Attachment 11

BIOLOGICAL RESOURCES ASSESSMENT

7408 – 7746 HIGHLAND SPRINGS ROAD

APN 007-006-27, 007-006-34, 007-006-35, 007-006-40, 007-006-41, 007-057-01 & 007-057-02

LAKE COUNTY, CALIFORNIA

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this reconnaissance-level Biological Assessment (BA) is to evaluate the existence of special-status species (SSS) and/or habitats, as well as assess the potential for SSS listed in Appendix A to occur on or near the site of commercial cultivation activities, pursuant to applicable regulations from County of Lake and the State of California. This BA also analyzes the potential for jurisdictional wetlands and other waters of the State to exist onsite, and classifies landforms that may potentially convey sediment to waters of the State including dry creeks, washes, swales, gullys, and other erosional features. Also included is a set of Best Management Practices (BMPs) that are adapted from a variety of sources including State Water Resources Control Board (SWRCB) *Cannabis* General Order No. WQ 2019-0001-DWQ and other state and local ordinances.

1.2 LOCATION

1.2.1 Site Overview

The project site is located to the west of Highland Springs Lake in unincorporated Lake County, 5 miles west of Kelseyville, and 7 miles south of Lakeport (Figure 1). The property is comprised of 7 parcels (Figure 3), with Assessor's Parcel Number (APN), zoning, acreage, and assigned address shown in Table 1, below. The total size of the combined parcels is 515 acres.

Table 1: Assessor's parcel numbers, deeded acres, County zoning, and street addresses of the project parcels.

APN	Deeded Acres	Zoning	Address
007-006-27	269.06	RL	7527 Highland Springs Rd., Lakeport, CA 95453
007-006-34	50.0	RL	7408 Highland Springs Rd., Lakeport, CA 95453
007-006-35	30.0	RL	7522 Highland Springs Rd., Lakeport, CA 95453
007-006-40	39.2	RL	7634 Highland Springs Rd., Lakeport, CA 95453
007-006-41	40.0	RL	7746 Highland Springs Rd., Lakeport, CA 95453
007-057-01	4.75	RL	7257 Amber Ridge Court, Lakeport, CA 95453
007-057-02	79.93	RL	7357 Amber Ridge Court, Lakeport, CA 95453

The parcels are located in Sections 25 & 26 in Township 13 North, Range 10 West, on the USGS Highland Springs 7.5-minute quadrangle (Figure 2). The approximate latitude and longitude of the centroid of the property is 38.9440 (N), -122.9300 (W). All parcels are under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB), and the Northern Region (District 1) of

the California Department of Fish & Wildlife (CDFW), and are not located in medium- or high-priority groundwater basins as designated by the California Department of Water Resources (DWR).

1.2.2 Federal Critical Habitat

Federal Critical Habitat (FCH) is designated by the U.S. Fish & Wildlife Service (USFWS) and provides special protections for habitats considered important for long-term population persistence of endangered or threatened species. There is no FCH onsite for any animal or plant species (Appendix E). The nearest Federal Critical Habitat is located 7.9 miles southeast of the parcel for Slender Orcutt Grass (*Orcuttia tenuis*). There is no other Federal Critical Habitat within 10 miles of the project parcel.

1.2.3 Special-Status Species Occurrences

Special-status species (SSS) are those species that receive special protections under either local, State, or Federal law and include both State and Federally Endangered and Threatened species of animals and plants, as well as candidate listing species and other species or populations of special concern for which additional information is required. The California Natural Diversity Database (CNDDB) provides information on most known SSS occurrences in the State of California. A description of the habitat requirements and likelihood of occurrence of potential SSS on the project parcel based the CNDDB database, published scientific literature, and the expertise of PEC staff, is provided in Appendix A, with a description of the nearest locality of all SSS known from within a 5 mile radius around the project parcel. Additionally, map-based representation of all of the SSS within an approximately 5 mile radius around the project site is provided in Appendices C & D.

1.2.3.1 SSS Animals

There are a total of 8 special-status animal species within 5 miles of the project parcel (Appendices A & C). There are no known special-status animal species known from the project parcel (Appendix C). The nearest known occurrence of special-status animal species is Red-bellied newt (*Taricha rivularis*) located approximately 0.5 miles southwest of the project parcel near Highland Creek. The next nearest known occurrences of special-status animal species are Foothill yellow-legged frog (*Rana boylii*; FYLF) and Western pond turtle (*Emys marmorata*) located approximately 0.7 miles southwest of the project parcel near Highland Creek. The next nearest known occurrence of special-status animal species is Bell's sage sparrow (*Artemisiospiza belli belli*) located approximately 0.8 miles south of the project parcel near Highland Creek. The next nearest known occurrence of special-status animal species is Tricolored blackbird (*Agelaius tricolor*) located approximately 2.0 miles northeast of the project parcel near Adobe Creek. The next nearest known occurrence of special-status animal species is Clear Lake hitch (*Lavinia exilicauda chi*) located approximately 2.2 miles northeast of the project parcel near Adobe Creek. The next nearest known occurrence of special-status animal species is Townsend's big-eared bat (*Corynorhinus townsendii*) located approximately 4.5 miles northwest of the project parcel near Coleman Creek. The next nearest known occurrence of special-status animal species is an unnamed isopod (*Calasellus californicus*) located approximately 4.7 miles northeast of the project parcel near Big Valley. There are no other known occurrences of special-status animal species within 5 miles of the project parcel.

1.2.3.2 SSS Plants

There are a total of 13 special-status plant species within 5 miles of the project parcel (Appendices A & C). There is one known special-status plant species with a CNDDB polygon that overlaps with the project parcel (Appendix C), Glandular Western flax (*Hesperolinon adenophyllum*) with a centroid located 0.7 miles offsite to the southeast near Highland Creek. The nearest known occurrence of special-status plant species is Konocti manzanita (*Arctostaphylos manzanita* ssp. *elegans*) located approximately 0.3 miles east of the project parcel near Highland Springs Recreation Area. The next nearest known occurrence of special-status plant species is Serpentine cryptantha (*Cryptantha dissita*) located approximately 0.6 miles southwest of the project parcel near Highland Creek. The next nearest known occurrences of special-status plant species are Bent-flowered fiddleneck (*Amsinckia lunaris*), Bolander's horkelia (*Horkelia bolanderi*), and Dimorphic snapdragon (*Antirrhinum subcordatum*) located approximately 0.8 miles south of the project parcel near Highland Creek. The next nearest known occurrence of special-status plant species is Colusa layia (*Layia septentrionalis*) located approximately 1.4 miles east of the project parcel near Highland Creek. The next nearest known occurrences of special-status plant species are Marsh checkerbloom (*Sidalcea oregana* ssp. *hydrophila*) and Napa bluecurls (*Trichostema ruygtii*) located approximately 3.0 miles northeast of the project parcel near Adobe Creek. The next nearest known occurrence of special-status plant species is Small-flowered calycadenia (*Calycadenia micrantha*) located approximately 3.5 miles north of the project parcel near Manning Creek. The next nearest known occurrence of special-status plant species is Brandegee's eriastrum (*Eriastrum brandegeeae*) located approximately 3.9 miles northeast of the project parcel near Hill Creek. The next nearest known occurrence of special-status plant species is Bogg's Lake hedge-hyssop (*Gratiola heterosepala*) located approximately 4.7 miles northeast of the project parcel near Kelsey Creek. The next nearest known occurrence of special-status plant species is Raiche's manzanita (*Arctostaphylos stanfordiana* ssp. *raichei*) located approximately 4.7 miles southeast of the project parcel near Hoil Creek. There are no other known occurrences of special-status plant species within 5 miles of the project parcel.

1.2.4 Landforms & Topography

The maximum elevation of the parcel is 2,230 feet above sea level at the top of an unnamed peak in the northern portion of the largest parcel (APN 007-006-27) (Figure 2). The minimum elevation is 1,702 feet above sea level in the southwest corner of the property where the unnamed tributary to Highland Creek exits the parcel (APN 007-057-02). The topography of the parcel is gently sloped in the central grassland portion of the site with grades between 5% and 10%, with slopes increasing to 25% to 75% on steeper slopes and ridgelines, as measured by Suunto PM5 handheld clinometer (Figure 2). Water onsite drains south and west through steep canyons with dense chaparral vegetation. The exception to this is the moderately sloped plateau where the proposed cultivation area is, where water flowing off of the chaparral slopes enters the grassland habitat and coalesces into a series of meandering watercourses (Figure 11) some of which contain with fringing wetland vegetation (Figure 16). After passing offsite water enters Highland Creek, that flows east for 1.5 miles before entering Highland Springs Reservoir. After passing over the spillway of the reservoir, water flows northeast for 0.6 miles before the confluence with Adobe Creek, that in turn flows north for 5.8 miles entering Clear Lake. From the spillway of the Cache Creek Dam, Cache Creek flows east through the inner Coast Ranges for 51 miles before emerging into the Central Valley near Esparto. From there Cache Creek continues east for 28 miles before entering the Yolo Bypass west of the City of Sacramento. From there water flows south into the Sacramento River which flows south for approximately 40 miles before emptying into Suisun Bay and the Pacific Ocean. More information on the jurisdictional status of watercourse and the pond are provided in Section §2.4, below.

1.2.5 Existing Structures

Access to the site is provided via unnamed private dirt road that branches to the east off of Highland Springs Road (Figure 1). Roads onsite are packed earth and graded and generally in good condition (Figure 6) and access is controlled by several manual entry locking metal gates (Figure 7). There are few structures onsite, except for one residence and several wells (Figure 15) and minor water storage structures (Figure 14). Culverts over several watercourses do not appear to have been replaced recently (Figures 8 & 9).

1.2.6 Regional Land Uses

Land uses in the vicinity of the project parcel are private property and rural residences. Most of the land to the north and west is dense chaparral on south facing slopes and gray pine woodland on north facing slopes. To the west and northwest is primarily hayfields, rural residential subdivisions, orchards, and vineyards. Clear Lake and the town of Lakeport is located 6 miles to the northeast.

1.3 METHODS

1.3.1 Records Search & Literature Review

Based on a review of the literature and relevant databases, we compiled a list of special-status plant and animal species that are known to occur within Lake County, or that occupy habitats that are known to be present on or near the project site (Appendices A & C). Sources of information referenced include the California Department of Fish & Wildlife (CDFW) *California Natural Diversity Database* (CNDDB 2020), U.S. Fish and Wildlife Service Environmental Conservation Online System (USFWS 2020), the California Native Plants Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2020), the CDFW *Habitat Relationships System* (HRS), and the knowledge of PEC staff familiar with the species and habitats of Lake County. Additional information on sensitive habitats including wetlands was obtained from the USFWS National Wetlands Inventory (NWI 2020), and the County of Lake *Geographic Information System Portal* (Lake Co. 2020). Plant species included here are State or Federally Endangered or Threatened species, and/or considered rare by CDFW, and/or are recognized as special-status species (SSS) by CNPS and/or CDFW. Animal species included here are designated as State or Federally Endangered or Threatened, and/or CDFW species of special concern (SSC), and/or CDFW fully protected species (FPS). In addition, nests of most native bird species, regardless of their regulatory status, are protected from take or harassment under the U.S. Migratory Bird Treaty Act (MBTA) and relevant sections of the California Fish & Wildlife Code.

1.3.2 Field Surveys

A wildlife and botanical survey was conducted at the site on May 25, 2020. The weather was sunny and warm at the time of the survey, that began at 11:30 AM. The temperature at the start of the survey was 87 degF, relative humidity was 32%, and wind gust speed was 2-4 mph, as measured with Kestrel 3000 handheld weather station. Approximately 1” of rain fell the preceding month, and most annual and

perennial species were actively flowering. Starting with the central grassland portion of the property, the majority of the project site was surveyed on foot by PEC Senior Biologist Dr. Christopher T. DiVittorio, recording the location and identity of all plant and animal species encountered. The areas that were surveyed in-depth are shown in Figure 3. Other regions of the parcel were not surveyed on foot either due to time constraints, or the inaccessibility and lack of ability for potential development of the area due to dense chaparral and steep slopes. Plant voucher specimens were taken of any species that were not identifiable in the field, and that were not likely to be special-status. The vast majority of species were identifiable at the time of the survey, although some had to be identified based on vegetative parts. Photographs and voucher specimens were taken of any plants that were identified solely based on vegetative characters.

2.0 RESULTS

2.1 REGIONAL ECOLOGICAL SETTING

Using field surveys, a review of published literature, and the knowledge of PEC staff, all of the natural communities present on and around the project areas shown in Figure 3 were assessed. Regionally, the dominant vegetation types are burned chamise chaparral, blue oak and gray pine woodland, and annual grasslands in the mosaic of areas without shrubs and trees. Valley bottoms support some wetland vegetation and ephemeral watercourses. The entire region is mostly burned from a series of fires from the Mendocino Complex Fire in 2018, as well as others. To the west and south is the shore of Clear Lake and the towns of Nice and Lucerne. To the north and east is increasingly mountainous until reaching Mendocino National Forest land.

2.2 NATURAL COMMUNITIES WITHIN THE PROJECT SITE

The onsite communities are largely the same as in the larger region, with chamise chaparral on south facing slopes, gray pine woodland on north facing slopes, and grassland on flatter topographic plateaus and valley bottoms (Figures 12 & 13). Wetlands form in the flatter areas of the parcel where watercourses fail to channelize. The property has not burned in the past 10 years as evidenced by aerial photographs. There are no special soil types such as serpentine or hardpan in the vicinity of the proposed cultivation areas, although there is a small amount of serpentine mapped onsite in the far southeast corner near Highland Springs Road, and offsite to the northwest (Appendix F). The specific community descriptions below are organized based on the zones that were surveyed, and the floristic results presented in Appendix B. We have used as guidance the *Manual of California Vegetation* (Sawyer et al. 2009) to guide community classification. Overall, the parcel consists of approximately 40% chamise-Yerba Santa chaparral, 30% Gray pine woodland, 25% annual grassland, and 5% wetland and riparian vegetation (Figure 3).

2.2.1 Blue Oak – Gray Pine – Ponderosa Pine Woodland

Trees onsite are generally small in stature due to the shallow soils, and concentrated on north-facing slopes. Canopy trees are dominated by Gray pine (*Pinus sabiniana*) to 24" DBH, Ponderosa pine (*Pinus ponderosa*) to 24" DBH Interior live oak (*Quercus wislizeni*) to 18" DBH, and Madroño (*Arbutus menziesii*) to 18" DBH. Riparian corridors contain primarily those species mentioned above but also trees with greater moisture requirements such as Black oak (*Quercus kelloggii*) to 20" DBH, California bay (*Umbellularia californica*) to 16" DBH, Canyon live oak (*Quercus chrysolepis*) to 14" DBH, California buckeye (*Aesculus californica*) to 14" DBH, Oregon ash (*Fraxinus latifolia*) to 12” DBH, and Bigleaf maple (*Acer macrophyllum*) to 12" DBH.

2.2.2 Leather Oak – Chamise – Yerba Santa Chaparral

The chaparral dominated south-facing slopes are non-serpentine and contain species including Yerba Santa (*Eriodictyon californicum*), chamise (*Adenostoma fasciculatum*), poison oak (*Toxicodendron diversilobium*), tanoak (*Notholithocarpus densiflorus*), leather oak (*Quercus durata*), scrub oak (*Quercus dumosa*), common manzanita (*Arctostaphylos manzanita*), whiteleaf manzanita (*Arctostaphylos viscida*), buck brush (*Ceanothus cuneatus*), deerbrush (*Ceanothus integerrimus*), coyote brush (*Baccharis pilularis*), mountain mint (*Monardella odoratissima*), toyon (*Heteromeles arbutifolia*), mountain mahogany (*Cercocarpus betuloides*), chaparral pea (*Pickeringia montana*), soap plant (*Chlorogalum pomeridianum*), evergreen buckthorn (*Rhamnus ilicifolia*), and western redbud (*Cercis occidentalis*). Understory herbaceous plants in chaparral habitats were mostly those found in grassland but included some unique species such as squirreltail grass (*Elymus elymoides*), naked buckwheat (*Eriogonum nudum*), slender western flax (*Hesperolinon spergulinum*), small tarweed (*Madia exigua*), California bedstraw (*Galium californicum*), imbricate phacelia (*Phacelia imbricata*), houndstongue (*Cynoglossum grande*), woolly sunflower (*Eriophyllum lanatum*), Western bracken fern (*Pteridium aquilinum*), hog fennel (*Lomatium dasycarpum*), foothill penstemon (*Penstemon heterophyllus*), and turpentine weed (*Trichostema laxa*).

2.2.3 Mixed Annual Grassland

The grassland portion of the site contains the proposed cultivation areas. Species encountered in these portions of the site during the May 2020 site visit include hairgrass (*Aira caryophyllea*), wild oatgrass (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceous*), cheatgrass (*Bromus tectorum*), dogstail grass (*Cynosurus echinatus*), annual hairgrass (*Deschampsia danthonioides*), blue wildrye (*Elymus glaucus*), medusahead (*Elymus caput-medusae*), Zorro fescue (*Festuca myuros*), foxtail barley (*Hordeum murinum*), harvest brodiaea (*Brodiaea elegans*), creamcups (*Platystemon californicus*), mountain dandelion (*Agoseris heterophylla*), smooth cat's ear (*Hypochaeris glabra*), narrow leaved mule ears (*Wyethia angustifolia*), common yarrow (*Achillea millefolium*), hayfield tarweed (*Hemizonia congesta*), common madia (*Madia elegans*), Fremont's calycadenia (*Calycadenia fremontii*), blow wives (*Achyrachaena mollis*), bristly ox-tongue (*Helminthotheca echioides*), yellow star thistle (*Centaurea solstitialis*), smooth cat's ear (*Hypochaeris glabra*), spiny sowthistle (*Sonchus asper*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), lowland cudweed (*Gnaphalium palustre*), annual lupine (*Lupinus bicolor*), spring vetch (*Vicia sativa*), bird's foot trefoil (*Acmispon americanus*), bur clover (*Medicago polymorpha*), rose clover (*Trifolium hirtum*), goosefoot viola (*Viola purpurea*), slender popcorn flower (*Plagiobothrys tenellus*), common fiddleneck (*Amsinckia intermedia*), purple navarretia (*Navarretia pubescens*), shining peppergrass (*Lepidium nitidum*), turkey-mullein (*Croton setiger*), field bindweed (*Convolvulus arvensis*), farewell-to-spring (*Clarkia amoena*), blue dicks (*Dichelostemma capitata*), California poppy (*Eschscholzia californica*), field buttercup (*Ranunculus arvensis*), woolly mullein (*Verbascum thapsus*), black mustard (*Brassica nigra*), English plantain (*Plantago lanceolata*), common geranium (*Geranium molle*), wild radish (*Raphanus sativa*), Queen Anne's lace (*Daucus carota*), chickweed (*Stellaria media*), field parsley (*Torilis nodosa*), sheep sorrel (*Rumex acetocella*), lamb's quarters (*Chenopodium album*), contorted sun cup (*Camissonia contorta*), and crane's bill filaree (*Erodium botrys*).

2.2.4 Potential Wetland

Vegetation associated with the seasonal wetlands and watercourses in the grassland portion of the site are primarily herbaceous and include species such as dried green algal mats (*Cladophora* spp.), common horsetail (*Equisetum arvense*), bog rush (*Juncus patens*), Western rush (*Juncus occidentalis*), green-sheathed sedge (*Carex feta*), nut sedge (*Cyperus eragrostis*), rabbitsfoot grass (*Polypogon monspeliensis*), Italian ryegrass (*Festuca perennis*), Western verbena (*Verbena lasiostachys*), pennyroyal (*Mentha pulegium*), coyote brush (*Baccharis pilularis*), mugwort (*Artemisia douglasiana*), curly dock (*Rumex crispus*), Klamathweed (*Hypericum perfoliata*), threenerve goldenrod (*Solidago velutina*), common gumweed (*Grindelia camporum*), common monkeyflower (*Mimulus guttatus*), Hyssop loosestrife (*Lythrum hyssopifolia*), Indian milkweed (*Asclepias eriocarpa*), skunk navarretia (*Navarretia mellita*), and bulge hedgenettle (*Stachys ajugoides*).

