grassy openings required by this species and the nearest known occurrence is over 8 miles away.	No further action recommended for this species.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentine. Elevation ranges from 10 to 1350 feet (3 to 410 meters). Blooms Feb-Apr.	**Unlikely.** The Project Area does not contain suitable grassy openings, heavy clay, or serpentine soils required by this species.	No further action recommended for this species.
San Francisco gumplant *Grindelia hirsutula var. maritima*	Rank 3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland/sandy or serpentine. Elevation ranges from 50 to 1310 feet (15 to 400 meters). Blooms Jun-Sep.	**Unlikely.** The Project Area does not contain suitable open, coastal habitats or serpentine soils required to support this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	Rank 1B.2	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation ranges from 0 to 710 feet (0 to 215 meters). Blooms Mar-Jun.	**Unlikely.** The Project Area does not contain suitable coastal bluff scrub, coastal dunes, or coastal prairie. Although an occurrence is located in seemingly unsuitable habitat less than 2 miles from the site, the occurrence is from 1954 and no other occurrences occur within the quadrangles examined for this report.	No further action recommended for this species.
Santa Cruz cypress *Hesperocyparis abramsiana var. abramsiana*	FE, SE, Rank 1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest/sandstone or granitic. Elevation ranges from 920 to 2620 feet (280 to 800 meters).	**Not Observed.** Although this species is known to occur within the immediate vicinity of the Project Area, WRA received anecdotal evidence that the population has been extirpated (Nadia Hamey, forester for Santa Cruz Land Trust, pers comm, April 6, 2016). The species was not observed during surveys conducted for this report. The species is identifiable year-round and would have been observed if present. Therefore, it is assumed that the species is not present within the Project Area.	No further action recommended for this species.
Butano Ridge cypress *Hesperocyparis abramsiana var. butanoensis*	FE, SE, Rank 1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest/sandstone. Elevation ranges from 1310 to 1610 feet (400 to 490 meters). Blooms Oct.	**Not Observed.** This species was not observed during surveys conducted for this report. The species is identifiable year-round and would have been observed if present. Moreover, the species is only known from Butano Ridge, located over 8 miles from the Project Area. Therefore, it is assumed that the species is not present within the Project Area.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Loma Prieta hoita *Hoita strobilina*	Rank 1B.1	Chaparral, cismontane woodland, riparian woodland/usually serpentine, mesic. Elevation ranges from 100 to 2820 feet (30 to 860 meters). Blooms May-Jul (Aug), (Oct).	**Unlikely.** Suitable mesic serpentine soils are not present within the Project Area and the nearest known occurrence is located over 12 miles away on the eastern slopes of the Santa Cruz Mountains.	No further action recommended for this species.
Santa Cruz tarplant *Holocarpha macradenia*	FT, SE, Rank 1B.1	Coastal prairie, coastal scrub, valley and foothill grassland/often clay, sandy. Elevation ranges from 30 to 720 feet (10 to 220 meters). Blooms Jun-Oct.	**Unlikely.** The Project Area does not contain suitable coastal prairie, coastal scrub, or valley or foothill grassland habitats required to support this species and the Project Area is located above the known elevation range for this species.	No further action recommended for this species.
Kellogg's horkelia *Horkelia cuneata var. sericea*	Rank 1B.1	Closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub/sandy or gravelly, openings. Elevation ranges from 30 to 660 feet (10 to 200 meters). Blooms Apr-Sep.	**Unlikely.** The Project Area does not contain suitable coastal sandhill habitat necessary to support this species and the Project Area is located above the known elevation range of this species.	No further action recommended for this species.
Point Reyes horkelia *Horkelia marinensis*	Rank 1B.2	Coastal dunes, coastal prairie, coastal scrub/sandy. Elevation ranges from 20 to 2480 feet (5 to 755 meters). Blooms May-Sep.	**Unlikely.** Although the Project Area contains at least three known occurrences of this species and the species was observed outside of the Project Area by WRA biologists, the species was not observed within the Project Area.	No further action recommended for this species.
harlequin lotus *Hosackia gracilis*	Rank 4.2	Wet areas in meadows and other grassy habitats, roadside ditches, etc. Elevation ranges from 0-2300 feet (0-700 meters). Blooms Mar-Jul.	**Unlikely.** The Project Area does not contain suitable mesic meadows, grasslands, or grassy road shoulders capable of supporting this species.	No further action recommended for this species.
coast iris *Iris longipetala*	Rank 4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps/mesic. Elevation ranges from 0 to 1970 feet (0 to 600 meters). Blooms Mar-May.	**Unlikely.** The Project Area does not contain suitable mesic sites on heavy soils required to support this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
large-flowered leptosiphon *Leptosiphon grandiflorus*	Rank 4.2	Sandy soils in open, grassy flats. Elevation ranges from 15-4000 feet (5-1220 meters). Blooms Apr-Aug.	**Unlikely.** The Project Area does not contain suitable open, grassy habitats necessary to support this species.	No further action recommended for this species.
woolly-headed lessingia *Lessingia hololeuca*	Rank 3	Broadleaved upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland/clay, serpentine. Elevation ranges from 50 to 1000 feet (15 to 305 meters). Blooms Jun-Oct.	**Unlikely.** The Project Area does not contain suitable serpentine soils required to support this species.	No further action recommended for this species.
smooth lessingia *Lessingia micradenia var. glabrata*	Rank 1B.2	Chaparral, cismontane woodland/serpentine, often roadsides. Elevation ranges from 390 to 1380 feet (120 to 420 meters). Blooms (May), (Jun), Jul-Nov.	**Unlikely.** The Project Area does not contain suitable serpentine soils required to support this species.	No further action recommended for this species.
Point Reyes meadowfoam *Limnanthes douglasii ssp. sulphurea*	SE, Rank 1B.2	Coastal prairie, meadows and seeps (mesic), marshes and swamps (freshwater), vernal pools. Elevation ranges from 0 to 460 feet (0 to 140 meters). Blooms Mar-May.	**Unlikely.** The Project Area does not contain suitable vernally wet depressional features required to support this species and the nearest known occurrence is located over 10 miles away.	No further action recommended for this species.
arcuate bush-mallow *Malacothamnus arcuatus*	Rank 1B.2	Chaparral, cismontane woodland. Elevation ranges from 50 to 1160 feet (15 to 355 meters). Blooms Apr-Sep.	**Unlikely.** This species was originally determined to have potential to occur in gravelly openings such as along the powerline road. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland/rocky. Elevation ranges from 150 to 2710 feet (45 to 825 meters). Blooms Mar-May.	**Unlikely.** The Project Area does not contain sunny, open rocky areas necessary to support this species.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
marsh Microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 20 to 1160 feet (5 to 355 meters). Blooms Apr-Jun (Jul).	**Unlikely.** The Project Area does not contain sunny openings on mesic soils necessary to support this species.	No further action recommended for this species.
Santa Cruz County monkeyflower *Mimulus rattanii ssp. decurtatus*	Rank 4.2	Chaparral, lower montane coniferous forest/margins, gravelly. Elevation ranges from 1310 to 1640 feet (400 to 500 meters). Blooms May-Jul.	**Unlikely.** This species was originally determined to have potential to occur in gravelly openings such as along the powerline road. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
northern curly-leaved Monardella *Monardella sinuata ssp. nigrescens*	Rank 1B.2	Chaparral, coastal dunes, coastal scrub, lower montane coniferous forest (ponderosa pine sandhills)/sandy. Elevation ranges from 0 to 980 feet (0 to 300 meters). Blooms (Apr), May-Jul (Aug), (Sep).	**Unlikely.** This species was originally determined to have potential to occur in openings on sandy soils throughout the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