2.3 WILDLIFE

Due to the temperature and time of year, animal activity was moderate at the time of the survey. Bird species observed both directly and indirectly include California quail (*Callipepla californica*), Western scrub jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), crow (*Corvus brachyrhynchos*), turkey vulture (*Cathartes aura*), savannah sparrow (*Passerculus sandwichensis*), and black-eyed junco (*Junco hyemalis*). Other animal species observed include Western fence lizard (*Sceloporous occidentalis*), Western grey squirrel (*Sciurus griseus*), excavation mounds of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Otospermophilus beecheyi*), runways of California vole (*Microtus californicus*), scat of black-tailed jackrabbit (*Lepus californicus*) and coyote (*Canis latrans*), sheddings of Pacific gopher snake (*Pituophis catenifer catenifer*), midden of Dusky-footed wood rat (*Neotoma fuscipes*), and tracks of Mule deer (*Odocoileus hemionus*).

2.4 WATERCOURSES & POTENTIAL WETLANDS

Jurisdictional watercourses onsite were classified according to the three-tier method used by the California Department of Forestry & Fire Protection (CALFIRE 2017) and included as a reference in Appendix H. Potential wetlands onsite were assessed based on the likelihood to satisfy the three-tier wetland delineation criteria used by the Army Corps of Engineers *Wetland Delineation Manual* (ACOE 1987), however a protocol-level wetland delineation was not performed. Onsite jurisdictional watercourses and potentially jurisdictional wetlands are mapped in Figures 4 & 5. Other portions of the site were either inaccessible or undevelopable due to slope and dense chaparral, and so watercourses were not mapped outside of the regions denoted in Figure 3. According to the aforementioned criteria, there are two Class I watercourses onsite that enter Highland Creek, and above these reaches the stream changes to Class II. These Class II reaches contain some hydrophytic (wetland) vegetation (Figure 11) although they may appear dry for most of the year. Above the Class II reaches the channels change to Class III reaches (Figure 10) before transitioning to vegetated swales or becoming enshrouded in dense chaparral that prevents sediment transport and channel formation. Several of the Class III and II watercourses that flow across the grassland portion of the site are discontinuous with patches of potential wetland. Potential wetlands form where the slope of the terrain is not steep enough to facilitate downslope sediment

transport and initiate channel formation. In some places wetland vegetation and channels capable of sediment transport exist together (Figure 16).

2.5 SOILS & LOCAL GEOMORPHOLOGY

The parent materials on the project parcel are typical of southwestern Lake County, with easily erodible sediments of the Franciscan Formation dissected by highly seasonal rivers (USGS 1985). A map of the USDA Soil Survey data from the project site is provided in Appendix F. The western half of the project property is mapped as Maymen-Etsel-Snook complex (#168-169), 15-75% slopes, with lesser proportions of Mayacama (5%) and Speaker (3%) soils, and is designated "not prime farmland." The eastern half and portions along the northern parcel boundaries are mostly mapped as Maymen-Hopland-Etsel association (#171), 15-50% slopes, and is designated "not prime farmland." Parent materials of all of the above soil types are residuum weathered from sandstone and/or shale. There are no serpentine soils onsite, however there are some serpentine soils near the west bank of Highland Springs Reservoir, and also offsite to the northwest approximately 0.25 miles. There are no serpentine or other ultramafic rock types onsite and no serpentine-derived soils (Appendix F). There are no alkalai or hardpan vernal pool soil types onsite.

3.0 SUMMARY & CONCLUSIONS

One special-status plant species was observed at the time of the May 2020 survey, scrub oak (*Quercus dumosa*). There is also Konocti manzanita (*Arctostaphylos manzanita* ssp. *elegans*) located immediately offsite to the south. No impacts are predicted to these species since there is no chaparral removal planned as part of this project. There are however some herbaceous species associated with meadow and wetland habitats that are known to occur within 5 miles of the project site, and some of these habitats overlap with the proposed project areas. There one species with a CNDDB polygon that overlaps with the southeast corner of the project parcels, Glandular Western flax. Additionally, although the majority of the project property does not contain serpentine soil, some of the land adjacent to the property has serpentine-containing soils (Appendix F), and many of these formations contain special-status plant species (Appendix C). Due to the potential for several of the species listed in Appendix A to exist on or near the wetlands shown in Figures 4 & 5, we recommend two follow-up plant surveys to be conducted, which when combined with the May 2020 survey will encompass the range of early-, mid-, and late-season flowering phenologies, and also examine the site over two years encompassing interannual variation. These surveys will be sufficient to determine if any of the species in Appendix A exist on or near the proposed cultivation areas, and should be conducted prior to significant ground disturbance.

No special-status animal species were observed onsite during the survey performed in May 2020. There are no special-status animal species with CNDDB polygons that overlap with the project parcel, although several animal species exist within 0.5 miles of the project parcels, mostly associated with Highland Creek. These include Foothill yellow-legged frog (*Rana boylii*; FYLF), Western pond turtle (*Emys marmorata*; WPT), and Red-bellied newt (*Taricha rivularis*). Although there are wetlands and some watercourses with marginally suitable habitat in the grassland areas of the site, there are barriers to dispersal for WPT and FYLF and other amphibians from reaching this plateau due to the steep and incised cliff-like formation that defines the southwestern boundary of the plateau. The watercourse on the southeast side of the plateau that drains the site to the southeast is also steeply incised and presents a barrier to dispersal due to the density of vegetation and steepness of the terrain. Despite this, is suitable habitat onsite in the form of the wetlands and ephemeral streamcourses and thus we recommend the avoidance measures in Appendix G7 related to amphibians be followed at all times.

No impacts to watercourses and wetlands are anticipated as long as setbacks of 100-feet are observed off all jurisdictional watercourses and potential wetlands shown in Figures 4 & 5. Wetlands are easily discernable in the field during the wet season, and thus a qualified biologist should demarcate with stakes the edges of the potential wetlands shown in Figures 4 & 5 in order to measure the appropriate setbacks off of. We do not believe a protocol-level wetland delineation is required as long as a qualified biologist visits the site in the wet season and stakes out all potential wetland areas for avoidance with 100-foot buffers.

Wherever erosion control is needed in the future only native plant species from local genotypes should be used. A list of suitable species and nurseries/vendors can be provided by PEC on request. Sterile wheat is acceptable as an emergency substitute if no native species can be obtained.

4.0 REGULATORY FRAMEWORK

4.1 FEDERAL ENDANGERED SPECIES ACT

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally-listed threatened and endangered species under the federal Endangered Species Act (FESA). The USFWS also maintains a list of 'proposed' species and candidate species that are not legally protected under the FESA, but are often included in their review of a project as they may become listed in the near future. The FESA protects listed animal species from harm or "take" which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that results in death or injury to a listed species. An activity can be defined as a "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands. Pursuant to the requirements of the FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed threatened or endangered species (plants and animals) may be present in the project area and determine whether the proposed project may affect such species. Any activities that could result in the take of a federally-listed species will require formal consultation with the USFWS.

4.2 CALIFORNIA ENDANGERED SPECIES ACT

The California Endangered Species Act (CESA) protects any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the California Department of Fish and Wildlife (CDFW) has jurisdiction over state-listed species (California Fish and Wildlife Code 2070). Take of state-listed species requires a permit from CDFW, which is granted only under strictly limited circumstances. Additionally, the CDFW maintains lists of "species of special concern" that are defined as animal species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed or proposed endangered or threatened species may be present in the project area and determine whether the proposed project may result in a significant impact on such species.

4.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Wildlife Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts, if it finds that the species meets the criteria of a threatened or endangered species.

4.4 CLEAN WATER ACT

Under Section 404 of the federal Clean Water Act, the U.S. Army Corps of Engineers (Corps) is responsible for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed "isolated wetlands" and, depending on the circumstances, may also be subject to Corps jurisdiction. In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the acreage involved and the purpose of the proposed fill. Minor amounts of fill are sometimes covered by Nationwide Permits, which were established to streamline the permit process for projects with "minimal" impacts on wetlands or other waters of the U.S. An Individual Permit is required for projects that result in more than a minimal impact on jurisdictional areas. The Individual Permit process requires evidence that fill of jurisdictional areas has been minimized to the extent "practicable" and provides an opportunity for public review of the project.

4.5 CALIFORNIA WATER QUALITY REGULATORY PROGRAMS

Pursuant to Section 401 of the federal Clean Water Act and the state's Porter-Cologne Act, projects that are regulated by the Corps must obtain water quality certification from the Regional Water Quality Control Board (RWQCB). This certification ensures that the project will uphold state water quality standards. The RWQCB sometimes asserts jurisdiction over wetlands that the Corps does not (e.g. certain isolated wetlands) and may impose mitigation requirements even if the Corps does not. The CDFW also exerts jurisdiction over the bed and banks of watercourses and water bodies according to provisions of Section 1601 to 1603 of the Fish and Wildlife Code. The Fish and Wildlife Code requires a Stream Alteration Agreement for the fill or removal of material within the bed and banks of a watercourse or water body.

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FIGURE 1: REGIONAL LOCATION

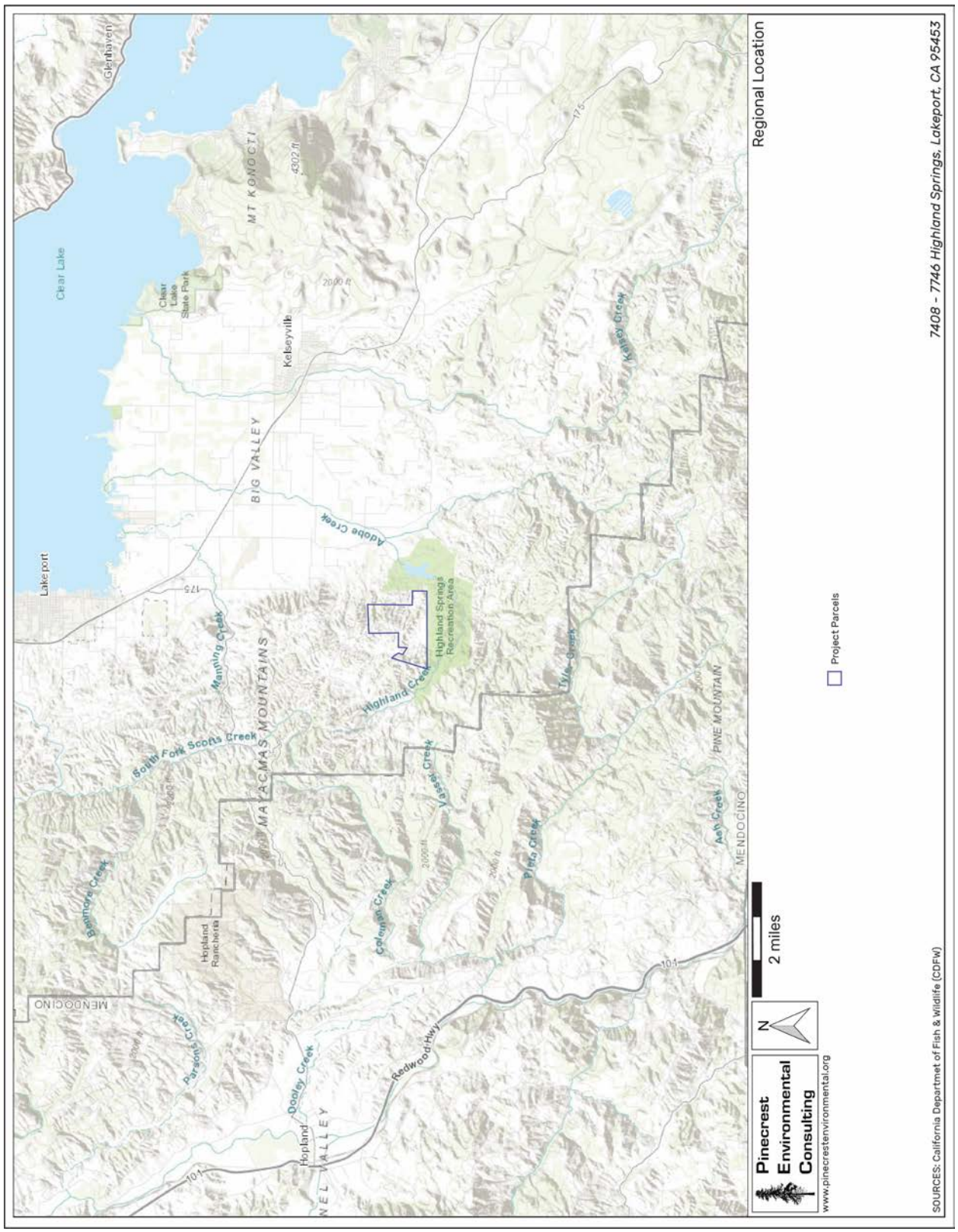

FIGURE 2: 40-FOOT CONTOURS

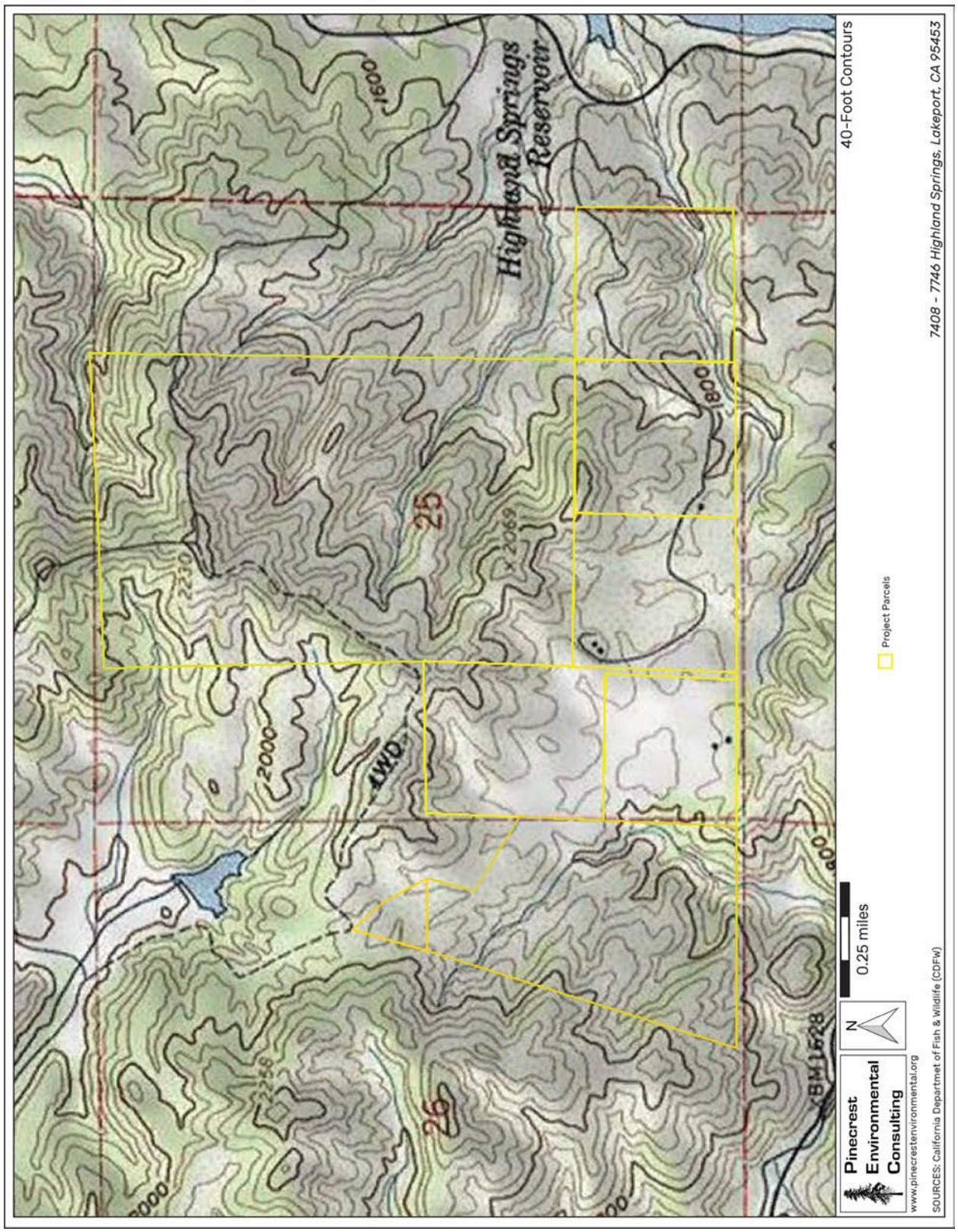

FIGURE 3: PARCELS OVERVIEW MAP

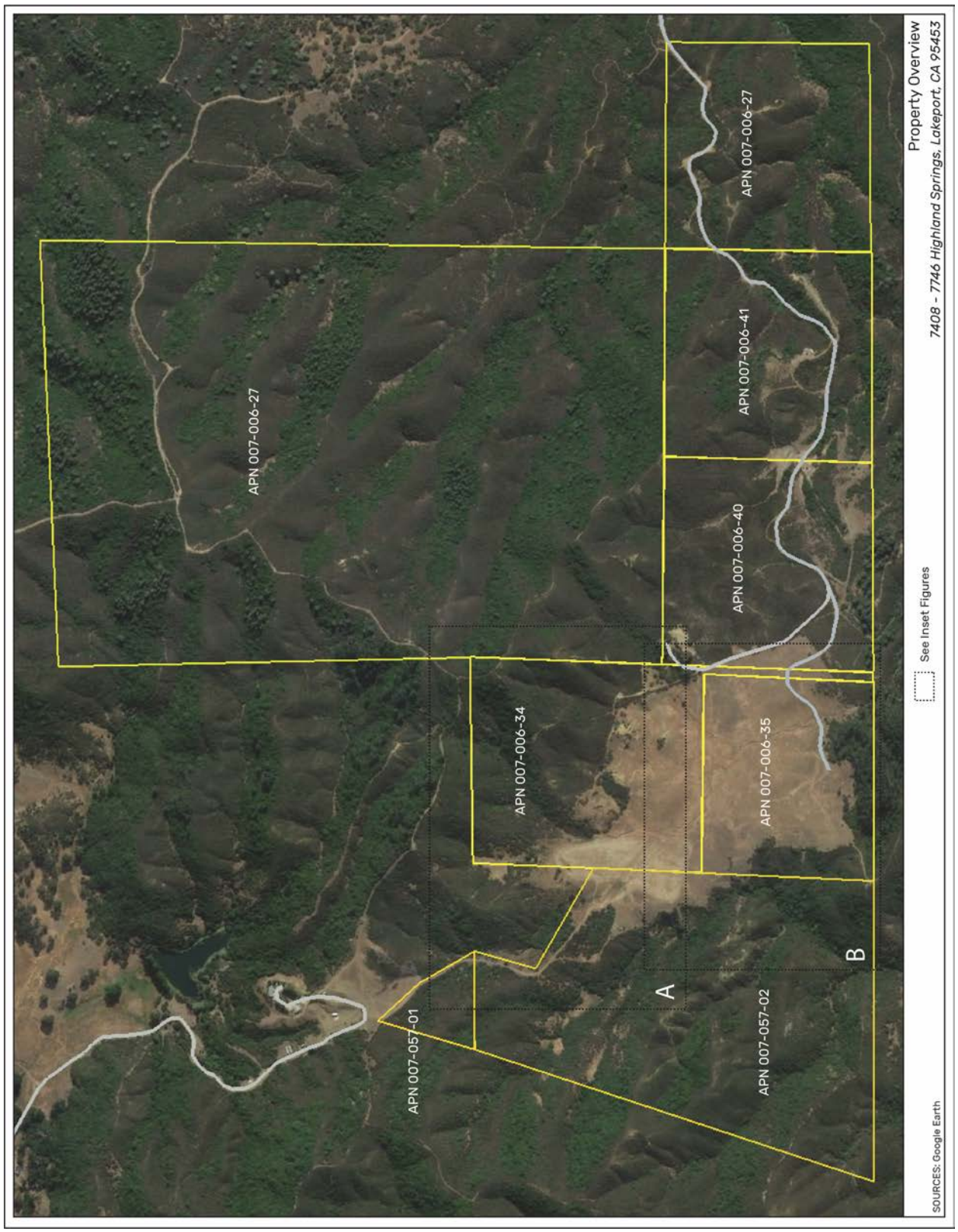

FIGURE 4: WATERCOURSES - A

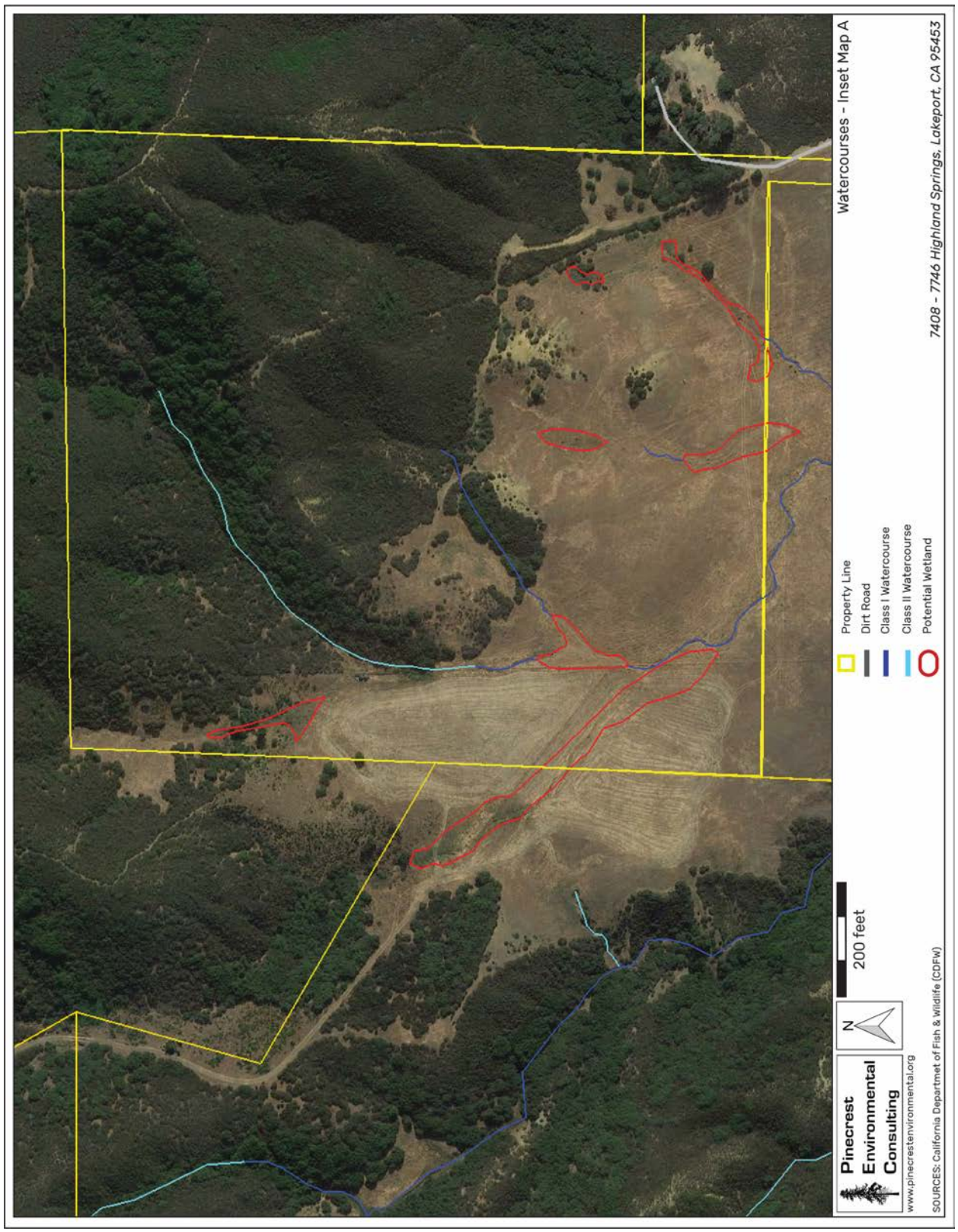

FIGURE 5: WATERCOURSES - B

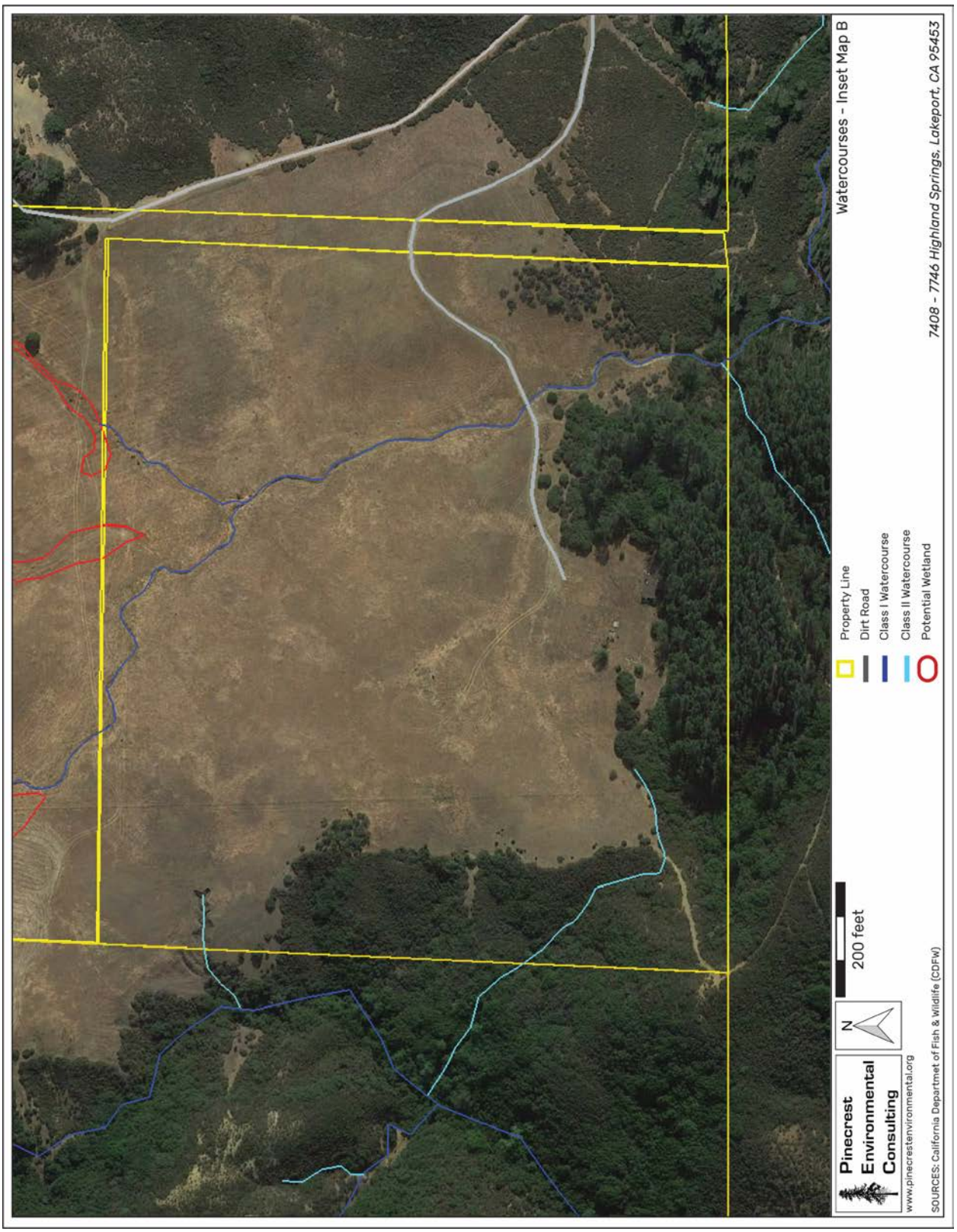

FIGURE 6: PHOTOGRAPH OF ACCESS ROAD

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 7: PHOTOGRAPH OF ACCESS GATE

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 8: PHOTOGRAPH OF CULVERT

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 9: PHOTOGRAPH OF CULVERT

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 10: PHOTOGRAPH OF CLASS III WATERCOURSE

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 11: PHOTOGRAPH OF CLASS II WATERCOURSE

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 12: PHOTOGRAPH OF GRASSLAND

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 13: PHOTOGRAPH OF GRASSLAND

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 14: PHOTOGRAPH OF WATER STORAGE

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 15: PHOTOGRAPH OF WELLHOUSE

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

APN 007-006-34
7408 Highland Springs Rd., Kelseyville, CA 95453

FIGURE 16: PHOTOGRAPH OF POTENTIAL WETLAND

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

SOURCES: PEC Inc.

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7408 Highland Springs Rd., Kelseyville, CA 95453

APPENDIX A: SPECIAL-STATUS SPECIES CONSIDERED

The following is a list of special-status plant and animal species generated based on knowledge of the species and habitats of Lake County by PEC staff, from various State and Federal databases, and from the California Natural Diversity Database (CNDDB). Known occurrences within 5 miles of the project site are shown in bold.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
PLANTS			
Adobe lily (*Fritillaria pluriflora*)	—/—/1B.2	Valley grasslands, foothill woodland	Low: Some grassland habitat exists onsite.
Anthony peak lupine (*Lupinus antoninus*)	—/—/1B.2	Montane forest	None: No suitable montane habitat exists onsite.
Baker's manzanita (*Arctostaphylos bakeri* ssp. *bakeri*)	—/—/1B.1	Serpentine chaparral	None: No serpentine habitat exists onsite.
Baker's meadowfoam (*Limnanthes bakeri*)	—/ST/1B.1	Vernal pools, wet meadows	Very Low: Some suitable wetland habitat exists onsite.
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	—/—/1B.1	Vernal pools, wet meadows	Low: Some wet meadow habitat exists onsite.
Beaked tracyina (*Tracyina rostrata*)	—/—/1B.2	Valley grassland, foothill woodland	Low: Some grassland habitat exists onsite.
Bent flowered fiddleneck (*Amsinckia lunaris*)	**—/—/1B.2**	**Valley grassland, foothill woodland**	**High: Some suitable grassland habitat exists onsite. Nearest known occurrence is 0.8 miles S of the parcel near Highland Creek.**
Big scale balsamroot (*Balsamorhiza macrolepis*)	—/—/1B.2	Valley grassland, foothill woodland	Low: Some grassland habitat exists onsite.
Bogg's Lake hedge-hyssop (*Gratiola heterosepala*)	**—/—/1B.2**	**Vernal pools, lake margins**	**Low: No suitable vernal pool habitat exists onsite. Nearest known occurrence is 4.7 miles NE of the parcel near Kelsey Creek.**
Bolander's horkelia (*Horkelia bolanderi*)	**—/—/1B.2**	**Yellow pine forest, grassland**	**High: Some suitable forest habitat exists onsite. Nearest known**

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
			occurrence is 0.8 miles S of the parcel near Highland Creek.
Brandegee's eriastrum (*Eriastrum brandegeeae*)	**—/—/1B.1**	**Clearings in chaparral**	**High: Some suitable chaparral habitat exists onsite. Nearest known occurrence is 3.9 miles NE of the parcel near Hill Creek.**
Bristly sedge (*Carex comosa*)	—/—/2B.1	Freshwater marsh, riparian	Very Low: No suitable marsh habitat exists onsite.
Brownish beaked-rush (*Rhynchospora capitellata*)	—/—/2B.2	Freshwater marsh, riparian	Low: Some suitable wet meadow habitat exists onsite.
Burke's goldfields (*Lasthenia burkei*)	FE/SE/1B.1	Vernal pools, wet meadows	Medium: Some wet meadow habitat exists onsite.
California alkalai grass (*Puccinellia simplex*)	—/—/1B.2	Alkalai sink	None: No alkalai wetland habitat exists onsite.
California satintail (*Imperata brevifolia*)	—/—/2B.1	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Calistoga ceanothus (*Ceanothus divergens*)	—/—/1B.2	Chaparral	Low: Some chaparral habitat exists onsite.
Cascade downingia (*Downingia willamettensis*)	—/—/2B.2	Vernal pool, wet meadow	Low: Some wet meadow habitat exists onsite.
Clara Hunt's milk vetch (*Astragalus claranus*)	—/—/1B.1	Serpentine grassland	Very Low: No serpentine habitat exists onsite.
Cobb Mountain lupine (*Lupinus sericatus*)	—/—/1B.2	Chaparral, pine forest	Low: Some chaparral habitat exists onsite.
Colusa layia (*Layia septentrionalis*)	**—/—/1B.2**	**Chaparral, valley grassland**	**High: Some suitable grassland habitat exists onsite. Nearest known occurrence is 1.4 miles E of the parcel near Highland Creek.**
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*)	—/—/1B.2	Grassland, coastal scrub	Low: Some grassland habitat exists onsite.
Deep scarred cryptantha (*Cryptantha excavata*)	—/—/1B.1	Foothill woodland	Low: Some grassland habitat exists onsite.
Dimorphic snapdragon (*Antirrhinum subcordatum*)	**—/—/4.3**	**Serpentine chaparral**	**Low: No serpentine habitat exists onsite. Nearest known occurrence is**

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
			0.8 miles S of the parcel near Highland Creek.
Drymaria-like western flax (*Hesperolinon drymarioides*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Dwarf downingia (*Downingia pusilla*)	—/—/2B.2	Vernal pools, freshwater wetland	Very Low: No vernal pool habitat exists onsite.
Dwarf soaproot (*Chlorogalum pomeridianum* var. *minus*)	—/—/1B.2	Serpentine chaparral	None: No serpentine chaparral habitat exists onsite.
Early jewelflower (*Streptanthus vernalis*)	—/—/1B.2	Serpentine outcrops	None: No suitable serpentine outcrop habitat exists onsite.
Eel-grass pondweed (*Potamogeton zosteriformis*)	—/—/2B.2	Freshwater lakes, ponds	None: No suitable pond habitat exists onsite.
Few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*)	FE/ST/1B.1	Vernal pools, wet meadows	Low: Some wet meadow habitat exists onsite.
Franciscan onion (*Allium peninsulare* var. *franciscanum*)	—/—/1B.2	Grassland	Very Low: Some grassland habitat exists onsite.
Freed's jewelflower (*Streptanthus brachiatus* ssp. *hoffmanii*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Geysers panicum (*Panicum acuminatum* var. *thermale*)	—/—/1B.2	Riparian, chaparral seeps	Low: Some suitable riparian habitat exists onsite.
Glandular western flax (*Hesperolinon adenophyllum*)	**—/—/1B.2**	**Serpentine chaparral**	**Very Low: No serpentine chaparral habitat exists onsite. Nearest known occurrence is 0.7 miles E of the parcel near Highland Creek.**
Grassleaf water plantain (*Alisma gramineum*)	—/—/2B.2	Wetland, riparian	Very Low: No suitable riparian habitat exists onsite.
Green jewelflower (*Streptanthus hesperidis*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Greene's narrow-leaved daisy (*Erigeron greenei*)	—/—/1B.2	Serpentine grassland	None: No serpentine habitat exists onsite.
Hall's harmonia (*Harmonia hallii*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Hoffman's bristly jewelflower (*Streptanthus glandulosus* spp. *hoffmanii*)	—/—/1B.3	Serpentine outcrops	Very Low: No serpentine outcrop habitat exists onsite.
Holly-leaved ceanothus (*Ceanothus purpureus*)	—/—/1B.2	Chaparral	Very Low: Some suitable chaparral habitat exists onsite.
Indian Valley brodiaea (*Brodiaea rosea*)	—/SE/3.1	Grassland, foothill woodland	Very Low: Some grassland habitat exists onsite.
Jepson's coyote thistle (*Eryngium jepsonii*)	—/—/4.2	Wetlands, vernal pools	Low: Some wet meadow habitat exists onsite.
Jepson's dodder (*Cuscuta jepsonii*)	—/—/1B.2	Coniferous forest, woodland	Low: No suitable forest habitat exists onsite.
Jepson's leptosiphon (*Leptosiphon jepsonii*)	—/—/1B.2	Woodland	Very Low: Some woodland habitat exists onsite.
Jepson's milk-vetch (*Astragalus rattanii* var. *jepsonianus*)	—/—/1B.2	Serpentine grassland	Very Low: No serpentine grassland habitat exists onsite.
Keck's checkerbloom (*Sidalcea keckii*)	FE/—/1B.1	Serpentine grassland	Very Low: No serpentine grassland habitat exists onsite.
Kenwood marsh checkerbloom (*Sidalcea oregana* ssp. *valida*)	FE/SE/1B.1	Freshwater wetlands	Very Low: Some wetland habitat exists onsite.
Konocti manzanita (*Arctostaphylos manzanita* ssp. *elegans*)	**—/—/1B.3**	**Chaparral, foothill woodland**	**High: Some suitable chaparral habitat exists onsite. Nearest known occurrence is 0.3 miles E of the parcel near Highland Springs Recreation Area.**
Kruckeberg's jewelflower (*Streptanthus morrisonii* ssp. *kruckebergii*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Lake County stonecrop (*Sedella leiocarpa*)	FE/SE/1B.1	Vernal pools, wet meadows	Low: Some wet meadow habitat exists onsite.
Lake County western flax (*Hesperolinon didymocarpum*)	—/SE/1B.2	Serpentine grasslands	None: No suitable serpentine habitat exists onsite.
Lake Pillsbury checkerbloom (*Sidalcea hickmanii* spp. *pillsburiensis*)	—/—/1B.2	Chaparral	Very Low: Some chaparral habitat exists onsite.
Legenere (*Legenere limosa*)	—/—/1B.1	Vernal pools	Low: Some wet meadow habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Loch Lomond button-celery (*Eryngium constancei*)	FE/SE/1B.1	Vernal pool, freshwater wetland	Low: Some wet meadow habitat exists onsite.
Many-flowered navarretia (*Navarretia leucocephala* spp. *plieantha*)	FE/SE/1B.2	Vernal pools	Low: Some wet meadow habitat exists onsite.
Marsh checkerbloom (*Sidalcea oregana* ssp. *hydrophila*)	**—/—/1B.2**	**Forest, riparian**	**Low: Some suitable habitat exists onsite. Nearest known occurrence is 3.0 miles NE of the parcel near Adobe Creek.**
Mayacamas popcornflower (*Plagiobothrys lithocaryus*)	—/—/A1	Foothill woodland, valley grassland	Very Low: Presumed extinct. Last observed in 1884 near present-day Lakeport.
Milo Baker's lupine (*Lupinus milo-bakeri*)	—/ST/1B.1	Foothill woodland, disturbances	Very Low: No suitable woodland habitat exists onsite.
Morrison's jewelflower (*Streptanthus morrisonii* ssp. *morrisonii*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Mt. St. Helena morning-glory (*Calystegia collina* ssp. *oxyphylla*)	—/—/4.2	Serpentine chaparral	None: No serpentine habitat exists onsite.
Napa bluecurls (*Trichostema ruygtii*)	**—/—/1B.2**	**Chaparral, woodland**	**Medium: Some grassland habitat exists onsite. Nearest known occurrence is 3.0 miles NE of the parcel near Adobe Creek.**
Napa checkerbloom (*Sidalcea hickmanii* ssp. *napensis*)	—/—/1B.1	Chaparral, rock outcrops	Very Low: Some chaparral habitat exists onsite.
Napa false indigo (*Amorpha californica* var. *napensis*)	—/—/1B.2	Forest, woodland	Low: Some woodland habitat exists onsite.
Narrow-anthered brodiaea (*Brodiaea leptandra*)	—/—/1B.2	Foothill woodland, grassland	Very Low: Some grassland habitat exists onsite.
North Coast semaphore grass (*Pleuropogon hooverianus*)	—/ST/1B.1	Wet meadows, vernal pools	Low: Some suitable wet meadow habitat exists onsite.
Northern California black walnut (*Juglans hindsii*)	—/—/1B.1	Riparian	Low: No suitable riparian habitat exists onsite.
Northern meadow sedge (*Carex praticola*)	—/—/2B.2	Freshwater wetlands	Low: Some suitable wet meadow habitat exists onsite.
Nuttall's ribbon-leaved pondweed (*Potamogeton epihydrus*)	—/—/2B.2	Ponds and lakes	None: No suitable pond habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Oregon polemonium (*Polemonium carneum*)	—/—/2B.2	Coastal scrub, yellow pine forest	None: No suitable habitat exists onsite.
Oval-leaved viburnum (*Viburnum ellipticum*)	—/—/2B.3	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	—/—/1B.2	Grassland, wetland	Medium: Some grassland habitat exists onsite.
Pennell's bird's beak (*Cordylanthus tenuis* ssp. *capillaris*)	FE/SR/1B.2	Serpentine chaparral	Very Low: No serpentine chaparral habitat exists onsite.
Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*)	—/—/1B.2	Grassland, chaparral	Low: Some grassland habitat exists onsite.
Pink creamsacs (*Castilleja rubicundula* var. *rubicundula*)	—/—/1B.2	Grasslands	Low: Some grassland habitat exists onsite.
Porter's navarretia (*Navarretia paradoxinota*)	—/—/1B.3	Grasslands, wetlands	Low: Some grassland habitat exists onsite.
Raiche's manzanita (*Arctostaphylos stanfordiana* ssp. *raichei*)	**—/—/1B.1**	**Serpentine chaparral**	**Medium: No serpentine chaparral habitat exists onsite. Nearest known occurrence is 4.7 miles SE of the parcel near Hoil Creek.**
Rincon Ridge ceanothus (*Ceanothus confusus*)	—/—/1B.1	Chaparral, foothill grassland	Low: Some suitable chaparral habitat exists onsite.
Rincon Ridge manzanita (*Arctostaphylos stanfordiana* ssp. *decumbens*)	—/—/1B.1	Chaparral	Very Low: Some suitable chaparral habitat exists onsite.
Round-leaved filaree (*California macrophylla*)	—/—/1B.2	Foothill grassland	Low: Some grassland habitat exists onsite.
Saline clover (*Trifolium hydrophilum*)	—/—/1B.2	Wetland, riparian	Low: Some suitable wetland habitat exists onsite.
San Joaquin spearscale (*Extriplex joaquinana*)	—/—/1B.2	Shadscale scrub, valley grassland	None: No alkalai scrub habitat exists.
Santa Rosa horkelia (*Horkelia tenuiloba*)	—/—/1B.2	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Sebastopol meadowfoam (*Limnanthes vinculans*)	FE/SE/1B.1	Freshwater wetland, vernal pools	Very Low: No suitable vernal pool habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Serpentine cryptantha (*Cryptantha dissita*)	**—/—/1B.2**	**Serpentine chaparral**	**Medium: No serpentine habitat exists onsite. Nearest known occurrence is 0.6 miles SW of the parcel near Highland Creek.**
Serpentine daisy (*Erigeron serpentinus*)	—/—/1B.3	Serpentine chaparral	Very Low: Some chaparral habitat exists onsite.
Sharsmith's western flax (*Hesperolinon sharsmithiae*)	—/—/1B.2	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)	—/—/1B.2	Vernal pools	Very Low: Some wet meadow habitat exists onsite.
Slender Orcutt grass (*Orcuttia tenuis*)	FT/SE/1B.1	Grassland, freshwater wetlands	Very Low: Some suitable wet meadow habitat exists onsite.
Small-flowered calycadenia (*Calycadenia micrantha*)	**—/—/1B.2**	**Foothill woodland**	**Medium: Some suitable grassland habitat onsite. Nearest known occurrence is 3.5 miles N of the parcel near Manning Creek.**
Small groundcone (*Kopsiopsis hookeri*)	—/—/2B.3	Redwood forest	None: No suitable forest habitat exists onsite.
Small pincushion navarretia (*Navarretia meyersii* ssp. *deminuta*)	—/—/1B.1	Wetlands	Very Low: Some suitable wetland habitat exists onsite.
Snow Mountain buckwheat (*Eriogonum nervulosum*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.
Socrates Mine jewelflower (*Streptanthus brachiatus* ssp. *brachiatus*)	—/—/1B.2	Serpentine outcrops	None: No serpentine habitat exists onsite.
Sonoma beardtongue (*Penstemon newberryi* var. *sonomensis*)	—/—/1B.3	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Sonoma ceanothus (*Ceanothus sonomensis*)	—/—/1B.2	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Thin-lobed horkelia (*Horkelia tenuiloba*)	—/—/1B.2	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Three-fingered morning glory (*Calystegia collina* ssp. *tridactylosa*)	—/—/1B.2	Serpentine grassland	Very Low: No serpentine habitat exists onsite.
Three Peaks jewelflower (*Streptanthus morrisonii* spp. *elatus*)	—/—/1B.2	Serpentine outcrops	None: No serpentine outcrop habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Tracy's eriastrum (*Eriastrum tracyi*)	—/SR/3.2	Chaparral, woodland	Low: Some suitable chaparral habitat exists onsite.
Two-carpellate Western flax (*Hesperolinon bicarpellatum*)	—/—/1B.2	Serpentine chaparral	Very Low: No serpentine chaparral habitat exists onsite.
Vine Hill ceanothus (*Ceanothus foliosus* var. *vineatus*)	—/—/1B.1	Chaparral	Low: Some suitable chaparral habitat exists onsite.
Vine Hill manzanita (*Arctostaphylos densiflora*)	—/SE/1B.1	Chaparral	Very Low: Some suitable chaparral habitat exists onsite.
Watershield (*Brasenia schreberi*)	—/—/2B.3	Pond, wetland	None: No suitable pond habitat exists in the project area.
White beaked-rush (*Rhynchospora alba*)	—/—/2B.2	Wetlands, freshwater marsh	Very Low: Some suitable wetland habitat exists onsite.
White-flowered rein orchid (*Piperia candida*)	—/—/1B.2	Yellow pine forest	None: No suitable forest habitat exists onsite.
Wolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*)	—/—/4.2	Vernal pools, wet meadows	Low: Some wet meadow habitat exists onsite.
MOSSES, LICHENS & LIVERWORTS			
Angel's hair lichen (*Ramalina thrausta*)	—/—/2B.1	Old growth conifer and hardwood forests	Very Low: No suitable forest habitat exists onsite.
Coastal triquetrella (*Triquetrella californica*)	—/—/1B.2	Forest, woodland	Low: Some woodland habitat exists onsite.
Elongate copper moss (*Mielichhoferia elongata*)	—/—/4.3	Rocky substrates, riparian	Very Low: No riparian habitat exists onsite.
Methuselah's beard lichen (*Dolichousnea longissima*)	—/—/4.2	Old growth conifer and hardwood forests	None: No suitable forest habitat exists onsite.
Slender silver moss (*Anomobryum julaceum*)	—/—/4.2	Rocky substrates in forests, riparian	Very Low: No suitable riparian habitat exists onsite.
Torren's grimmia (*Grimmia torenii*)	—/—/1B.3	Rocky substrates	Very Low: Some suitable habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
FISH			
Chinook Salmon Coastal California DPS (*Oncorhynchus kisutch*)	FT/SE/—	Freshwater streams, open ocean and estuaries	None: No suitable streams exist onsite.
Clear Lake Drainage Resident Rainbow trout (*Oncorhynchus mykiss*)	FE/SE/—	Freshwater streams, open ocean and estuaries	None: No suitable habitat exists in the project area.
Clear Lake hitch (*Lavinia exilicauda chi*)	**FE/SE/—**	**Freshwater lakes and streams**	**None: No suitable habitat exists in the project area. Nearest known occurrence is 2.2 miles NE of the parcel near Adobe Creek.**
Clear Lake tule perch (*Hysterocarpus traskii lagunae*)	—/SSC/—	Freshwater lakes and streams	None: No suitable habitat exists in the project area.
Coho Salmon Central California Coast ESU (*Oncorhynchus kisutch*)	FE/SE/—	Freshwater streams, open ocean and estuaries	None: No suitable streams exist onsite.
Sacramento perch (*Archoplites interruptus*)	—/SSC/—	Low gradient sloughs and lakes	None: No suitable habitat exists in the project area.
Sacramento splittail (*Pogonichthys macrolepidotus*)	—/SSC/—	Low gradient freshwater streams	None: No suitable streams exist onsite.
Steelhead Central California Coast DPS (*Oncorhynchus mykiss irideus*)	FT/—/—	Freshwater streams, open ocean and estuaries	None: No suitable streams exist onsite.
Steelhead Northern California DPS (*Oncorhynchus mykiss irideus*)	FT/—/—	Freshwater streams, open ocean and estuaries	None: No suitable streams exist onsite.
AMPHIBIANS & REPTILES			
California giant salamander (*Dicamptodon ensatus*)	—/SSC/—	Wetlands and riparian areas	Very Low: Some suitable wetland habitat exists onsite.
Foothill yellow-legged frog (*Rana boylii*)	**—/SSC/—**	**Wetlands, riparian, streams and ponds**	**Low: No suitable breeding habitat onsite. Some marginal estivation habitat onsite. Nearest known occurrence is 0.7 miles SW of the parcel near Highland Creek.**
Red bellied newt (*Taricha rivularis*)	**—/SSC/—**	**Woodland streams, riparian corridors**	**Low: No suitable stream habitat exists onsite. Nearest known occurrence is**