woodland woolythreads *Monolopia gracilens*	Rank 1B.2	Broadleaved upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland/serpentine. Elevation ranges from 330 to 3940 feet (100 to 1200 meters). Blooms (Feb), Mar-Jul.	**Unlikely.** The Project Area does not contain serpentine soils or suitable forest openings required to support this species. In addition, the nearest known occurrence is located over 6 miles away from the Project Area.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Dudley's lousewort *Pedicularis dudleyi*	SR, Rank 1B.2	Chaparral (maritime), cismontane woodland, north coast coniferous forest, valley and foothill grassland. Elevation ranges from 200 to 2950 feet (60 to 900 meters). Blooms Apr-Jun.	**Unlikely.** An occurrence of this species is located approximately 2 miles to the northeast of the Project Area and this species was originally determined to have potential to occur in cismontane woodland and coniferous forest within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Santa Cruz Mountains beardtongue *Penstemon rattanii var. kleei*	Rank 1B.2	Chaparral, lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 1310 to 3610 feet (400 to 1100 meters). Blooms May-Jun.	**Unlikely.** An occurrence is known within less than 1 mile from the Project Area and this species was originally determined to have potential to occur in coniferous forest habitat within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
white-rayed pentachaeta *Pentachaeta bellidiflora*	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland (often serpentine). Elevation ranges from 110 to 2030 feet (35 to 620 meters). Blooms Mar-May.	**Unlikely.** The Project Area does not contain suitable open, dry rocky slopes and grassy areas necessary to support this species, nor does the Project Area contain serpentine soils.	No further action recommended for this species.
Monterey pine *Pinus radiata*	Rank 1B.1	Closed-cone coniferous forest, cismontane woodland. Elevation ranges from 80 to 610 feet (25 to 185 meters).	**Not Observed.** Monterey pine is identifiable year-round, but was not observed within the Project Area during surveys conducted for this report. It is assumed that this species is not present.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
white-flowered rein orchid *Piperia candida*	Rank 1B.2	Broadleaved upland forest, lower montane coniferous forest, north coast coniferous forest/sometimes serpentine. Elevation ranges from 100 to 4300 feet (30 to 1310 meters). Blooms (Mar), May-Sep.	**Unlikely.** There is a known occurrence of this species within 2.5 miles from the site and the species was originally determined to have potential to occur in suitable habitat within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Choris' popcornflower *Plagiobothrys chorisianus var. chorisianus*	Rank 1B.2	Chaparral, coastal prairie, coastal scrub/mesic. Elevation ranges from 50 to 520 feet (15 to 160 meters). Blooms Mar-Jun.	**Unlikely.** The Project Area does not contain suitable mesic sites in chaparral, coastal prairie, or coastal scrub habitats necessary to support this species. In addition, the Project Area is located above the known elevation range for this species.	No further action recommended for this species.
Hickman's popcorn flower *Plagiobothrys chorisianus var. hickmanii*	Rank 4.2	Moist depressions in sandy deposits over clay. Elevation ranges from 50-600 feet (15-185 meters). Blooms Apr-Jun.	**Unlikely.** The Project Area does not contain suitable open, mesic sites necessary to support this species.	No further action recommended for this species.
San Francisco popcornflower *Plagiobothrys diffusus*	SE, Rank 1B.1	Coastal prairie, valley and foothill grassland. Elevation ranges from 200 to 1180 feet (60 to 360 meters). Blooms Mar-Jun.	**Unlikely.** The Project Area does not contain suitable coastal prairie or other grassland habitats required to support this species.	No further action recommended for this species.
Scotts Valley Polygonum *Polygonum hickmanii*	FE, SE, Rank 1B.1	Valley and foothill grassland (mudstone and sandstone). Elevation ranges from 690 to 820 feet (210 to 250 meters). Blooms May-Aug.	**Unlikely.** The Project Area does not contain suitable grassland habitats required to support this species and the species is only known from one location in Scott's Valley.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
pine rose *Rosa pinetorum*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland. Elevation ranges from 10 to 3100 feet (2 to 945 meters). Blooms May-Jul.	**Unlikely.** This species was originally determined to have potential to occur in coniferous forest or cismontane woodland within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Sanicula hoffmannii Hoffmann's sanicle	Rank 4.3	Broadleaved upland forest, coastal bluff scrub, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest/often serpentine or clay. Elevation ranges from 100 to 980 feet (30 to 300 meters). Blooms Mar-May.	**Unlikely.** This species was originally determined to have potential to occur in broadleaved upland forest and lower montane coniferous forest within the Project Area. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub/sometimes alkaline. Elevation ranges from 50 to 2620 feet (15 to 800 meters). Blooms Jan-Apr.	**Unlikely.** This species was originally determined to have potential to occur in openings such as along the powerline road. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
maple-leaved checkerbloom *Sidalcea malachroides*	Rank 4.2	Broadleaved upland forest, coastal prairie, coastal scrub, north coast coniferous forest, riparian woodland/often in disturbed areas. Elevation ranges from 0 to 2400 feet (0 to 730 meters). Blooms (Mar), Apr-Aug.	**Unlikely.** Although the Project Area may contain suitable habitat elements, the nearest known occurrence is located over 10 miles to the southeast of the site and is listed as possibly extirpated.	No further action recommended for this species.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
San Francisco campion *Silene verecunda ssp. verecunda*	Rank 1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/sandy. Elevation ranges from 100 to 2120 feet (30 to 645 meters). Blooms (Feb), Mar-Jun (Aug).	**Unlikely.** This species was originally determined to have potential to occur in openings such as along the powerline road. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
Santa Cruz Microseris *Stebbinsoseris decipiens*	Rank 1B.2	Broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/open areas, sometimes serpentine. Elevation ranges from 30 to 1640 feet (10 to 500 meters). Blooms Apr-May.	**Unlikely.** This species was originally determined to have potential to occur in openings such as along the powerline road. However, this species was not observed during seasonally-timed surveys and was determined to be unlikely to occur in the Project Area.	No further action recommended for this species.
slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	Rank 2B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 980 to 7050 feet (300 to 2150 meters). Blooms May-Jul.	**Unlikely.** The Project Area lacks suitable marsh or swamp habitat necessary to support this species.	No further action recommended for this species.
Santa Cruz clover *Trifolium buckwestiorum*	Rank 1B.1	Broadleaved upland forest, cismontane woodland, coastal prairie/gravelly, margins. Elevation ranges from 340 to 2000 feet (105 to 610 meters). Blooms Apr-Oct.	**Unlikely.** The Project Area lacks openings with moist grassland and gravelly margins necessary to support this species.	No further action recommended for this species.
Mammals				
Hoary bat *Lasiurus cinereus*	WBWG Medium	Hoary bats are solitary and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches, 3-12 meters above the ground (WBWG 2012). Roosts are usually at the edge of a clearing. Summer tree roosts are typically located along edge habitats close to feeding grounds.	**Moderate.** This species has been documented to occur within 3.75 miles of the Project Area (CDFW 2016). Mature conifer and broadleaf trees in the Project Area have the potential to support roosting sites.	Recommendations for this species are provided in Section 7.2.2

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Pallid bat *Antrozous pallidus*	SSC, WBWG High	Roost habitat for this species includes buildings, hollows in trees, caverns, and bridges.	**Moderate.** This species has been documented to occur within 3.75 miles of the Project Area (CDFW 2016). Cavities within large mature trees in the Project Area and nearby rock outcroppings, and cave features in the have the potential to support roosting sites.	Recommendations for this species are provided in Section 7.2.2
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	Lives in a wide variety of habitats but most common in mesic sites. Day roosts highly associated with caves and mines. Need appropriate roosting, maternity, and hibernacula sites free from human disturbance.	**High.** This species has been documented roosting within cave habitat within the property and near the Project Area and there are numerous occurrences within 5 miles of Project Area.	Recommendations for this species are provided in Section 7.2.2
western red bat *Lasiurus blossevillii*	SSC, WBWG; High	This species is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).	**Moderate.** The Project Area contains potentially suitable maternity roosting habitat within the riparian habitat. Suitable foraging habitat is supported within and adjacent to creek habitat throughout the Project Area.	Recommendations for this species are provided in Section 7.2.2
silver-haired Bat *Lasionycteris noctivagans*	WBWG; Medium	Summer habitats include coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. This species is primarily a forest dweller, feeding over streams, ponds, and open brushy areas. It roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	**Moderate.** The Project Area contains potentially suitable maternity roosting habitat within the forest habitat. Suitable foraging habitat is supported within and adjacent to creek habitat throughout the Project Area.	Recommendations for this species are provided in Section 7.2.2