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
			0.5 miles SW of the parcel near Highland Creek.
Western pond turtle (*Emys marmorata*)	**—/SSC/—**	**Slow-moving creeks, streams, ponds, rivers, ditches.**	**None: No suitable pond habitat exists onsite. Nearest known occurrence is 0.7 miles SW of the parcel near Highland Creek.**
INVERTEBRATES			
Behren's silverspot butterfly (*Speyeria zerene behrensii*)	FE/SSC/—	Coastal prairie	None: Requires blue violet to reproduce; none onsite.
Blennosperma vernal pool andrenid bee (*Andrena blennospermatis*)	—/SSC/—	Upland areas near vernal pools	Low: Some wet meadow habitat exists onsite.
Borax Lake cuckoo wasp (*Hedychridium milleri*)	—/SSC/—	Lakes and streams	None: No suitable lake or stream habitat exists onsite.
Brownish dubiraphian riffle beetle (*Dubiraphia brunnescens*)	—/SSC/—	Freshwater lakes and streams	None: No suitable stream habitat exists onsite.
California brackishwater snail (*Tryonia imitator*)	—/SSC/—	Brackish wetlands	Very Low: Some suitable wetland habitat exists onsite.
California floater (*Anodonta californiensis*)	—/SSC/—	Freshwater ponds, streams	None: No suitable stream habitat exists onsite.
California freshwater shrimp (*Syncaris pacifica*)	FE/SE/—	Freshwater ponds	None: No suitable pond habitat exists onsite.
California linderiella (*Linderiella occidentalis*)	—/SSC/—	Vernal pools	None: No vernal pool habitat exists onsite.
Clear Lake pyrg (*Pyrgulopsis ventricosa*)	—/SSC/—	Freshwater streams	None: No suitable stream habitat exists onsite.
Crotch bumble bee (*Bombus crotchii*)	—/SSC/—	Grassland, chaparral	Medium: Some grassland habitat exists onsite.
Leech's skyline diving beetle (*Hydroporus leechi*)	—/SSC/—	Freshwater ponds	None: No suitable pond habitat exists onsite.
Myrtle silverspot butterfly (*Speyeria zerene myrtleae*)	FE/SSC/—	Coastal prairie, chaparral	None: Requires western dog violet for reproduction; none onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Monarch butterfly California overwintering Population #1 (*Danaus plexippus*)	—/SSC/—	Large trees required for roosting.	Low: Some suitable trees for roosting onsite.
Obscure bumble bee (*Bombus caliginosus*)	—/SSC/—	Grassland, foothill woodland, chaparral	Medium: Some grassland habitat exists onsite.
Opler's longhorn moth (*Adela oplerella*)	—/SSC/—	Usually associated with *Platystemon* (creamcups)	Low: Some suitable grassland habitat onsite.
Oregon floater (*Anodonta oregonensis*)	—/SSC/—	Large freshwater streams	None: No suitable stream habitat exists onsite.
Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)	—/SSC/—	Freshwater lakes and ponds	None: No suitable pond habitat exists onsite.
Serpentine cypress wood-boring beetle (*Trachykele hartmani*)	—/SSC/—	Requires cypress trees in serpentine outcrops	None: No suitable host plants known from the project site.
Sonoma zerene fritillary (*Speyeria zerene sonomensis*)	—/SSC/—	Grasslands and meadows with *Viola* plants	None: Requires *Viola* for reproduction; none onsite.
Unnamed isopod (*Calasellus californicus*)	**—/SSC/—**	**Freshwater wetlands**	**Medium: Some suitable wetland habitat exists onsite. Nearest known occurrence is 4.7 miles NE of the parcel near Big Valley.**
Western bumblebee (*Bombus occidentalis*)	—/SSC/—	Grassland	Medium: Some grassland habitat exists onsite.
Wilbur Springs minute moss beetle (*Ochthebius recticulus*)	—/SSC/—	Shorelines of hot springs	None: No suitable hot spring habitat exists onsite.
Wilbur Springs shorebug (*Saldula usingeri*)	—/SSC/—	Ponds	None: No suitable pond habitat exists onsite.
Wilbur Springs shore fly (*Paracoenia calida*)	—/SSC/—	Hot sulphur springs	None: No suitable hot spring habitat exists onsite.
BIRDS			
American perigrine falcon (*Falco peregrinus anatum*)	—/SSC/—	Forages in open grasslands, nests in trees	Low: Some suitable nesting and foraging habitat exists.
Bank swallow (*Riparia riparia*)	FE/SE/—	Typically found near lakes and streams	None: No suitable stream habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Bald eagle (*Haliaeetus leucocephalus*)	—/SSC/—	Forages over open lakes and streams	Very Low: No suitable foraging or nesting habitat exists onsite.
Bell's sage sparrow (*Artemisiospiza belli belli*)	**—/SSC/—**	**Chaparral**	**Medium: Some suitable chaparral habitat exists onsite. Nearest known occurrence is 0.8 miles S of the parcel near Highland Creek.**
Black swift (*Cypseloides niger*)	—/SSC/—	Cliff faces near water	None: No suitable stream habitat exists onsite.
Burrowing owl (*Athene cunicularia*)	—/SSC/—	Grasslands with ground squirrel burrows	Low: Some suitable grassland habitat exists onsite.
California black rail (*Laterallus jamaicensis coturniculus*)	FE/SE/—	Coastal salt marshes and mudflats	None: No suitable salt marsh habitat exists onsite.
California horned lark (*Eremophila alpestris actia*)	—/SSC/—	Herbaceous vegetation, chaparral	Low: Some suitable foraging and nesting habitat exists onsite.
Cooper's hawk (*Accipiter cooperii*)	—/WL/—	Forages over open grassland	Low: Some suitable foraging and nesting habitat exists onsite.
Double-crested cormorant (*Phalacrocorax auritus*)	—/SSC/—	Forages in open water. Nests in trees and cliffs.	None: No suitable foraging or nesting habitat exists onsite.
Ferruginous hawk (*Buteo regalis*)	—/SSC/—	Forages over open grassland. Nests in old-growth trees	Low: Some suitable foraging and nesting habitat exists onsite.
Golden eagle (*Aquila chrysaetos*)	—/SSC/—	Forages over open grassland. Nests in old-growth trees	Medium: Some suitable foraging habitat. Some suitable nesting habitat.
Grasshopper sparrow (*Ammodramus savannarum*)	—/SSC/—	Forages over open grassland	Low: Some suitable foraging and nesting habitat exists onsite.
Great blue heron (*Ardea herodias*)	—/SSC/—	Nests in trees, forages in wetlands and grasslands	Low: Some foraging habitat exists onsite.
Great egret (*Ardea alba*)	—/SSC/—	Nests in trees, forages in wetlands and grasslands	Low: Some foraging habitat exists onsite.
Marbled murrelet (*Brachyramphus marmoratus*)	FT/SE/—	Old growth coniferous forest	None: No suitable old-growth forest habitat exists onsite.
Northern goshawk (*Accipiter gentilis*)	—/SSC/—	Coniferous forest	None: No suitable forest habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Northern spotted owl (*Strix occidentalis*)	FT/ST/—	Nests primarily in old growth forests	Very Low: No suitable nesting habitat onsite. Some marginal foraging habitat onsite.
Osprey (*Pandion haliaetus*)	—/WL/—	Areas with fish	Very Low: No suitable foraging habitat onsite. Some poor quality nesting habitat onsite.
Prairie falcon (*Falco mexicanus*)	—/SSC/—	Forages over grasslands	Medium: Some suitable nesting and foraging habitat exists onsite.
Purple martin (*Progne subis*)	FE/SE/—	Insectivorous, nests in cavities	Low: Some suitable nesting habitat onsite. Some suitable foraging habitat onsite.
Sharp-shinned hawk (*Accipiter striatus*)	—/SSC/—	Forest and woodland	Very Low: Some suitable nesting and foraging habitat exists onsite.
Tricolored blackbird (*Agelaius tricolor*)	**—/SSC/—**	**Forages in grasslands and nests in freshwater marshes**	**Medium: No suitable nesting habitat exists onsite. Some suitable foraging habitat. Nearest known occurrence is 2.0 miles NE of the parcel near Adobe Creek.**
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	—/SE/—	Woodland, riparian	Low: Some suitable nesting and foraging habitat exists onsite.
White-tailed kite (*Elanus leucurus*)	—/CFP/—	Prefers to nest in marshes next to deciduous forests.	Low: Some suitable nesting and foraging habitat exists onsite.
Yellow breasted chat (*Icteria virens*)	—/SSC/—	Dense shrubby growth, grasslands	Low: Some suitable grassland habitat exists onsite.
Yellow rail (*Coturnicops noveboracensis*)	—/SSC/—	Breeds in marshes, forages in wet meadows	None: No suitable marsh habitat exists onsite.
Yellow warbler (*Coturnicops noveboracensis*)	—/SSC/—	Riparian, shrubland, farmland	Low: Some suitable scrub habitat exists onsite.
MAMMALS			
American badger (*Taxidea taxus*)	—/SSC/—	Open grassland habitats with plenty of prey	Low: Some suitable den habitat exists onsite.
Big free-tailed bat (*Nyctinomops macrotis*)	—/SSC/—	Forages over open areas, roots in trees or caves	Low: Some suitable foraging habitat. Few suitable roosts in project area.
Fisher (*Pekania pennanti*)	—/SSC/—	Forages and breeds primarily in forests	Very Low: Some marginally suitable forest habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
Fringed myotis (*Myotis thysanodes*)	—/SSC/—	Roosts in caves or buildings and forages in open habitats	Very Low: Some suitable foraging habitat. Few suitable roosts in project area.
Hoary bat (*Lasiurus cinereus*)	—/SSC/—	Forages over open areas, roots in trees or caves at high altitude	Very Low: Few suitable roosts in the project area. Primarily forages at high altitude.
Humboldt marten (*Martes caurina humboldtensis*)	—/SSC/—	Forages and breeds in forests, typically near streams	None: No suitable den and foraging habitat exists onsite.
Long-eared myotis (*Myotis evotis*)	—/SSC/—	Roosts in caves or buildings and forages in open habitats	Low: Some suitable foraging habitat. Few suitable roosts in project area.
Long-legged myotis (*Myotis volans*)	—/SSC/—	Roosts in caves or buildings and forages in open habitats	Very Low: Some foraging habitat. Few suitable roosts in project area.
North American porcupine (*Erethizon dorsatum*)	—/SSC/—	Require rocky areas or trees for dens, abundant open space for foraging	Very Low: Some suitable foraging and den habitat exists onsite.
Pallid bat (*Antrozous pallidus*)	—/SSC/—	Common in open dry habitats with rocky areas for roosting	Low: Some foraging habitat exists. Few suitable roosts in the project area.
Silver haired bat (*Lasionycteris noctivagans*)	—/SSC/—	Nocturnal, migratory, solitary, roosts in tree cavities	Low: Some suitable trees exist for roosting. Some foraging habitat exists.
Sonoma tree vole (*Arborimus pomo*)	—/SSC/—	Old growth Douglas fir canopies	None: No suitable forest habitat exists onsite.
Townsend's big-eared bat (*Corynorhinus townsendii*)	**—/SSC/—**	**Hibernate in mines or caves, roost in man made structures and caves**	**Low: No man-made structures exist suitable for roosting. Some habitat for foraging. Nearest known occurrence is 4.5 miles NW of the parcel near Coleman Creek.**
Western red bat (*Lasiurus blossevillii*)	—/SSC/—	Forages over open areas, roots in trees or caves	Very Low: Little suitable roosting habitat. Some suitable foraging habitat.
Yuma myotis (*Myotis yumanensis*)	—/SSC/—	Forages over open areas, roots in trees or caves	Very Low: No suitable nesting habitat exists onsite. Some suitable foraging habitat exists onsite.

Taxon	Status[1] Fed/State/CNPS	Habitat	Potential to Occur Within the Project Area
HABITATS			
Coastal & Valley Freshwater Marsh (CVFM)	—	—	None: No marsh habitat exists onsite.
Northern Basalt Flow Vernal Pool (NBFVP)	—	—	None: No basalt flow vernal pool habitat exists onsite.
Northern Hardpan Vernal Pool (NHVP)	—	—	None: No hardpan vernal pool habitat exists onsite.
Northern Vernal Pool (NVP)	—	—	None: No vernal pool habitat exists onsite.
Sycamore Alluvial Woodland (SAW)	—	—	None: No woodland habitat exists onsite.
Valley Needlegrass Grassland (VNG)	—	—	Low: Some grassland habitat exists onsite.
Valley Oak Woodland (VOW)	—	—	None: No valley oaks exist onsite.
Valley Sink Scrub (VSS)	—	—	None: No sink habitat exists onsite.