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
fringed myotis *Myotis thysanodes*	WBWG; High	Associated with a wide variety of habitats including mixed coniferous-deciduous forest and redwoods/sequoia groves. Buildings, mines, and large snags are important day and night roosts.	**Moderate.** The Project Area contains potentially suitable maternity roosting habitat within the large stands of conifer and hardwood forest habitat found throughout the Project Area. Nearby cave and cliff area of the San Vicente Quarry may also support roosting.	Recommendations for this species are provided in Section 7.2.2
long-legged myotis *Myotis volans*	WBWG; High	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	**Unlikely.** This species is more common in coastal regions with redwood/sequoia stands. This species may occasionally forage or occur as a migrant through the area; however, roosting habitat is suboptimal and the Project Area is unlikely to support maternity roosting.	No further actions are recommended.
western mastiff bat *Eumops perotis*	SSC, WBWG; High	Found in a wide variety of open, arid and semi-arid habitats. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	**Unlikely.** The Project Area does not contain open arid habitats. While potential roosting habitat for this species may occurs within the rock and cliff crevices of the San Vicente Quarry, the Project Area does not contain such rock habitat and therefore is unlikely to support roosting.	No further actions are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
ringtail (ring-tailed cat) *Bassariscus astutus*	CFP	Ringtail is widely distributed throughout most of California, absent from some portions of the Central Valley and northeastern California. Found in a variety of habitats throughout the western US including riparian areas, semi-arid country, deserts, chaparral, oak woodlands, pinyon pine woodlands, juniper woodlands and montane conifer forests usually under 1400m in elevation. Typically uses cliffs or large trees for shelter.	**Moderate.** The Project Area provides wooded habitat of varying composition that could support the species and it's foraging needs. The Project Area is also surrounded by forest which provides a habitat corridor for the species.	Due to the elusive nature of this species, it is unlikely to be directly impacted by construction or trail activities and no further surveys or avoidance measures are recommended.
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is the primary habitat. Does not burrow, but builds loosely organized nests and requires higher areas for flood escape.	**No Potential.** Suitable salt-marsh habitat is not present in the Project Area. There are no documented occurrences within 5 miles of the Permanente Property (CDFW 2016).	No further surveys or avoidance measures are recommended.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	**Present.** This species has been observed throughout the Project Area.	Recommendations for this species are provided in Section 7.2.2
Monterey ornate shrew *Sorex ornatus salarius*	SSC	Riparian, wetland and upland areas in the vicinity of the Salinas River delta. Prefers moist microhabitats. Feeds on insects and other invertebrates found under logs, rocks, and litter.	**Unlikely.** The Project Area is located outside of the species known range.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
American badger *Taxidea taxus*	SSC	Occurs in drier open stages of most scrub, forest, and herbaceous habitats where friable soils and prey populations are present.	**Unlikely.** Dense woodland within the Project Area provides unsuitable habitat for this species, and no badger burrows were observed in the Project Area during the site assessment. While there are documented occurrences >2.5 miles southeast of the Project Area, burrow habitat and open herbaceous habitat more characteristic of the species does not occur.	No further surveys or avoidance measures are recommended.
Birds				
California brown pelican *Pelecanus occidentalis californicus*	FD, SD, CFP	Generally a winter visitor to the region (though present nearly year-round). Nests colonially on offshore islands; nearest rookeries are on the Channel Islands. San Francisco Bay provides important foraging and loafing habitat.	**No Potential.** No foraging or nesting habitat is present, and this species does not nest in the area.	No further surveys or avoidance measures are recommended.
golden eagle *Aquila chrysaetos*	CFP, BCC	Resident in rolling foothill and mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range.	**Unlikely.** The Project Area does not provide suitable nesting habitat for this species, nor does it provide foraging habitat. The species may fly over the Project Area.	No further surveys or avoidance measures are recommended.
bald eagle *Haliaeetus leucocephalus*	FD, SE, CFP, BCC	Occurs year-round in California, but primarily a winter visitor. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	**Unlikely.** The Project Area does not provide suitable nesting habitat for this species, nor does it provide foraging habitat. The species may fly over the Project Area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
white-tailed kite *Elanus leucurus*	CFP	Resident in coastal and valley lowlands. Preys on small mammals and other small vertebrates, and insects. Nests in trees and larger shrubs, often in relatively isolated stands.	**Unlikely.** The dense forest that dominates the Project Area does not provide typical nesting or foraging habitat for this species.	No further surveys or avoidance measures are recommended.
ferruginous hawk *Buteo regalis*	BCC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Winters west of Cascades-Sierra Nevada.	**Unlikely.** Occasionally observed along the open coast terraces of Santa Cruz County (eBird 2016). However, dense forest within the Project Area provides unsuitable habitat for this species.	No further surveys or avoidance measures are recommended.
northern harrier *Circus cyaneus*	SSC	Nests and forages in grassland habitats, usually in association with coastal salt and freshwater marshes. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas. May also occur in alkali desert sinks.	**Unlikely**. The dense forest habitat that dominates the Project Area does not provide suitable nesting for the species. Foraging habitat is largely precluded, and while the species may occur along nearby open coast terraces of Santa Cruz County (eBird 2016), the Project Area is not anticipated to support the species.	No further surveys or avoidance measures are recommended.
prairie falcon *Falco mexicanus*	BCC	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	**Unlikely**. Occasionally observed in coastal Santa Cruz County (eBird 2016). However, dense forest that dominates the Project Area provides unsuitable habitat for this species.	No further surveys or avoidance measures are recommended.
American peregrine falcon *Falco peregrinus anatum*	FD, SD, CFP	Largely resident. Requires protected cliffs, ledges or manmade structures for nesting. Often associated with coasts, bays, marshes and other open expanses of water. Preys primarily upon waterbirds; forages widely.	**Unlikely.** The Project Area does not contain suitable cliff habitat to support nesting. While the species has been documented to nest along the cliffs of the San Vicente Quarry, and may fly overhead, the Project Area does not support nesting.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
California clapper rail *Rallus longirostris obsoletus*	FE, SE, CFP	Resident in salt marshes of the San Francisco Bay Estuary, with largest populations in south San Francisco Bay. Requires mud flats for foraging and dense marsh vegetation on higher ground for nesting.	**No Potential.** Suitable salt-marsh habitat is not present in the Project Area.	No further surveys or avoidance measures are recommended.
marbled murrelet *Brachyramphus marmoratus*	FT, SE	(Nesting) Feeds near shore; nests inland along the Pacific coast, from Eureka to Oregon border, and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland. Nests often built in Douglas-fir or redwood stands containing platform-like branches.	**High Potential.** There are numerous occurrences of this species throughout the Santa Cruz Mountains, the closest of which are approximately 1 mile to the west and 1.9 miles to the east of the Project Area (CDFW 2016). Within the Project Area, several stands of old-growth redwood potentially suitable for nesting habitat occur. Therefore, while the species has not be documented within the Project Area, the presence of potentially suitable nesting habitat and the proximity to known occurrences makes it likely that the species would utilize the Project Area.	Recommendations for this species are provided in Section 7.2.2
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC, BCC	Federal listing applies only to the Pacific coastal population. Found on sandy beaches, dry salt ponds, mudflats and adjacent levees, and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	**No Potential.** Project Area lacks sandy beaches, dry salt ponds, mudflats, levees or shores.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
California least tern *Sterna antillarum browni*	FE, SE, CFP	Summer resident. Breeds along the California coast from San Francisco Bay south. Nests colonially on barren or sparsely vegetated, flat substrates near water. Forages for small fish, typically in shallow shoreline habitats. San Francisco Bay colonies usually located on dry/abandoned salt ponds and along estuarine shores.	**No Potential.** Project Area lacks nesting colony and foraging habitat.	No further surveys or avoidance measures are recommended.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	**No Potential.** The Project Area does not contain suitable marsh habitat.	No further surveys or avoidance measures are recommended.
burrowing owl *Athene cunicularia*	SSC, BCC	Largely resident in the region. Found in grasslands and other open habitats with a sparse to absent shrub/tree canopy. Nests and roosts in old mammal burrows, typically those of ground squirrels. Preys upon insects, and also small mammals, reptiles and birds.	**Unlikely.** The dense forest that dominates the Project Area precludes the presence of this species. No ground squirrel burrows were observed in the Project Area and the dense woodlands do not provide suitable habitat for this species. No sign of burrowing owl was observed during the site assessment.	No further surveys or avoidance measures are recommended.
short-eared owl *Asio flammeus*	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**No potential**. No suitable marshland to support nesting or foraging is present within the Project Area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
long-eared owl *Asio otus*	SSC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	**Unlikely**. The Project Area does not provide suitable riparian bottomland habitat characteristic of the species nesting areas.	No further surveys or avoidance measures are recommended.
Vaux's swift *Chaetura vauxi*	SSC	Redwood, Douglas-fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.	**High potential**. Large stands of coniferous forest with complex canopies and snags occur throughout the Project Area. Potentially suitable nesting and foraging habitat is prevalent in the Project Area.	Recommendations for this species are provided in Section 7.2.2
black swift *Cypseloides niger*	SSC, BCC	Summer resident. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above surf. Forages widely.	**Unlikely.** The Project Area is not known to contain cliffs with waterfall features that would be suitable for nesting. While nesting along the coastline to the west and south has been documented, and the species may opportunistically forage or fly over the Project Area, nesting is not anticipated to be supported in the Project Area.	No further surveys or avoidance measures are recommended.
Allen's hummingbird *Selasphorus sasin*	BCC	Inhabits mixed evergreen, riparian woodlands, eucalyptus and cypress groves, oak woodlands, and coastal scrub during breeding season. Nest in shrubs and trees with dense vegetation.	**High Potential.** Mature oak and riparian woodland within the Project Area provides suitable nesting habitat.	Recommendations for this species are provided in Section 7.2.2