[1] Status:

Federal
FE = Federally Endangered Species
FT = Federally Threatened Species

State
SE = State Endangered Species
ST = State Threatened Species
SSC = California Species of Special Concern
CFP = California Fully Protected Species

CNPS (applies to plants only)
List 1B = plants considered rare, threatened, or endangered in California and elsewhere
List 2B = plants rare, threatened or endangered in California, but more common elsewhere
List 3 = plant is likely rare but more information is required
List 4 = plants of limited distribution

[2] USFWS

APPENDIX B: SPECIES ENCOUNTERED

This list contains a list of all of the plants and animals observed onsite within the study area during the site visit. Any special-status species (SSS) are denoted in bold with an asterisk.

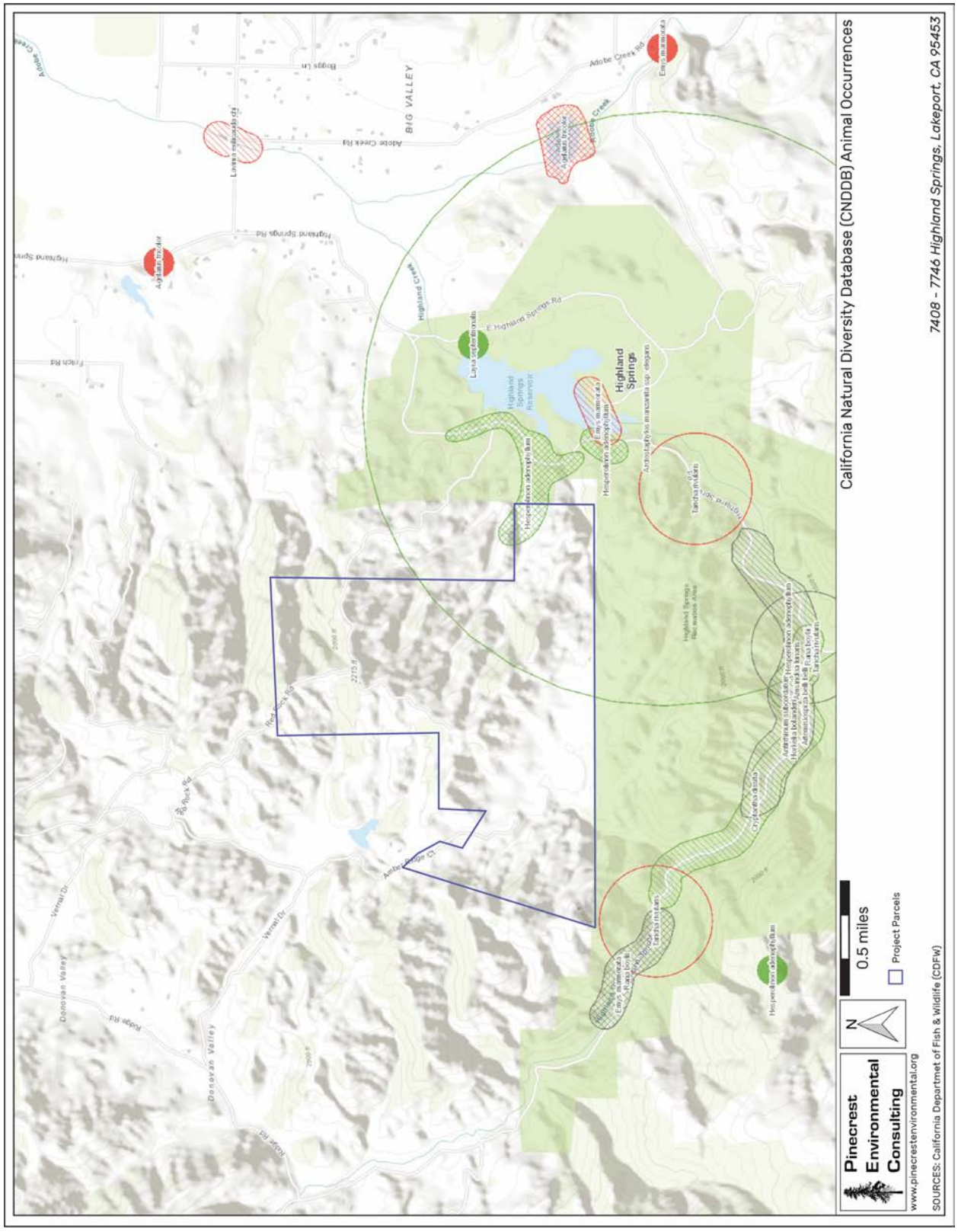
PLANTS
Acer macrophyllum
Achillea millefolium
Achyrachaena mollis
Acmispon americanus
Adenostoma fasciculatum
Aesculus californica
Agoseris heterophylla
Aira caryophyllea
Amsinckia intermedia
Arbutus menziesii
Arctostaphylos manzanita
Arctostaphylos viscida
Artemisia douglasiana
Asclepias eriocarpa
Avena barbata
Baccharis pilularis
Brassica nigra
Brodiaea elegans
Bromus diandrus
Bromus hordeaceous
Bromus tectorum
Calycadenia fremontii
Camissonia contorta
Carduus pycnocephalus
Carex feta
Ceanothus cuneatus
Ceanothus integerrimus
Centaurea solstitialis
Cercis occidentalis
Cercocarpus betuloides
Chenopodium album
Chlorogalum pomeridianum
Cirsium vulgare
Cladophora spp.
Clarkia amoena
Convolvulus arvensis

Croton setiger
Cynoglossum grande
Cynosurus echinatus
Cyperus eragrostis
Daucus carota
Deschampsia danthonioides
Dichelostemma capitata
Elymus caput-medusae
Elymus elymoides
Elymus glaucus
Equisetum arvense
Eriodictyon californicum
Eriogonum nudum
Eriophyllum lanatum
Erodium botrys
Eschscholzia californica
Festuca myuros
Festuca perennis
Fraxinus latifolia
Galium californicum
Geranium molle
Gnaphalium palustre
Grindelia camporum
Helminthotheca echioides
Hemizonia congesta
Hesperolinon spergulinum
Heteromeles arbutifolia
Hordeum murinum
Hypericum perfoliata
Hypochaeris glabra
Juncus occidentalis
Juncus patens
Lepidium nitidum
Lomatium dasycarpum
Lupinus bicolor
Lythrum hyssopifolia
Madia elegans
Madia exigua
Medicago polymorpha
Mentha pulegium
Mimulus guttatus
Monardella odoratissima
Navarretia mellita
Navarretia pubescens
Notholithocarpus densiflorus
Penstemon heterophyllus
Phacelia imbricata
Pickeringia montana
Pinus ponderosa

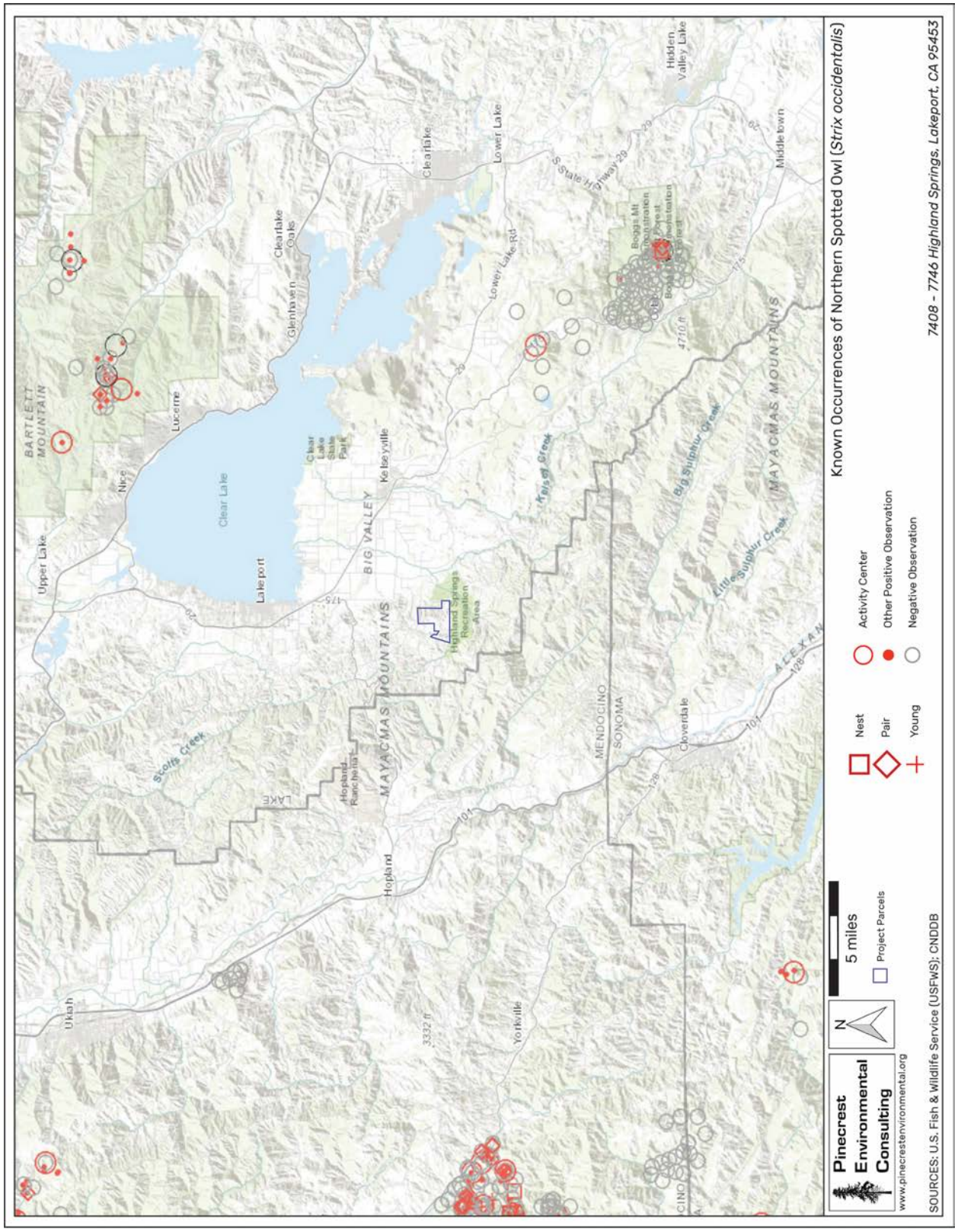
Pinus sabiniana
Plagiobothrys tenellus
Plantago lanceolata
Platystemon californicus
Polypogon monspeliensis
Pteridium aquilinum
Quercus chrysolepis
*Quercus dumosa**
Quercus durata
Quercus kelloggii
Quercus wislizeni
Ranunculus arvensis
Raphanus sativa
Rhamnus ilicifolia
Rumex acetocella
Rumex crispus
Solidago velutina
Sonchus asper
Stachys ajugoides
Stellaria media
Torilis nodosa
Toxicodendron diversilobium
Trichostema laxa
Trifolium hirtum
Umbellularia californica
Verbascum thapsus
Verbena lasiostachys
Vicia sativa
Viola purpurea
Wyethia angustifolia

ANIMALS
Aphelocoma californica
Callipepla californica
Canis latrans
Cathartes aura
Corvus brachyrhynchos
Junco hyemalis
Lepus californicus
Melanerpes formicivorus
Microtus californicus
Neotoma fuscipes
Odocoileus hemionus
Otospermophilus beecheyi
Passerculus sandwichensis
Pituophis catenifer catenifer
Sceloporous occidentalis
Sciurus griseus
Thomomys bottae

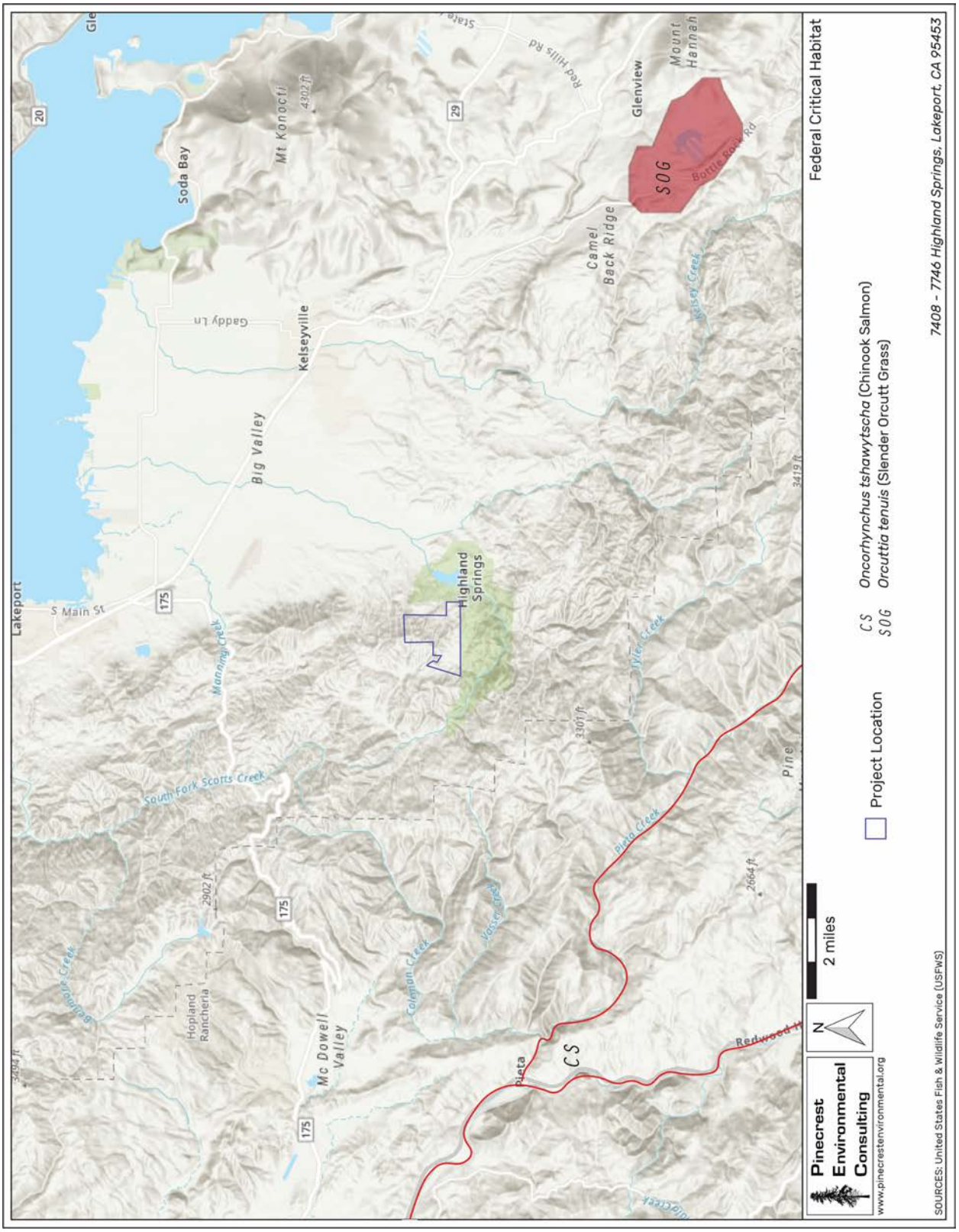
APPENDIX C: CNDDB OCCURRENCES MAP



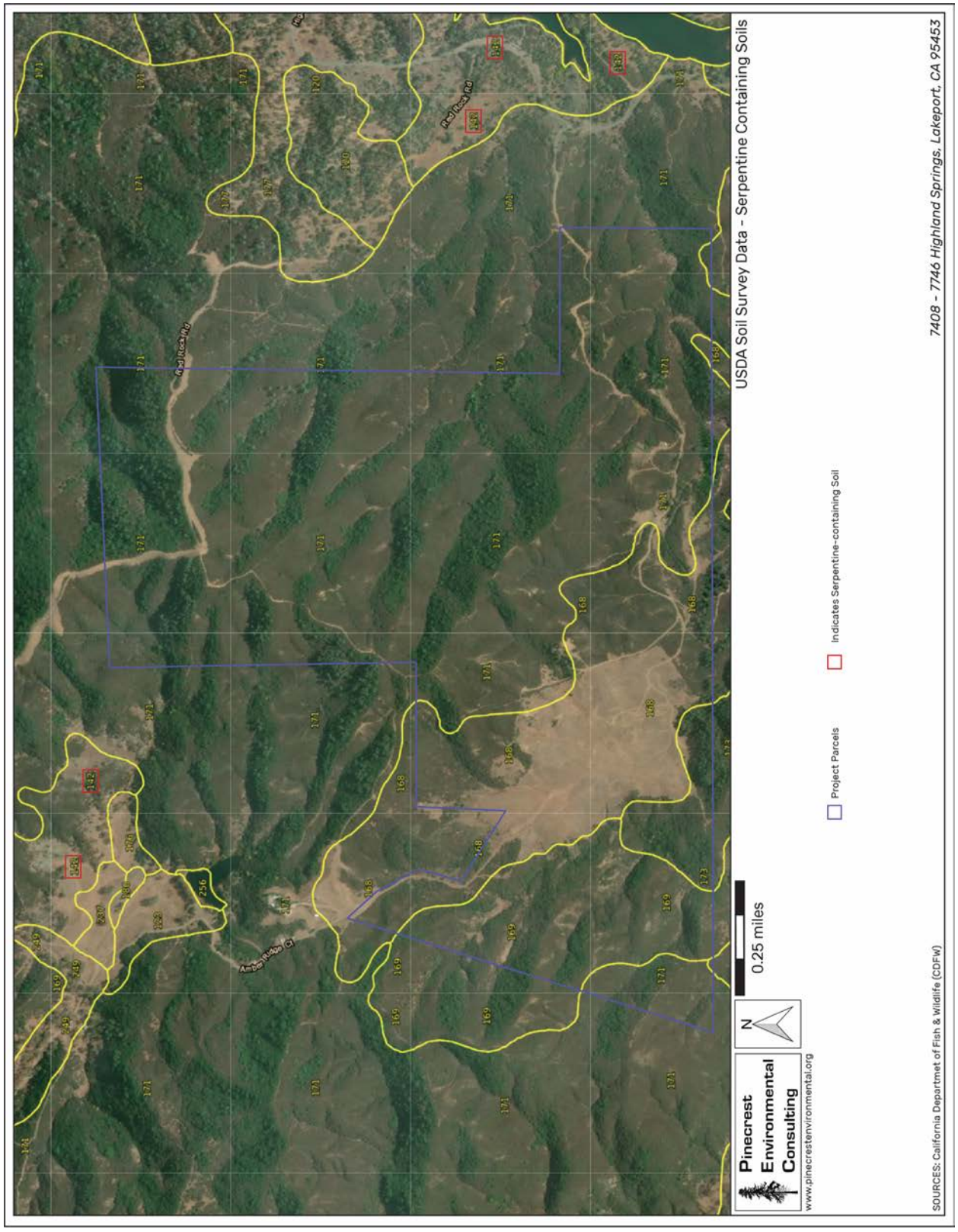
APPENDIX D: NSO OCCURRENCES MAP



APPENDIX E: REGIONAL CRITICAL HABITAT MAP



APPENDIX F: SERPENTINE SOIL MAP



APPENDIX G: CANNABIS CULTIVATION BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are designed to prevent, minimize, and control the discharge of waste and pollutants associated with site operations and maintenance for the aforementioned project. Many of these BMPs are considered enforceable conditions under State Water Resources Control Board *Cannabis* General Order No. WQ 2019-0001-DWQ.

G.1 CANNABIS CULTIVATION

- Pesticide and fertilizer storage facilities shall be located outside of the riparian corridor setbacks for structures.
- Pesticide and fertilizer storage facilities shall not be located within 100 feet of a wellhead, or within 50 feet of identified wetlands.
- Pesticide and fertilizer storage facilities shall be adequate to protect pesticide and fertilizer containers from the weather.
- Store all bags and boxes of pesticides and fertilizers off the ground on pallets or shelves.
- If the structure does not have an impermeable floor, store all liquid pesticides and fertilizers on shelves capable of containing spills or provide appropriate secondary containment.
- Routinely check for leaks and spills.
- Have spill cleanup kit onsite to be able to respond to any leaks or spills.
- Inspect planting stock for pests and diseases prior to planting.
- Avoid planting stock with pests and disease and notify the supplier of the planting stock of the infestation.
- Comply with all pesticide laws and regulations as enforced by the California Department of Pesticide Regulation and County Agricultural Commissioner.
- For pesticides with the signal word CAUTION that have listed food uses, comply with all pesticide label directions as they pertain to personal protective equipment, application method, and rate, environmental hazards, longest reentry intervals and greenhouse and indoor use directions.
- For all other pesticides, use must comply with all label requirements including site and crop restrictions.
- Prior to the use of any registered pesticide on *Cannabis*, Operator Identification Number should be obtained from the County Agricultural Commissioner if required.
- Submit monthly pesticide use reports to the County Agricultural Commissioner if required.
- Prior to applying fertilizers, evaluate irrigation water, soils, growth media, and plant tissue to optimize plant growth and avoid over fertilization.

- Apply fertilizers at label rates and no higher.
- Do not apply fertilizers in a way that will result in runoff that may contaminate ground or surface water or escape via airborne drift or fugitive dust.
- Observe riparian corridor setbacks for agricultural cultivation as applicable. These shall be maintained as "no touch" areas and demarcated with appropriate flagging.
- The removal of vegetation is prohibited within riparian setback areas.
- No equipment, vehicles, or other materials shall be stored in the riparian setback areas.
- Composting areas shall not be located in the riparian setback areas.
- Irrigation must be conducted in a manner that does not result in runoff from the cultivated area.
- Any water tanks or storage facilities must obtain permits from the local City or County planning department where required.
- The use of membrane based water bladders is prohibited.
- If using an irrigation system, inspect for and repair leaks prior to planting each year and continuously during the season.
- Irrigation systems shall be equipped with a backflow prevention devices and shutoff valves.
- Recycle or properly dispose of all plastic bags, containers, and irrigation materials.
- Properly dispose of green waste in a manner that does not discharge pollutants to a watercourse. This may be accomplished by composting, chipping, and/or shredding.
- The method of green waste disposal must be documented.
- Used growth medium (soil and other organic medium) shall be handled to minimize or prevent discharge of soil and residual nutrients and chemicals to watercourses. Proper disposal could include incorporating into garden beds, spreading on a stable surface and re-vegetating, storage in watertight dumpsters, or covering with tarps or plastic sheeting prior to proper disposal.
- The method of disposal of growth medium must be documented.
- Compost piles are to be located outside of riparian setbacks for agricultural cultivation and in a manner that will not discharge pollutants to a watercourse.
- If necessary, construct a berm or install fiber roll around compost area to prevent runoff or use straw wattles around perimeter.
- Cover compost piles with tarp or impermeable surface prior to fall rains and continuously throughout the rainy season.
- Leave a vegetative barrier along the property boundary and interior watercourses to act as a pollutant filter.
- Avoid soil disturbance between November 1 and April 15 and during times of active precipitation.
- All exposed and disturbed soil must be covered with a minimum of 2 inches of mulch, such as straw, bark, wood chips, etc., by November 15. Alternatively, establish a thick cover crop over disturbed areas composed of native species.
- Erosion control materials shall be available on site at all times in the form of straw, mulch, wattles, silt fencing, erosion control fabrics, sand bags, or other materials adequate to cover areas of disturbed soil or incipient erosion events.

- In the event of a forecast storm event likely to produce runoff, apply mulch, wattles, or other erosion prevention measures to the disturbed areas prior to rain event.
- Any grading or drainage conducted as part of site preparation shall have permits from local County or City agencies if required.

G.2 EROSION & SEDIMENT CONTROL

- Erosion control and sediment detention devices and materials shall be incorporated into the cleanup/restoration work design and installed prior to the end of project work and before the beginning of the rainy season or any predicted rain events.
- Any continuing, approved project work conducted after October 15 shall have erosion control measures completed and up-to-date.
- All erosion control measures shall be inspected daily during severe rain events.
- Erosion control materials shall be, at minimum, stored on-site at all times during approved project work between May 1 and October 15.
- Approved project work within the 5-year flood plain shall not begin until all temporary erosion controls (straw bales or silt fences that are effectively keyed-in) are installed downslope of cleanup/restoration activities.
- Native species appropriate to the local habitat shall be used for all revegetation purposes. Non-invasive, non-persistent grass species (e.g., barley grass) may be used for their temporary erosion control benefits to stabilize disturbed slopes and prevent exposure of disturbed soils to rainfall.
- Upon work completion, all exposed soil present in and around the cleanup/restoration sites shall be stabilized within 7 days.
- The disturbed area will be minimized at all times to only that which is essential for the completion of the project.
- Provide temporary cover over disturbed areas that are not currently being worked on.
- Heavy equipment shall not be used in flowing water.
- Use of heavy equipment shall be avoided or minimized in a channel bottom with rocky or cobbled substrate.
- Heavy equipment shall not introduce chemicals or foreign sediment to the channel (e.g., remove mud from tracks or cover channel work area with plastic sheeting prior to heavy equipment entry).
- When heavy equipment is used, any woody debris and stream bank or streambed vegetation disturbed shall be replaced to a pre-project density with native species appropriate to the site.
- When possible, existing ingress or egress points shall be used or work shall be performed remotely from the top of the creek banks.
- Divert runoff away from unprotected slopes or loose soils using a combination of mats, geotextiles, silt fencing, wattling, check dams, sediment basins, vegetated buffers, or rock armor.
- Deploy appropriate erosion control measures such as silt fencing or straw wattles around all temporary exposed piles or soil or surface disturbances.

- All temporary exposed piles or soil or surface disturbances shall have tarping and sand bags or other stabilization materials deployed in order to prevent discharge of sediments in the event of a rain or wind event.
- Geotechnical fabric shall be deployed on all exposed dirt surfaces with a slope of greater than 15% and staked in place during ground disturbing activities, and silt fencing deployed on slopes of greater than 15% where appropriate.
- Sand bags, straw bales, or other devices shall be placed at appropriate locations near and alongside the roadsides and swales in anticipation of large storm events.
- Bioswales and cultivation areas including parking areas shall be maintained free of trash including empty soil and pesticide or fertilizer containers.
- Locations of sediment sources shall be identified during rain events and mitigated where appropriate.
- Protect ditch inlets and outlets from erosion using rock armor.
- Silt fencing shall be installed downstream of rock piles, stockpiles, and temporary soils storage areas.
- Desilting or retention basins shall be installed if the capacity of the natural percolation exceeds the inputs during routine storm events.
- Sediment traps shall be used on all exposed driveway surfaces where natural vegetation is not able to be established.
- Exposed unvegetated surfaces will be graveled where appropriate.
- Rock placed for slope protection shall be the minimum necessary to avoid erosion, and shall be part of a design that provides for native plant revegetation and minimizes bank armoring.
- Soil exposed as a result of project work, soil above rock riprap, and interstitial spaces between rocks shall be revegetated with native vegetation by live planting, seed casting, or hydroseeding prior to the rainy season of the year work is completed.
- Avoidance of earthwork on steep slopes and minimization of cut/fill volumes, combined with proper compaction, shall occur to ensure the area is resilient to issues associated with seismic events and mass wasting. If cracks are observed, or new construction is anticipated, consultation with a qualified professional is recommended.
- Culvert fill slopes shall be constructed at a 2:1 slope or shall be armored with rock.
- If it is necessary to conduct work in or near a live stream, the work space shall be isolated to avoid project activities in flowing water.
- Any spoils associated with site maintenance shall be placed in a stable location where it cannot enter a watercourse.
- Sidecasting shall be minimized and shall be avoided on unstable areas or where it has the potential to enter a watercourse.
- Entrance to the project site shall be maintained in a condition that will prevent tracking or flowing of sediment into the public right-of-way.
- All sediment spilled, dropped, washed, or tracked onto the public right-of-ways shall be removed immediately.
- When necessary, wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-ways.

- When wheel washing is required, it shall be done in an area stabilized with crushed stone that drains into a sediment trap fitted with appropriate erosion control measures.
- To control surface water runoff in and around cultivation areas use fiber rolls or wattling and stake appropriately and perpendicular to the flow path.
- Cover crops should be utilized on all exposed slopes that are not able to be protected by other means.
- Cover crops should be native species as described in the associated biological resources report.
- Rip compacted soils prior to placing spoils to prevent the potential for ponding under the spoils that could result in spoil site failure and subsequent sedimentation.
- Compact and contour stored spoils to mimic the natural slope contours and drainage patterns to reduce the potential for fill saturation and failure.
- Ensure that spoil materials are free of woody debris, and not placed on top of brush, logs or trees.
- Inspect all roads and culverts regularly for blockages.

G.3 WATER USE & POLLUTION

- Ensure that all appropriate water rights permits are filed with the State Water Resources Control Board.
- Notify the California Department of Fish and Wildlife by submitting a Lake and Streambed Alteration (LSA) notification package if the proposed activities involve substantial diversion from or alteration of the bed or bank of a stream or other waterbody.
- Ensure that all water storage features are permitted from the Department of Water Rights if necessary.
- All refueling and pesticide and chemical storage and transfer shall occur greater than 100 feet away from any swales, creeks, or natural areas.
- All refueling and pesticide and chemical storage and transfer shall occur on top of an impermeable metal or other fabric mat that is no less than 2 inches high on all sides and capable of completely containing any spillage.
- Concrete truck and other vehicles shall not be washed out in natural areas or directly onto soil and shall be washed out into a metal or other impermeable basin and disposed of properly such that no water is discharged to the soil.
- All waste shall be kept in plastic drums with tight fitting lids so that water is not able to make contact with the contents and potentially leach to the environment.
- All pesticide sprays shall occur on windless nights for outdoor facilities.
- Chemical or fertilizer wastes shall never be disposed of into swales or creeks and shall be contained inside closed-roof facilities and designated with appropriate labeling until it is possible to dispose of properly.
- Septic leach fields and graywater mulch fields shall be maintained free of large vegetation and not used for aboveground storage that may impact their proper functioning.

- Chemical contamination (fuel, grease, oil, hydraulic fluid, solvents, etc.) of water and soils is prohibited during routine equipment operation and maintenance.
- The use or storage of petroleum-powered equipment shall be accomplished in a manner that prevents the potential release of petroleum materials into waters of the state (Fish and Game Code 5650).
- Schedule excavation and grading activities for dry weather periods.
- Designate a contained area for equipment storage, short-term maintenance, and refueling. Ensure it is located at least 50 feet from waterbodies.
- Inspect vehicles for leaks and repair immediately.
- Clean up leaks, drips and other spills immediately to avoid soil or groundwater contamination.
- Conduct major vehicle maintenance and washing offsite.
- Ensure that all spent fluids including motor oil, radiator coolant, or other fluids and used vehicle batteries are collected, stored, and recycled as hazardous waste offsite.
- Ensure that all construction debris is taken to appropriate landfills and all sediment disposed of in upland areas or offsite, beyond the 100-year floodplain.
- Use dry cleanup methods (e.g., absorbent materials, cat litter, and/or rags) whenever possible. If necessary for dust control, use only a minimal amount of water.
- Sweep up spilled dry materials immediately.
- Separate organic material (e.g., roots, stumps) from the dirt fill and store separately. Place this material in long-term, upland storage sites, as it cannot be used for fill.
- Spoils shall not be placed or stored in locations where soils are wet or unstable, or where slope stability could be adversely affected.
- Do not locate spoil piles in or immediately adjacent to wetlands and watercourses.
- Store spoil piles in a manner (e.g. cover pile with plastic tarps and surround base of pile with straw wattle) or location that would not result in any runoff from the spoil pile ending up in wetlands and watercourses.
- Keep temporary disposal sites out of wetlands, adjacent riparian corridors, and ordinary high water areas as well as high risk zones, such as 100-year floodplain and unstable slopes.
- Conduct operations on a size and scale that considers available water sources and other water use and users in the planning watershed.
- Implement water conservation measures such as rainwater catchment systems, drip irrigation, mulching, or irrigation water recycling where possible.
- Hauled water utilized for irrigation shall be documented via receipt or similar, and show the date, name, and license plate of the water hauler, and the quantity of water purchased.
- If using a water storage tank, do not locate the tank in a flood plain or next to equipment that generates heat. Locate the tank so it is easy to install, access, and maintain.
- Vertical tanks should be installed according to manufacturer's specifications and placed on firm, compacted soil that is free of rocks/sharp objects and capable of bearing the weight of the tank and its maximum contents.
- Install float valves on tanks to prevent them from overflowing.

- Place proper lining or sealing in ponds to prevent water loss.

G.4 ROAD MAINTENANCE & GENERAL CONSTRUCTION

- Always limit work to the appropriate work date windows considering wet weather, migratory bird and other biological and environmental constrains that may be placed on the project.
- Proper design and location of roads and other features is critical to ensuring that a road or other feature be adequately drained and is best accomplished through consultation with a qualified professional.
- Placement of temporary access roads, staging areas, and other facilities shall avoid or minimize disturbance to habitat.
- If inspection identifies surface rills or ruts, then surfacing and drainage likely needs maintenance. Consultation should be made with a licensed professional to design appropriate erosion control strategies.
- Design of roads should allow for sheet flow of water and use water bars and rolling dips to break up slope length.
- Vehicle speed shall be kept to a maximum of 10 mph while onsite to minimize dust generation.
- All unvegetated and unpaved roadways and vehicle turnarounds shall be graveled to a depth of not less than 1" in order to prevent dust and sediment entrainment.
- Applicant will use geotechnical fabric or similar materials on exposed slopes, and distribute weed-free straw mulch wherever possible on exposed surfaces on the perimeter of all graded roads and graveled areas.
- Roads and the berms alongside all roads shall be maintained free of headcuts, gullies, stutter bumps, and other erosion features capable of discharging sediment to adjacent grassland areas.
- Roads will be graveled with clean rock whenever required to prevent dust and sediment erosion during the wet season.
- Whenever possible, road maintenance activities shall be performed from May 1 to October 15.
- Work performed outside of this window should take extra precautions for winter weather erosion control prevention beyond that which is described in this Plan.
- A 48 hour advance forecast for rain shall trigger a temporary cessation of work, and all soils piles will need to be covered and secured with sandbags or other materials.
- Placement of temporary access roads, staging areas, and other facilities shall avoid or minimize disturbance to habitat.
- Whenever feasible, finished grades shall not exceed 1.5:1 side slopes. In circumstances where final grades cannot achieve 1.5:1 slope, additional erosion control or stabilization methods shall be applied as appropriate for the project location.
- Spoils and excavated material not used during project activities shall be removed and placed outside of 100-year floodplains.
- Upon completion of grading, slope protection of all disturbed sites shall be provided prior to the rainy season through a combination of permanent vegetative treatment, mulching, geotextiles, and/or rock, or equivalent.

- Position vehicles and other apparatus so as to not block emergency vehicle access.
- After construction is complete, all storm drain systems and culverts shall be inspected and cleared of accumulated sediment and debris.
- Sediment barriers including wattles and silt fencing should be checked for sediment accumulation following each significant rainfall and sediment removed or the feature replaced as needed.
- Road drainage shall be discharged to a stable location away from a watercourse.
- Use sediment control devices, such as check dams, sand/gravel bag barriers, and other acceptable techniques, when it is neither practical nor environmentally sound to disperse ditch water immediately before the ditch reaches a stream.
- Within areas with potential to discharge to a watercourse (i.e. within riparian areas of at least 200 feet of a stream) road surface drainage shall be filtered through vegetation, slash, or other appropriate material or settled into a depression with an outlet with adequate drainage.

G.5 SWALE & VEGETATION MANAGEMENT

- The work area shall be restored to pre-project work condition or better.
- Any stream bank area left barren of vegetation as a result of cleanup/restoration activities shall be stabilized by seeding, replanting, or other means with native trees, shrubs, and/or grasses appropriate to the site prior to the rainy season in the year work was conducted.
- Ensure that vegetated swales are properly formed, allow moderate velocity water passage without causing sediment entrainment, and are otherwise functioning properly.
- Create and expand vegetated bioswales where necessary, should additional construction or road maintenance be required, in order to maintain flow without scour.
- All bioswales and other drainage features requiring revegetation will be seeded with native vegetation and lawns and hedgerows maintained in good health and watered in dry years.
- Vegetation including grasses shall be mowed as necessary to create fire breaks and to prevent the accumulation of fuels that would be able to sustain a ground fire.
- All vegetation shall be surveyed on foot once a year by staff and new outbreaks of any invasive weeds identified by the California Invasive Plant Council as noxious or invasive to be removed by the owner or qualified landscaping professionals.
- Channels and swales that show evidence of overland flow and scour (e.g. bare of vegetation) shall be seeded with native grasses such as *Stipa pulchra*, *Hordeum brachyantherum*, *Elymus glaucus*, and *Bromus carinatus*, and kept vegetated at all times.
- If shrubs and non-woody riparian vegetation are disturbed, they shall be replaced with similar native species appropriate to the site.
- Disturbance to native shrubs, woody perennials or tree removal on the streambank or in the stream channel shall be avoided or minimized.
- If riparian trees over six inches dbh (diameter at breast height) are to be removed, they shall be replaced by native species appropriate to the site at a 3:1 ratio.
- Where physical constraints in the project area prevent replanting at a 3:1 ratio and canopy cover is sufficient for habitat needs, replanting may occur at a lesser replacement ratio.

- Vegetation planting for slope protection purposes shall be timed to require as little irrigation as possible for ensuring establishment by the commencement of the rainy season.
- The spread or introduction of exotic plant species shall be avoided to the maximum extent possible by avoiding areas with established native vegetation during cleanup/restoration activities, restoring disturbed areas with appropriate native species, and post-project monitoring and control of exotic species.
- Removal of invasive exotic species after construction activities is strongly recommended. Mechanical removal (hand tools, weed whacking, hand pulling) of exotics shall be done in preparation for establishment of native plantings.
- Where permanent soil stabilization is required a locally-appropriate mix of native grass species shall be used such as a mix containing *Nassella pulchra*, *Hordeum brachyantherum*, *Elymus glaucus*, and *Bromus carinatus* or as described in the site's Biological Resources Assessment.
- Entire cultivation site shall be seeded and maintained as a permanent non-tilled cover crop during non-usage times. Straw mulch shall be used where native seeding is not practicable.
- Use mulches (e.g. wood chips or bark) in cultivation areas that do not have ground cover to prevent erosion and minimize evaporative loss.
- Mulch shall be applied at a rate of 4000 lbs / acre and seeding shall be applied to achieve 70% cover in the first year or approximately 200 lbs / acre.
- Annual inspections for the purpose of assessing the survival and growth of revegetated areas and the presence of exposed soil shall be conducted for three years following project work.
- Dischargers and/or their consultant(s) or third party representative(s) shall note the presence of native/non-native vegetation and extent of exposed soil, and take photographs during each inspection.
- Dischargers and/or their consultant(s) or third party representative(s) shall provide the location of each work site, pre- and post-project work photos, diagram of all areas revegetated and the planting methods and plants used, and an assessment of the success of the revegetation program in the annual monitoring report as required under relevant state and local water board regulations.

G.6 IRRIGATION & CULTIVATION MANAGEMENT

- Cultivation-related waste shall be stored in a place where it will not enter a stream.
- Soil bags and other garbage shall be collected, contained, and disposed of at an appropriate facility, including for recycling where available.
- Pots shall be collected and stored where they will not enter a waterway or create a nuisance.
- Plant waste and other compostable materials be stored (or composted, as applicable) at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or groundwaters.
- Imported soil for cultivation purposes shall be minimized. In the event that containers (e.g. grow bags or grow pots) are used for cultivation, reuse of soil shall be maximized to the extent feasible.

- Spent growth medium (i.e. soil and other organic medium) shall be handled to minimize discharge of soil and residual nutrients and chemicals to watercourses. Proper handling of spent soil could include incorporating into garden beds, spreading on a stable surface and revegetation, storage in watertight dumpsters, covering with tarps or plastic sheeting prior to proper disposal.
- Trash containers of sufficient size and number shall be provided and properly serviced to contain the solid waste generated by the project.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Use lined bins or dumpsters to reduce leaking of liquid waste. Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash. Consider using refuse containers that are bear-proof and/or secure from wildlife.
- Refuse shall be removed from the site on a frequency that does not result in nuisance conditions, transported in a manner that they remain contained during transport, and the contents shall be disposed of properly at a proper disposal facility.
- Ensure that human waste disposal systems do not pose a threat to surface or ground water quality or create a nuisance. Onsite treatment systems should follow applicable County ordinances for human waste disposal requirements, consistent with the applicable tier under the State Water Resources Control Board Onsite Waste Treatment System Policy.
- Install buffer strips, bioswales, or vegetation downslope of cultivation areas to filter runoff of chemicals from irrigation.
- Irrigate at rates to avoid or minimize runoff.
- Regularly inspect and repair leaks in mains and laterals, in irrigation connections, or at the ends of drip tape and feeder lines.
- Design irrigation system to include redundancy (i.e., safety valves) in the event that leaks occur, so that waste of water is prevented and minimized.
- Recapture and reuse irrigation runoff (tailwater) where possible, through passive (gravity-fed) or active (pumped) means.
- Construct retention basins for tailwater infiltration; percolation medium may be used to reduce pollutant concentration in infiltrated water. Constructed treatment wetlands may also be effective at reducing nutrient loads in water.
- Ensure that drainage and/or infiltration areas are located away from unstable or potentially unstable features.
- Regularly replace worn, outdated or inefficient irrigation system components and equipment.
- Leave a vegetative barrier along the property boundary and interior watercourses to act as a pollutant filter.
- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Evaluate irrigation water, soils, growth media, and plant tissue to optimize plant growth and avoid over-fertilization.
- All chemicals shall be stored in a manner, method, and location that ensures that there is no threat of discharge to waters of the State.