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Lewis' woodpecker *Melanerpes lewis*	BCC	Uncommon winter resident occurring on open oak savannahs, broken deciduous and coniferous habitats.	**Unlikely.** The species does not nest along coastal California, and while the species has been sporadically observed in Santa Cruz County, the dense woodland of the Project Area is not conducive to the open foraging areas needed for the species (eBird 2016).	No further surveys or avoidance measures are recommended.
Nuttall's woodpecker *Picoides nuttallii*	BCC	Relatively dense oak and riparian woods. Can also occur in urban and residential settings.	**High Potential.** Mature oak and riparian woodland provides suitable nesting habitat for this relatively common species.	Recommendations for this species are provided in Section 7.2.2
olive-sided flycatcher *Contopus cooperi*	SSC, BCC	Nesting habitats are mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir and lodgepole pine. Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain.	**High Potential.** Mixed conifer, redwood, and pine forest throughout the Project Area provide suitable nesting habitat for this species. The species has been observed frequently along roads surrounding the Project Area (eBird 2016).	Recommendations for this species are provided in Section 7.2.2
willow flycatcher *Empidonax traillii*	SE, BCC	Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters; 2000 to 8000 foot elevation. Require dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/hunting perches	**Unlikely.** No suitable willow nesting habitat exists within the Project Area, and there are no CNDDB records within the vicinity (CDFW 2016). The species may occur briefly during migration.	No further surveys or avoidance measures are recommended.
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Unlikely.** The dense forest and woodland within the Project Area is not typical foraging and nesting habitat for this species.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Least Bell's vireo *Vireo bellii pusillus*	FE, SE	This species is a Summer resident of Southern California but whose range is extending northward. Nesting occurs in riparian areas in the vicinity of water or in dry river bottoms. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, coyote brush or mesquite.	**Unlikely.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.
bank swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured sandy soils near streams, rivers, lakes or the ocean.	**Unlikely.** No suitable nesting habitat exists within the Project Area, and the species is unlikely to forage/ pass through here. The nearest CNDDB record for this species is located 8 miles northwest of the Project Area and dated 1987 (CDFW 2016).	No further surveys or avoidance measures are recommended.
oak titmouse *Baeolophus inornatus*	BCC	Oak woodland and savannah, open broad-leaved evergreen forests containing oaks, and riparian woodlands. Associated with oak and pine-oak woodland and arborescent chaparral.	**Present.** This species is commonly found within mature oak woodland habitat, which occurs in the Project Area.	Recommendations for this species are provided in Section 7.2.2
yellow warbler *Setophaga petechia*	SSC, BCC	Frequents riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores and alders for nesting and foraging. Also nests in montane shrubbery in open conifer forests.	**Unlikely.** No suitable willow nesting habitat exists within the Project Area, and there are no CNDDB records within the vicinity (CDFW 2016). The species may occur briefly during migration.	No further surveys or avoidance measures are recommended.
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Unlikely.** No suitable marsh habitat exists in or near the area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
yellow-breasted chat *Icteria virens*	SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forage and nest within 10 feet of ground.	**Unlikely.** Suitable riparian thickets do not exist in the Project Area, and the species has not been observed in the vicinity of the Project Area (CDFW 2016, eBird 2016).	No further surveys or avoidance measures are recommended.
grasshopper sparrow *Ammodramus savannarum*	SSC	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs, and scattered shrubs. Loosely colonial when nesting.	**Unlikely.** Dense forest and woodland habitat occurs throughout the Project Area, which does not provide suitable grassland habitat.	No further surveys or avoidance measures are recommended.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	SSC	Associated with the coastal fog belt, primarily between Humboldt and northern Monterey Counties. Occupies low tidally influenced habitats, adjacent to ruderal areas; often found where pickleweed communities merge into grassland. Infrequently found in drier grasslands.	**Unlikely.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.
Bell's sage sparrow *Amphispiza belli belli*	BCC	Year-round resident, though shows seasonal movements. Prefers dense chaparral and scrub habitats for breeding; strongly associated with chamise. Also occurs in more open habitats during winter.	**Unlikely.** The Project Area does not contains patches of scrub habitat and lacks suitable nesting habitat for the species. While the species has been documented to the east and north of the Project Area (eBird 2016), the Project Area contains suboptimal foraging habitat relative to areas outside of the Project Area and is unlikely to support nesting.	No further surveys or avoidance measures are recommended.
Lawrence's goldfinch *Spinus lawrencei*	BCC	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.	**Unlikely.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
tricolored blackbird *Agelaius tricolor*	SSC	Resident, though disperses somewhat when not breeding. Typically nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Highly colonial; breeding aggregations tend to be large.	**Unlikely.** No suitable freshwater marsh or riparian thicket habitat is present in the Project Area. There are no CNDDB records in the vicinity (CDFW 2016).	No further surveys or avoidance measures are recommended.
purple martin *Progne subis*	SSC	Inhabits woodlands and low elevation coniferous forests. Nests in old woodpecker cavities and human-made structures. Nest is often located in tall, isolated tree or snag.	**Moderate Potential.** The Project Area contains coniferous forests that may provide suitable nesting habitat. This species has been observed east of the Project Area in Bonny Doon Ecological Preserve (eBird 2016).	Recommendations for this species are provided in Section 7.2.2
Reptiles and Amphibians				
California tiger salamander *Ambystoma californiense*	FT, ST, SSC	Inhabits annual grasslands, spending most of the year underground in mammal burrows. Breeding occurs in vernal pools and other seasonal aquatic features. In the immediate vicinity of San Francisco Bay, occurs only in Fremont.	**No Potential.** There is no suitable aquatic breeding or upland aestivation habitat present for this species. This species has not been documented to occur within 5 miles of the Project Area (CDFW 2016).	No further surveys or avoidance measures are recommended.
Santa Cruz long-toed salamander *Ambystoma macrodactylum croceum*	FE, SE, CFP	Wet meadows near sea level in a few restricted locales in Santa Cruz and Monterey counties. Aquatic larvae prefer shallow (<12 inches) water, using clumps of vegetation or debris for cover. Adults use mammal burrows.	**No Potential.** This species has a limited range, and is not documented to occur north of Aptos, which is over 15 miles southeast of the Project Area (USFWS 2009). The Project Area does not support habitat for this species, and the species is not known for the area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
California red-legged frog *Rana aurora*	FT, SSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**Moderate Potential.** This species has been documented to occur within the property and adjacent to the Project Area in 1997 and there are many documented occurrences within 2 miles (CDFW 2016). While no suitable aquatic breeding habitat was observed, the Project Area provides dispersal and seasonal aquatic non-breeding habitat that may support the species. The Project Area is located within dispersal distance of known occurrences.	Recommendations for this species are provided in Section 7.2.2