- Products shall be labeled properly and applied according to the label.
- Use integrated pest management strategies that apply pesticides only to the area of need, only when there is an economic benefit to the grower, and at times when runoff losses are least likely.
- Periodically calibrate pesticide application equipment.
- Use anti-backflow devices on water supply hoses, and other mixing/loading practices designed to reduce the risk of runoff and spills.
- Petroleum products shall be stored with a secondary containment system such as a pan or a tub
- Throughout the rainy season, any temporary containment facility shall have a permanent cover and side-wind protection, or be covered during non-working days and prior to and during rain events.
- Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.
- Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials shall be covered during non-working days and prior to rain events.
- Have proper chemical and fertilizer storage instructions posted at all times in an open and conspicuous location.
- Prepare and keep a spill prevention and cleanup plan onsite when dealing with any hazardous materials.
- Keep ample supply of appropriate spill clean-up material near storage areas.
- Plant cover crops to boost soil fertility, improve soil texture, and protect from storm caused sediment runoff.

G.7 SPECIAL-STATUS SPECIES AVOIDANCE MEASURES

- All employees and contractors including one-time contractors and day-laborers should be distributed cards with visual identifications of all of the aforementioned special-status species, including both male and female, and juvenile and adult forms, and be briefed on all of the following AMMs contained herein. Species cards may be obtained from PEC on request.

- Observation of any of the aforementioned SSS onsite shall result in immediate stoppage of all work and notification of PEC and/or CDFW.

- All animals observed onsite shall be allowed to leave the premises voluntarily without being harassed.

- Vehicle speeds should be limited to 5 mph all year, with 3 mph limit during amphibian breeding and migration season from October 1-June 1, and for breeding bird season from February 1-September 1.

- No loud noises including unmuffled or non-street legal vehicles, heavy machinery, hammering, discharge of firearms, or unmuffled generators are allowed during the breeding and nesting

window to avoid impacts to NSO from February 1-September 1.

- Avoid ground disturbance including trenching, grading, or road scraping to a depth of greater than 10" without first clearing the site from a qualified biologist to avoid disturbing estivating amphibians.

- Access within 100 feet of nesting migratory bird should not be allowed, and a sign should be placed stating there is a sensitive habitat ahead and no entry is permitted.

- All roadways and culverts should be inspected once before major rain events and once after to ensure that all erosion control materials are effective and not discharging sediment to any jurisdictional watercourses.

- All containers and other vessels left outside unattended should be checked before use to ensure that no animals are inside.

- Vessels including buckets should be turned over on their sides to allow animals to escape.

- No holes greater than 6" deep should be left exposed and uncovered to avoid making "pitfall traps" into which animals can enter but cannot escape. If holes such as post holes must be left for more than 24 hours they should be checked daily to ensure no animals are inside.

- Clear areas within 100 feet of any watercourse by a biological monitor prior to disturbing the ground more than 6".

- Only native woody species should be planted wherever revegetation is required such as along the sides of roadcuts and bridge abutments.

- Preconstruction breeding bird surveys for NSO and other migratory birds should be performed if tree removal is to take place.

- No tree or vegetation removal should be conducted during breeding bird season from February 1 to September 1.

- No aerial wires or lines should be permitted that may impede the flight path of nesting birds.

- No upward pointed lights should be permitted during anytime during the year, and ambient outdoor night time lights should be prohibited during the breeding bird period from February 1 to September 1.

- Use of rodenticides should not be used under any circumstances due to the hazard of secondary ingestion by raptors.

APPENDIX H: STREAM CLASSIFICATION CRITERIA

The following stream classification criteria were copied form the California Department of Forestry & Fire Protection *Forest Practice Rules* (CALFIRE 2017) and is widely used by many state and local agencies. Most state and local jurisdictions require setbacks of 50, 100, and 150 feet from Class III, II, and I streams, respectively, although greater setbacks may be required in some jurisdictions.

Watercourse – a natural or artificial channel through which water flows.

- Perennial watercourse (Class I*):
  1. In the absence of diversions, water is flowing for more than nine months during a typical year,
  2. Fish always or seasonally present onsite or includes habitat to sustain fish migration and spawning, and/or
  3. Spring: an area where there is concentrated discharge of ground water that flows at the ground surface. A spring may flow any part of the year. For the purpose of this Policy, a spring does not have a defined bed and banks.
- Intermittent watercourse (Class II*):
  1. In the absence of diversions, water is flowing for three to nine months during a typical year,
  2. Provides aquatic habitat for non-fish aquatic species,
  3. Fish always or seasonally present within 1,000 feet downstream, and/or
  4. Water is flowing less than three months during a typical year and the stream supports riparian vegetation.
- Ephemeral watercourse (Class III*): In the absence of diversion, water is flowing less than three months during a typical year and the stream does not support riparian vegetation or aquatic life. Ephemeral watercourses typically have water flowing for a short duration after precipitation events or snowmelt and show evidence of being capable of sediment transport.
- Other watercourses (Class IV*): Class IV watercourses do not support native aquatic species and are man-made, provide established domestic, agricultural, hydroelectric supply, or other beneficial use.

*Except where more restrictive, stream class designations are equivalent to the Forest Practice Rules Water Course and Lake Protection Zone definitions (California Code of Regulations, title 14, Chapter 4. Forest Practice Rules, Subchapters 4, 5, and 6 Forest District Rules, Article 6 Water Course and Lake Protection).

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M E M O R A N D U M

Date: March 31, 2021

To: Autumn Karcey, Cultivo, Inc.

From: Dr. Christopher T. DiVittorio, Pinecrest Environmental Consulting, Inc.

Subject: Results of early-season special-status plant survey at Lake County APN 007-006-35 & 007-006-34

Dear Autumn Karcey,

This memorandum details the findings of our early-season special status plant survey for the above-referenced property. This memorandum is intended as an addendum to the Biological Assessment (BA) that was previously prepared for the property. On March 15, 2021 the site was visited by PEC botanists Dr. Christopher DiVittorio and Dr. Zoya Akulova, who surveyed the entirety of the project area using methods as specified in the California Department of Fish & Wildlife (CDFW) publication titled *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*, dated March 20, 2018.

This memorandum is intended to be an addendum to the species already described in the original BA. A description of natural habitats, jurisdictional watercourses, potential wetlands, and special-status species known from the vicinity can also be found in the original BA. Provided here is an updated vegetation description and species list of species that were identifiable in the early-spring time period.

Methods

A botanical field survey was conducted starting at 1:00 PM and involved walking the entire project area on foot in parallel lines approximately 15 feet apart, identifying every species that was flowering, and making note of any species that were past flowering or that had not yet flowered.

Below is a generalized vegetation description of the major habitats present in and near the cultivation area. Table 1 contains a list of all herbaceous and woody species observed in the vicinity of the project area that were identifiable at this time. Species that were not identifiable at this time are denoted as such and will be revisited later in the season.

Conclusions

No special-status plants were positively identified in the project area at this time, however the majority of plants were still not flowering and not identifiable, and there is one species of *Erythronium* on the edge of the activity area that may be special-status but was not able to be identified at the time of the survey. Thus, we recommend a follow-up survey in mid-spring to adequately determine the identity of these species. Additionally, the areas noted in red in the original BA, particularly on the north parcel (APN 007-006-34), are confirmed as wetlands since they are currently inundated, however extensive pig disturbance is observed throughout the north parcel including most areas that are shown as potential wetlands in the BA. Pig control should be employed in this area as soon as practicable, they have already severely impacted nearly every wetland on the north parcel, however a protocol-level wetland delineation was not conducted. PEC will prepare memoranda with the results of future studies as they are able to be completed. Site visit is scheduled for late April, however the timing of this visit should be contingent on the timing of plant flowering.

Sincerely,

Christopher DiVittorio, PhD
President, PEC
(510) 881-3039
chris@pinecrestenvironmental.org

Generalized Vegetation of Bartlett Property Proposed Cultivation Area

1. **Non-native grassland** is dominated by medusahead (*Elymus caput-medusae*) and non-native forb big heron bill (*Erodium botrys*). Some native forbs are less abundant, for instance, popcorn flower (*Plagiobothrys* spp.), meadow nemophila (*Nemophila pedunculata*), and others. Hill slopes have some native species, such as lomatium (*Lomatium dasycarpum*), and clarkia (*Clarkia* sp.).

2. **Chaparral** consists of chamise (*Adenostoma fasciculatum*), buckbrush (*Ceanothus cuneatus* var. *cuneatus*), manzanitas (*Arctostaphylos stanfordiana* ssp. *stanfordiana*), and chaparral pea (*Pickeringia montana*).

3. **Drainages** have some wetland vegetation, for instance, such species as meadow foam (*Limnanthes* sp.), rushes (*Juncus patens, J. effusus*), and others.

4. **Coniferous forest** consists mostly of Knobcone pine (*Pinus attenuata*). On the edge of the forest and chaparral herbal native species occur, for instance, erythronium (*Erythronium* sp.) and violets (*Viola* sp.).

Table 1: List of plant species observed onsite during the early-spring plant survey. Plant species that were unable to be identified to species are denoted with "?" or ".sp" and will be revisited at a later date.

Scientific name	**Common name**	**Native**
Acmispon parviflorus	Hill lotus	yes
Adenostoma fasciculatum	Chamise	yes
Adiantum jordanii	Adiantum	yes
Aphanes occidentalis	Western lady's mantle	yes
Arbutus menziesii	Madrone	yes
Arctostaphylos manzanita ssp. *manzanita*	Common manzanita	yes
Arctostaphylos stanfordiana ssp. *stanfordiana*	Stanford manzanita	yes
Athysanus pusillus	Common sandweed	yes
Baccharis pilularis	Coyote brush	yes
Barbarea orthoceras	American wintercress	yes
Calandrinia menziesii	Red maids	yes
Ceanothus cuneatus var. *cuneatus*	Buckbrush	yes
Ceanothus foliosus var. *foliosus*	Wavyleaf ceanothus	yes
Centaurea melitensis	Tocalote	no
Centaurea solstitialis	Yellow star thistle	no
Chlorogalum pomeridianum	Soap plant	yes
Clarkia sp.	Clarkia	yes
Convolvulus arvensis	Bind weed	no
Crassula sp.	Crassula	
Croton setiger	Turkey mullein	yes
Cynosurus echinatus	Dog tail	no
Draba verna	Spring Draba	no
Elymus caput-medusae	Medusa head	no
Elymus glaucus	Blue wildrye	yes
Eriodictyon californicum	Yerba Santa	yes
Eriophyllum lanatum	Common woolly sunflower	yes
Erodium botrys	Big heron bill	no
Erodium cicutarium	Coastal heron's bill	no
Erythronium sp.	Erythronium	yes
Geranium dissectum	Cutleaf geranium	no
Heteromeles arbutifolia	Toyon	yes
Hypericum concinnum.	Gold wire	yes
Juncus effusus	Bog rush	yes
Juncus patens	Common rush	yes
Juncus tenuis	Slender rush	yes
Leontodon saxatilis ssp. *saxatilis*	Hawkbit	no
Lepidium nitidum	Shining peppergrass	yes
Limnanthes sp.	Meadow foam	yes
Lomatium dasycarpum	Hog fennel	yes
Lupinus sp.	Lupine	yes
Mentha pulegium	Pennyroyal	no
Navarretia sp.	Navarretia	yes

Nemophila pedunculata	Meadow nemophila	yes
Pentagramma triangularis	Goldenback fern	yes
Phoradendron leucarpum ssp. *tomentosum*	Mistletoe	yes
Pickeringia montana	Montana chaparral pea	yes
Pinus attenuata	Knobcone pine	yes
Plagiobothrys nothofulvus?	Popcorn flower	yes
Primula hendersonii	Shooting star	yes
Quercus berberidifolia	Inland scrub oak	yes
Quercus chrysolepis	Canyon live oak	yes
Rumex crispus	Curly dock	no
Salix babylonica	Weeping willow	no
Sanicula bipinnatifida	Purple sanicle	yes
Sanicula crassicaulis	Pacific sanicle	yes
Sidalcea sp.	Checkerbloom	yes
Stachys sp.	Hedge nettle	yes
Symphyotrichum sp.	Aster	yes
Umbellularia californica	Bay tree	yes
Viola sp.	Violet	yes

Pinecrest Environmental Consulting

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M E M O R A N D U M

Date: May 23, 2021

To: Autumn Karcey, Cultivo, Inc.

From: Christopher T. DiVittorio, Pinecrest Environmental Consulting, Inc.

Subject: Results of special-status plant survey at Lake County APN 007-006-34 & 007-006-35 (Highland Springs Road)

Dear Autumn Karcey,

This memorandum details the findings of a special-status plant survey for the above-referenced property. This memorandum is intended as an addendum to the site visit performed for the original Biological Assessment (BA) on May 25, 2020, and the previous special-status species survey that was conducted for the property on March 15, 2021.

For this survey, a late-season protocol-level special-status plant survey was performed on May 10, 2021 by PEC botanists Dr. Christopher DiVittorio and Dr. Zoya Akulova, who surveyed the entirety of the project area using methods as specified in the California Department of Fish & Wildlife (CDFW) publication titled *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*, dated March 20, 2018. A description of natural habitats, jurisdictional watercourses, potential wetlands, and special-status species known from the vicinity can also be found in the original BA. Provided here is an updated list of species that were identifiable across all time periods.

Methods

A botanical field survey was conducted by walking the entire project area on foot in parallel lines approximately 15 feet apart, identifying every species that was flowering, and making note of any species that were past flowering or that had not yet flowered. Table 1 contains a list of all herbaceous and woody species observed in the vicinity of the project area that were identifiable at this time and at previous time points. Voucher specimens were taken of any species that required identification in the laboratory. Species that were not identifiable at this time are denoted "spp." and will be revisited later in the season. All terminology follows currently accepted nomenclature as described in *The Jepson Manual* (2012).

Results & Recommendations

All of the plant species identified at the time of the survey are presented in Table 1. No special-status plant species were positively identified in the project area. The only major biological constraint onsite are the watercourses and potential wetlands mapped in the original BA. Due to

the configuration of wetlands and watercourses onsite, we do not believe it is feasible to cultivate on the majority of the north parcel. The configuration of potential wetlands, and the existence of three branches of jurisdictional watercourse appear to preclude access to any potential cultivation areas on the north parcel without having to transit through wetlands or watercourses. Potential wetlands and watercourses shown in the original BA that are in the same hydrological drainage can be assumed to be connected even if they are not shown as such in the original BA, making access to any potential cultivation areas in the north parcel problematic.

In addition, State Water Quality Control Board *Cannabis* General Order requires 100-foot setbacks from wetlands, and it would be difficult to avoid any discharge of sediment into any setback area while grading the top of the two hills on the north parcel due to the small size of these potential cultivation areas. In addition, there is a high diversity of native species on the tops of the hills, most of the native species diversity on the parcel is concentrated in these wetlands and hills.

Our recommendation is to limit cultivation to the south parcel and to restore the wetlands in the north parcel by undertaking pig elimination measures such as trapping or shooting, and restoring the wetlands by revegetating with native species. Extensive, recent pig disturbance to the potential wetlands in both parcels was observed (see figure below), and is concentrated in the wetlands in the north parcel but extends across all the mapped potential wetlands onsite. Our recommendation is to avoid cultivation in or near any potentially jurisdictional wetlands as mapped in the original BA and to develop a restoration strategy for eliminating pig disturbance onsite, and to restore the vegetation in the wetlands. Pig control should be achieved by trapping or shooting and revegetation should use native wetland species from local genotypes.

Please contact us anytime at the number or email address below if you have any questions about this memorandum or other studies we've completed for this or other projects.

Sincerely,

Christopher DiVittorio, PhD
President, PEC
(510) 881-3039
chris@pinecrestenvironmental.org

Table 1: Cumulative list of plant species observed onsite during the plant surveys in early, mid, and late spring.

Scientific name	Common name	Native
Achyrachaena mollis	Blow-wives	yes
Acmispon parviflorus	Hill lotus	yes
Acmispon wrangelianus	Chilean trefoil	yes
Adenostoma fasciculatum	Chamise	yes
Adiantum jordanii	Adiantum	yes
Agoseris heterophylla var. *heterophylla*	Annual agoseris	yes
Agoseris grandiflora	Mountain dandelion	yes
Allium sp.	Onion	yes
Aphanes occidentalis	Western lady's mantle	yes
Arbutus menziesii	Madrone	yes
Arctostaphylos manzanita ssp. *manzanita*	Common manzanita	yes
Arctostaphylos stanfordiana ssp. *stanfordiana*	Stanford manzanita	yes
Asclepias eriophylla	Indian milkweed	yes
Athysanus pusillus	Common sandweed	yes
Avena barbata	Slender wild oats	no
Baccharis pilularis	Coyote brush	yes
Barbarea orthoceras	American wintercress	yes
Bromus diandrus	Ripgut brome	no
Bromus hordeaceus	Soft chess	no
Calandrinia menziesii	Red maids	yes
Calochortus amabilis	Golden fairy lantern	yes
Calystegia subacaulis	Hillside morning glory	yes
Carex densa	Dense sedge	yes
Castilleja attenuata	Valley tassels	yes
Ceanothus cuneatus var. *cuneatus*	Buckbrush	yes
Ceanothus foliosus var. *foliosus*	Wavyleaf ceanothus	yes
Centaurea melitensis	Tocalote	no
Centaurea solstitialis	Yellow star thistle	no
Cerastium glomeratum	Sticky mouse-ear chickweed	no
Chlorogalum pomeridianum	Soap plant	yes
Clarkia purpurea var. *quadrivulnera*	Purple clarkia	yes
Convolvulus arvensis	Bind weed	no
Crassula sp.	Crassula	
Croton setiger	Turkey mullein	yes
Cynoglossum grande	Western houndstongue	yes
Cynosurus echinatus	Dog tail	no
Daucus pusillus	American carrot	yes
Dichelostemma capitatum	Blue dicks	yes
Draba verna	Spring Draba	no
Elymus caput-medusae	Medusa head	no

Elymus glaucus	Blue wildrye	yes
Eriodictyon californicum	Yerba Santa	yes
Eriophyllum lanatum	Common woolly sunflower	yes
Erodium botrys	Big heron bill	no
Erodium cicutarium	Coastal heron's bill	no
Erythronium californicum	California fawn lily	yes
Eschscholzia californica	California poppy	yes
Festuca perennis	Italian ryegrass	no
Galium parisiense	Wall bedstraw	no
Galium porrigens	Climbing bedstraw	yes
Geranium dissectum	Cutleaf geranium	no
Gnaphalium palustre	Western marsh cudweed	yes
Heteromeles arbutifolia	Toyon	yes
Hordeum brachyantherum	Meadow barley	yes
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	no
Hypericum concinnum.	Gold wire	yes
Hypochaeris radicata	Rough cat's ears	no
Juncus bufonius	Toad rush	yes
Juncus effusus	Bog rush	yes
Juncus patens	Common rush	yes
Juncus tenuis	Slender rush	yes
Lactuca serriola	Prickly lettuce	no
Lasthenia gracilis	Needle goldfields	yes
Lathyrus angulatus	Angled pea vine	no
Leontodon saxatilis	Hawkbit	no
Lepidium nitidum	Shining peppergrass	yes
Leptosiphon bicolor	True baby stars	yes
Limnanthes douglasii ssp. *nivea*	Meadow foam	yes
Logfia gallica	Narrowleaf cottonrose	no
Lomatium dasycarpum	Hog fennel	yes
Lonicera interrupta	Chaparral honeysuckle	yes
Lupinus bicolor	Miniature lupine	yes
Madia exigua	Little tarweed	yes
Mentha pulegium	Pennyroyal	no
Micropus californicus	Q-tips	yes
Microseris douglasii ssp. *douglasii*	Douglas' microseris	yes
Navarretia intertexta	Needleleaf navarretia	yes
Nemophila pedunculata	Meadow nemophila	yes
Penstemon heterophyllus	Foothill penstemon	yes
Pentagramma triangularis	Goldenback fern	yes
Phoradendron leucarpum ssp. *tomentosum*	Mistletoe	yes
Pickeringia montana	Montana chaparral pea	yes
Pinus attenuata	Knobcone pine	yes
Plagiobothrys bracteatus	Bracted allocarya	yes
Plagiobothrys nothofulvus	Popcorn flower	yes

Plantago erecta	Hill plantain	yes
Primula hendersonii	Shooting star	yes
Psilocarphus tenellus	Slender woolly heads	yes
Quercus berberidifolia	Inland scrub oak	yes
Quercus chrysolepis	Canyon live oak	yes
Rhus aromatica	Fragrant sumac	yes
Rigiopappus leptocladus	Gold wire	yes
Rumex crispus	Curly dock	no
Salix babylonica	Weeping willow	no
Sanicula bipinnatifida	Purple sanicle	yes
Sanicula crassicaulis	Pacific sanicle	yes
Sidalcea diploscypha	Fringed checkerbloom	yes
Stachys sp.	Hedge nettle	yes
Thysanocarpus curvipes	Fringe pod	yes
Trifolium albopurpureum	Indian clover	yes
Trifolium depauperatum var. *depauperatum*	Dwarf sack clover	yes
Trifolium dichotomum	Branched Indian clover	yes
Trifolium willdenovii	Tomcat clover	yes
Tropidocarpum gracile	Slender tropidocarpum	yes
Umbellularia californica	Bay tree	yes
Uropappus lindleyi	Silver puffs	yes
Verbena lasiostachys	Common verbena	yes
Veronica peregrina	Speedwell	yes
Viola purpurea	Goosefoot violet	yes
Wyethia glabra	Smooth mule’s ears	yes

Pinecrest Environmental Consulting
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SOURCES: PEC Inc.