foothill yellow-legged frog *Rana boylii*	SSC	Found in rocky streams in a variety of habitats. Feeds on both aquatic and terrestrial invertebrates. Closely associated with water.	**Unlikely.** There are no CNDDB occurrences within 5 miles of the Project Area (CDFW 2016). The Project Area does not contain perennial streams with suitable basking habitat.	No further surveys or avoidance measures are recommended.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Alameda Whipsnake is restricted to valley-foothill hardwood habitat of the Coast Ranges between Monterey and San Francisco Bay. They inhabit south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	**No Potential.** The Project Area is outside of the species' known range, and does not contain suitable habitat.	No further surveys or avoidance measures are recommended.
Blainville's (coast) horned lizard *Phrynosoma blainvillii*	SSC	Habitat variable, most common in lowlands along sandy washes with low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and an abundant supply of insect forage are primary microhabitat components.	**No Potential.** No suitable lowland or wash habitat is present in the Project Area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE, SE, CFP	Found in the vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important. Adults prey chiefly on large frogs.	**No Potential.** The Project Area is outside of this subspecies' known range, and provides no typical aquatic habitat or forage.	No further surveys or avoidance measures are recommended.
Pacific pond turtle *Actinemys marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter. Nests are excavated in areas with friable soil and vegetative cover.	**Unlikely.** There are no perennial streams or pond habitat that would support the species. Basking habitat is limited within the dense woodland of the Project Area. The nearest CNDDB occurrence for this species is over 4 miles east of the Project Area (CDFW 2016).	No further surveys or avoidance measures are recommended.
Fishes				
green sturgeon *Acipenser medirostris*	FT, SSC	Anadromous. Spawns in the Sacramento and Klamath River systems. Lingering transients may be found throughout the San Francisco Bay Estuary, particularly juveniles.	**No Potential.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.
tidewater goby *Eucyclogobius newberryi*	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**No Potential.** No brackish water habitat is present within or immediately adjacent to the Project Area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Delta smelt *Hypomesus transpacificus*	FT, ST	Endemic to the Sacramento-San Joaquin delta area; found in areas where salt and freshwater systems meet. It occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay.	**No Potential.** The Project Area is outside of the range for this species and does not contain suitable habitat.	No further surveys or avoidance measures are recommended.
longfin smelt *Spirinchus thaleichthys*	FC, ST, SSC	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Project Area does not contain suitable estuarine habitat.	No further surveys or avoidance measures are recommended.
Coho salmon - Central CA Coast ESU *Oncorhynchus kisutch*	FE, SE	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**No Potential.** Coho is known to occur within the lower reaches of San Vicente Creek; however, fish passage barriers, steep gradient, and the ephemeral nature of the streams in the Project Area make it unlikely for this species to occur. Coho is not known from Laguna Creek, and known natural fish passage barriers downstream of the Project Area make it unlikely that Coho to occur.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
steelhead - Central CA Coast DPS *Oncorhynchus mykiss irideus*	FT	Anadromous, spending most of life cycle in the ocean. This ESU occurs from the Russian River south to Soquel Creek and Pajaro River, including the San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Unlikely.** Steelhead occur within the mainstem of San Vicente Creek up to the quarry tunnel and the lower reaches of Mill Creek; however, partial fish passage barriers, narrow steep channels, and the ephemeral nature of the streams in the main parcel make it unlikely for this species to occur there. Steelhead are known from the lower reaches of Laguna Creek; however, a known natural barrier occurs downstream of the site, making it unlikely that steelhead would occur there.	No further surveys or avoidance measures are recommended.
steelhead – South/ Central CA Coast DPS *Oncorhynchus mykiss irideus*	FT	Occurs in coastal basins from the Pajaro River south to, but not including, the Santa Maria River. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Unlikely.** Steelhead occur within the mainstem of San Vicente Creek up to the quarry tunnel and the lower reaches of Mill Creek; however, this location is in the territorial area for Central California Coast DPS steelhead. Therefore the Project Area is outside of the range for this DPS. Further, steelhead are unlikely to occur in the Project Area for the reasons outlined for the Central California Coast DPS.	No further surveys or avoidance measures are recommended.
Chinook salmon - Winter-run ESU *Oncorhynchus tshawytscha*	FE, SE	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 degrees C for spawning. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles typically migrate to the ocean soon after emergence from the gravel.	**No Potential.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Chinook salmon - Central Valley Spring-run ESU *Oncorhynchus tshawytscha*	FT, ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October. Juveniles migrate soon after emergence as young-of-the-year, or remain in freshwater and migrate as yearlings.	**No Potential.** The Project Area is outside of the known range for this species.	No further surveys or avoidance measures are recommended.
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Lives in ephemeral or temporary pools of freshwater (vernal pools) that form in the cool, wet months of the year. Highly turbid water is preferred.	**No Potential.** No vernal pool or seasonal wetland habitat is present within the Project Area.	No further surveys or avoidance measures are recommended.
vernal pool fairy shrimp *Branchinecta lynchi*	FT	Inhabits small, clear-water sandstone-depression pools, grassy swales, slumps, or basalt-flow depression pools.	**No Potential.** No vernal pool or seasonal wetland habitat is present within the Project Area.	No further surveys or avoidance measures are recommended.
Ohlone tiger beetle *Cicindela ohlone*	FE	Sparsely vegetated native grasslands on costal terrace in Santa Cruz County. Substrate is poorly-drained clay or sandy clay soil over bedrock of Santa Cruz mudstone.	**No Potential.** The nearest CNDDB occurrence for this species is located 4.8 miles southeast of the Project Area (CDFW 2016). The Project Area is not within the coastal terrace and does not contain native grasslands.	No further surveys or avoidance measures are recommended.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Occurs only in the central valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberrry 2 to 8 inches in diameter; some preference shown for "stressed" elderberry.	**No Potential.** The Project Area is out of the species' known range.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
vernal pool tadpole shrimp *Lepidurus packardi*	FE	VPTS pools are commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**No Potential.** The Project Area provides no suitable vernal/seasonal pool habitat, and is outside of this species' known range (the nearest population is isolated in Fremont on the eastern shore of the Bay).	No further surveys or avoidance measures are recommended.
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	FE	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be *Viola adunca.*	**No Potential.** The Project Area is outside of the species known range.	No further surveys or avoidance measures are recommended.
monarch butterfly *Danaus plexippus*	Roost Habitat Protected by CDFW	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	**Unlikely.** Typical winter roost sites do not exist in the Project Area.	No further surveys or avoidance measures are recommended.
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant.	**No Potential.** No native serpentine grasslands or larval host or nectar plants are present in the Project Area.	No further surveys or avoidance measures are recommended.
Smith's blue butterfly *Euphilotes enoptes smithi*	FE	Most commonly associated with coastal dunes and coastal sage scrub plant communities in Monterey and Santa Cruz counties. *Eriogonum latifolium* and *Eriogonum parvifolium* are utilized as host plants and adult food plants.	**No Potential.** Suitable habitat and host/food plants are not present in the Project Area.	No further surveys or avoidance measures are recommended.

SPECIES	STATUS[1]	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE[2]	RECOMMENDATIONS
Mount Hermon (=barbate) June beetle *Polyphylla barbata*	FE	Known only from sand hills in Santa Cruz County (type locality). Occurs in open, sandy habitat on Zayante series soils.	**No Potential.** The nearest CNDDB occurrence for this species is located 4.8 miles east of the Project Area (CDFW 2016). No sand hill habitat or suitable Zayante soils are present in the Project Area.	No further surveys or avoidance measures are recommended.
Zayante band-winged grasshopper *Trimerotropis infantilis*	FE	Endemic to isolated sandstone deposits in the Santa Cruz Mountains (the Zayante Sand Hills ecosystem). Restricted to sand parkland habitat found on ridges and hills within this very limited ecosystem.	**No Potential.** No sandhills habitat or suitable Zayante soils are present in the Project Area.	No further surveys or avoidance measures are recommended.

[1]Key to status codes

FE	Federal Endangered
FT	Federal Threatened
FD	Federal Delisted
FC	Federal Candidate
BCC	USFWS Birds of Conservation Concern
SE	State Endangered
ST	State Threatened
SR	State Rare
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group Priority Species
Rank 1B.1	CNPS Rank 1B.1: Rare, threatened, or endangered in California and elsewhere (seriously threatened in California)
Rank 1B.2	CNPS Rank 1B.2: Rare, threatened, or endangered in California and elsewhere (moderately threatened in California)
Rank 2B.1	CNPS Rank 2B.1: Rare, threatened, or endangered in California, but more common elsewhere (seriously threatened in California)
Rank 2B.2	CNPS Rank 2B.2: Rare, threatened, or endangered in California, but more common elsewhere (moderately threatened in California)
Rank 3.1	CNPS Rank 3.1: Plants about which more information is needed - A review list (seriously threatened in California)
Rank 3.2	CNPS Rank 3.2: Plants about which more information is needed - A review list (moderately threatened in California)
Rank 4.2	CNPS Rank 4.2: Plants of limited distribution - A watch list (moderately threatened in California)
Rank 4.3	CNPS Rank 4.3: Plants of limited distribution - A watch list (not very threatened in California)

[2]Key to Potential for Occurrence

No Potential	None of the habitat components meeting the species requirements are present. The habitat is clearly unsuitable for the species.
Unlikely	Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
Moderate Potential	Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
High Potential	All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
Present	Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.
Not Observed	The species is identifiable year-round but was not observed during surveys or the survey occurred when the species should have been apparent and identifiable but the species was not observed. These species are assumed to not be present.

APPENDIX D

SITE PHOTOGRAPHS

Example of shaded fuel break within the Project Area.

Example of shaded fuel break within the Project Area.

Example of open, sunny edge habitat where plant diversity is expected to be higher and a larger number of rare plants have potential to occur.

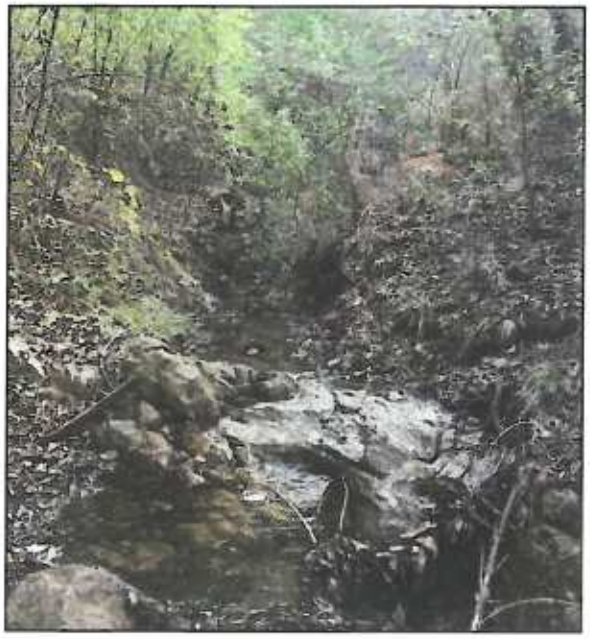
Example of dense, shaded understory habitat where plant diversity is expected to be lower and fewer rare plants have potential to occur.

Anderson's manzanita flowers.

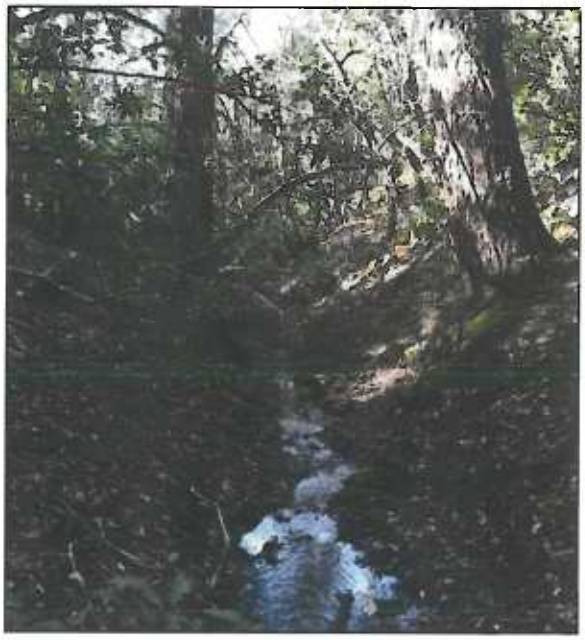
Typical leaf arrangement for Anderson's manzanita.

Anderson's manzanita in flower.

Anderson's manzanita growth form under open, sunny conditions.



Example of a regulated stream.



Example of a regulated stream.

Example of a drainage feature determined to be non-jurisdictional.

Example of a drainage feature determined to be non-jurisdictional.

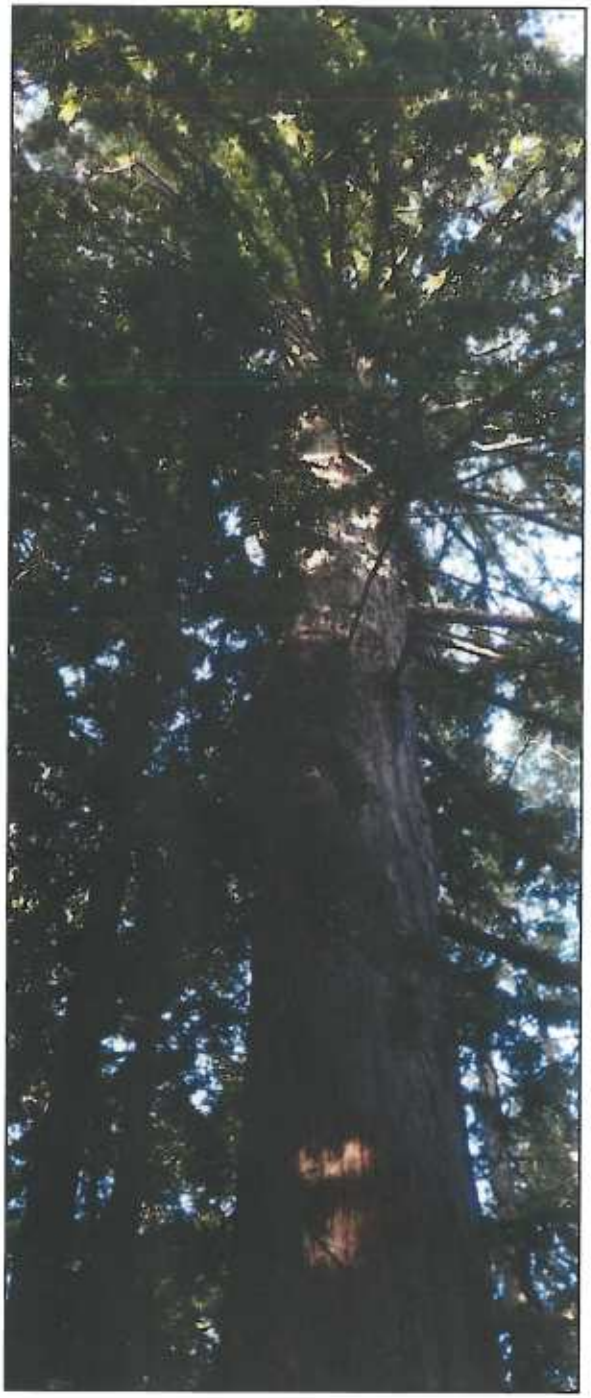
Example of a woodrat midden in the Project Area.

Example of a woodrat midden in the Project Area.

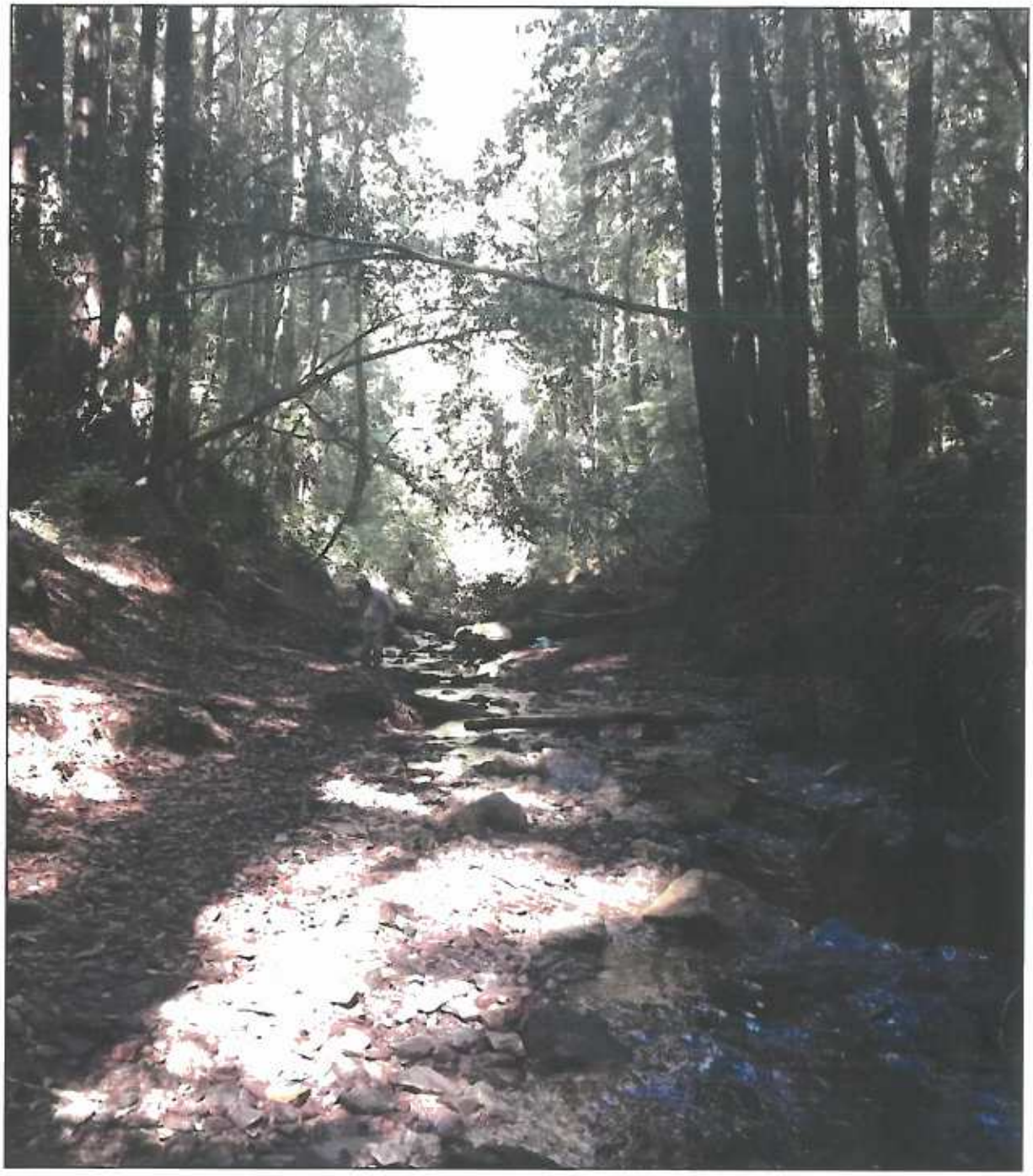
Example of a woodrat midden in the Project Area.

Example of a woodrat midden in the Project Area.

Example of a potentially significant wildlife tree.



Example of a potentially significant wildlife tree.



Laguna Creek, a perennial stream located on the Laguna parcel.

in association with
Timothy C. Best | WRA Environmental Consultants
Law Office of Pamela J. Asselmeier | Tom Origer & Associates