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BIOLOGICAL MEMORANDUM

To:	Autumn Karcey Lake County Development Co.
From:	Kathleen Sholty, Senior Biologist AES-Montrose 1801 7th Street, Suite 100 Sacramento, CA 95811
Project:	Highland Farms Cannabis Cultivation
Date:	2/11/2022

1.0 INTRODUCTION

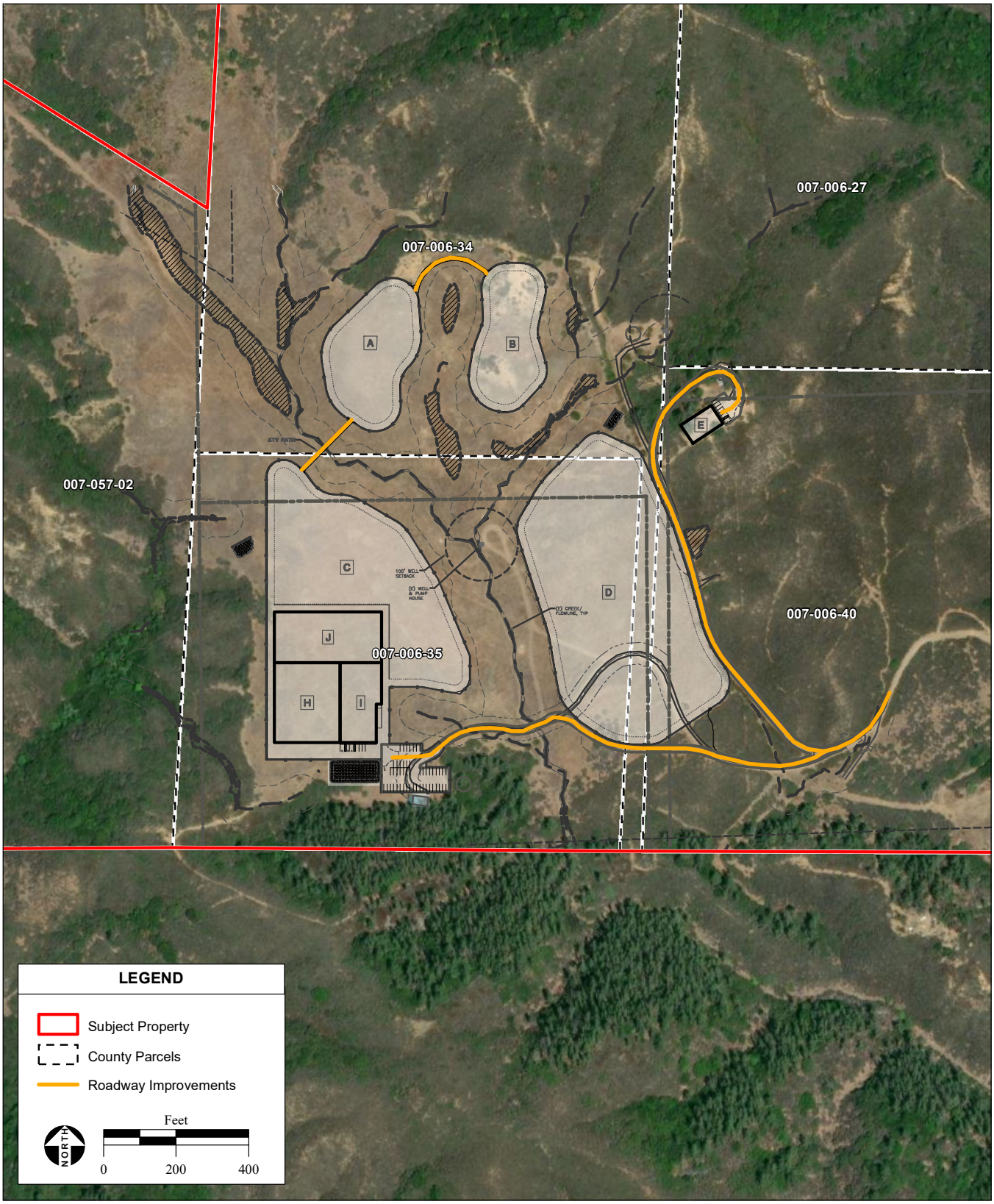
This memorandum has been prepared for the Highland Farms Cannabis Cultivation Project (Proposed Project) located west of Kelseyville in Lake County, CA on an approximate 513-acre property (Subject Property; APNs 007-006-34, 007-006-35, 007-006-40, 007-006-27, 007-006-41, 007-057-01, and 007-057-02). Development related to the Proposed Project, such as grading and construction, would occur on the three cultivation parcels (APNs 007-006-34, -35, and -40), as well as a small portion of APN 007-006-27. Additionally, a portion of the access road (1,057 linear feet) that connects Highland Springs Rd. to the Property entrance (located across APNs 007-043-04 and 007-043-01) would be graded and improved in accordance with Public Resource Code 4290 to provide adequate site access. Furthermore, Pacific Gas and Electric (PG&E) would install power lines along Amber Ridge Ct. to the Project Site, which would partially cross APN 007-057-01 (Project Site; **Figures 1**, **2,** and **5**). The Proposed Project consists of 27.7 acres of disturbed development area and includes commercial outdoor cannabis canopy and associated ancillary facilities. Infrastructure improvement activities include laying of irrigation lines and utility transmission lines, installation of 11 PG&E electrical transmission poles, and improvements to roadways and ingress, including re-compacting, re-graveling, grading, and culvert upgrades (**Figures 2, 3,** and **5**). For the purposes of this report, the Subject Property refers to the entire approximate 513-acre property, and the Project Site refers only to those areas within the Subject Property with the potential to be impacted by the Proposed Project (i.e., Cultivation Areas, buildings, roadway improvements, graded areas, etc.) that total 27.7 acres. The site plan is shown in **Figure 2**. It should be noted that the internal configuration of Buildings J, H, and I have changed since generation of the site plan; however, the building footprint remains the same and internal configuration changes would have no impacts on the biological analysis.

To date, three biological surveys and reports have been completed for the Proposed Project by Pinecrest Environmental Consulting (PEC). These include:

- A Biological Assessment that included a habitat assessment based on a May 25, 2020 site visit (PEC, 2020);
- A Biological Memorandum detailing the results of an early-season protocol-level floristic survey completed on March 15, 2021 (PEC, 2021a); and
- A Biological Memorandum detailing the results of a late-season protocol-level floristic survey completed on May 10, 2021 (PEC, 2021b).

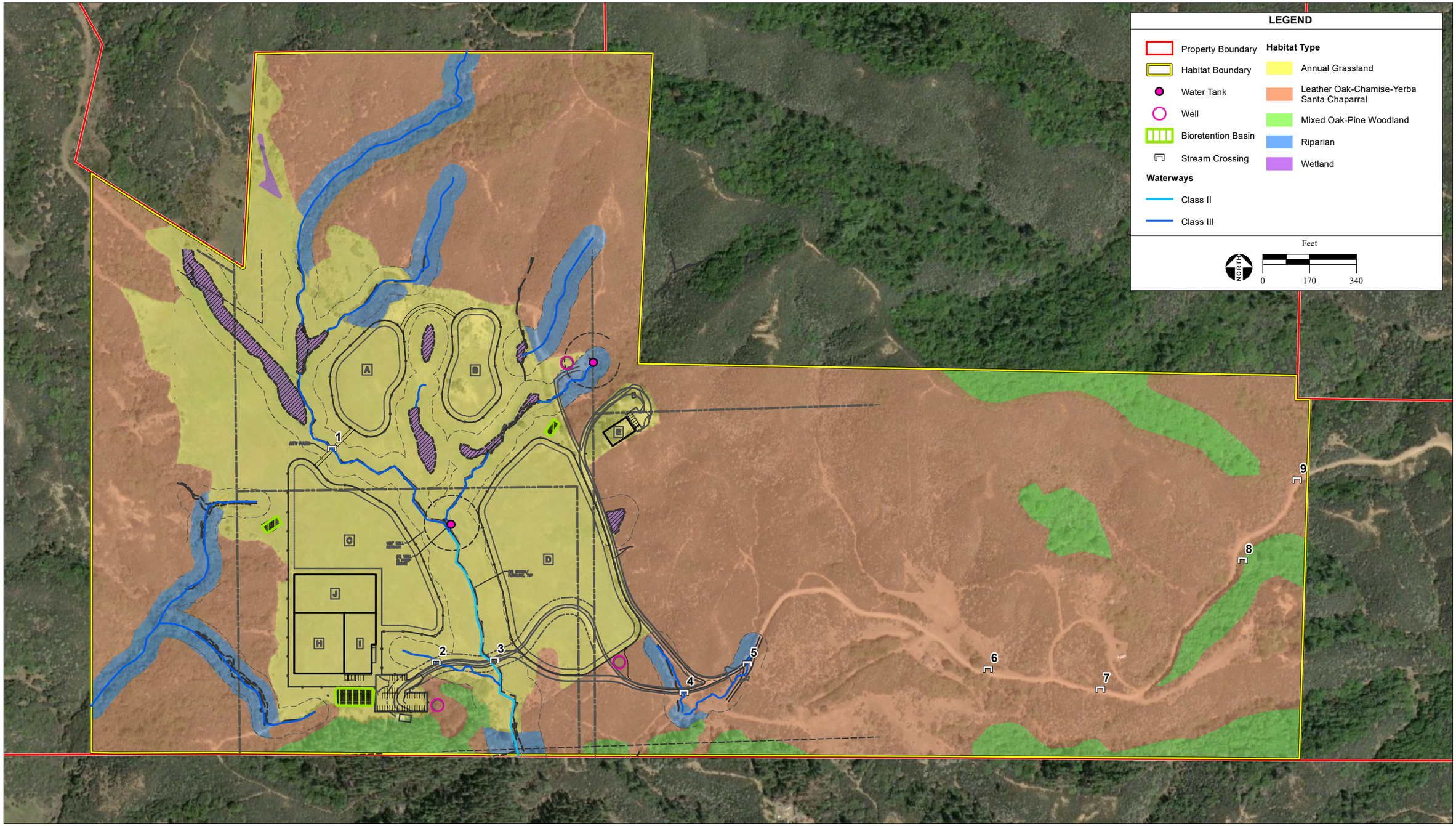
SOURCE: ESRI, 2021; AES-Montrose, 11/12/2021

Figure 1
Regional Location



SOURCE: Summit Engineering Inc, 07/26/2021; Lake County Parcels, 2021;
Maxar aerial photograph, 8/20/2020; ESRI, 2021; AES-Montrose, 11/12/2021

Figure 2
Site Plan



SOURCE: SUMMIT Engineering Inc, 7/28/2021; Vivid Maxar aerial photograph, 4/16/2021; ESRI, 2021; AES-Montrose, 2/4/2022

Figure 3
Habitat Types

PHOTO 1: View of cultivation area.

PHOTO 2: Class III stream, chamise chaparral, and gray pine woodland in the southern section of the Property.

PHOTO 3: Cultivation Block A.

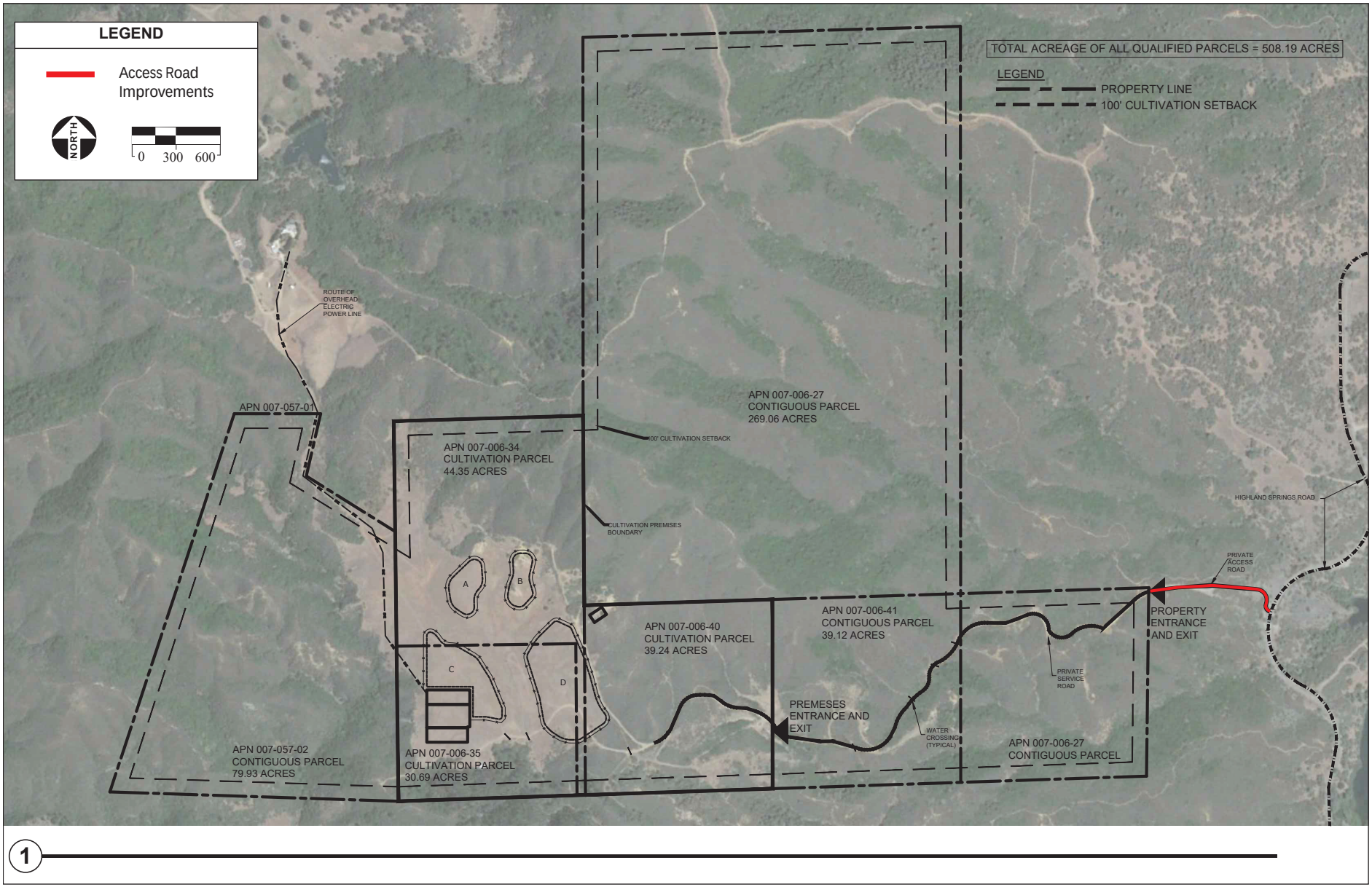
PHOTO 4: Seasonal wetland between Cultivation Blocks A and B.

PHOTO 5: Seasonal wetland adjacent to east access road.

PHOTO 6: Site of proposed processing building.

SOURCE: AES, 10/5/2021

Figure 4
Site Photographs



SOURCE: Lake Co Development, 12/17/2021; AES-Montrose, 2/11/2022

Figure 5
Property Plan

The above-referenced existing reports provided biological information on several areas across the Subject Property. The purpose of this memorandum is to identify sensitive biological resources within the Project Site by summarizing the data from existing reports, and to provide the results of a final floristic survey and habitat assessment conducted by AES-Montrose biologists on May 26, 2021.

2.0 METHODOLOGY

Prior to completion of the survey, the following information was obtained and reviewed:

- The existing reports completed by PEC;
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) list, updated November 5, 2021 (**Attachment A**);
- California Natural Diversity Database (CNDDB) list, updated October 5, 2021 (**Attachment A**);
- California Native Plant Society (CNPS) list, updated October 5, 2021 (**Attachment A**);
- USFWS National Wetlands Inventory (NWI) map of wetland features, updated May 20, 2021 (**Attachment B**); and
- NRCS Custom Soils Report for the Subject Property, prepared May 20, 2021 (**Attachment C**).

A biological resources and floristic survey were conducted on the Project Site on May 26, 2021. The floristic survey and habitat assessment were conducted by walking transects throughout the Project Site. The floristic survey was completed consistent with the California Department of Fish and Wildlife (CDFW) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018). Data was collected via a Trimble Geo XH hand-held GPS receiver. Survey goals consisted of identifying habitat types, sensitive habitats, wetlands, waters of the U.S., and special-status species. Sensitive habitats include those that are designated by CDFW, considered by local experts to be communities of limited distribution, or likely to be waters of the U.S. or State by the appropriate regulatory agencies. Habitat requirements of regionally occurring special-status species were compared to habitats observed, which were determined based on aerial photographs, ground-truthing, and background data review. Where stream classes were assessed, stream class was identified consistent with the California Forest Practice Rules (CalFire, 2015).

3.0 ENVIRONMENTAL SETTING

3.1 HABITAT TYPES

The Subject Property consists of mixed oak-pine woodland, annual grassland, leather oak-chamise-Yerba Santa chaparral, seasonal wetlands, riparian habitat, and several streams. The May 26, 2021 survey targeted the Project Site; annual grassland and leather oak-chamise-Yerba Santa chaparral are within Project Site boundaries. Seasonal wetlands and riparian habitat do not occur within Project Site boundaries. Setbacks for aquatic resources included on the site plan design are consistent with those identified in the State Water Resources Control Board Requirements for Cannabis Cultivation and are displayed on **Figure 2**. Access to the proposed Cultivation Areas occurs along dirt roads that span eight culverted stream crossings which require improvement. An additional culvert will need to be installed for ATV access from Cultivation Areas A to C (**Figure 2**). Habitat types identified on the Project Site are shown in **Figure 3**, and representative photos of habitat types are provided in **Figure 4**. Habitat types on the Project Site are further discussed below.

Annual Grassland

This habitat type comprises the majority of the Project Site. Vegetation observed within this habitat type

includes hairgrass (*Aira caryophyllea*), wild oatgrass (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceous*), cheatgrass (*Bromus tectorum*), dogstail grass (*Cynosurus echinatus*), annual hairgrass (*Deschampsia danthonioides*), blue wildrye (*Elymus glaucus*), medusahead (*Elymus caput-medusae*), Zorro fescue (*Festuca myuros*), and foxtail barley (*Hordeum murinum*). Trees are absent within these areas, and this habitat type is not considered sensitive.

Leather Oak-Chamise-Yerba Santa Chaparral

Leather oak-chamise-Yerba Santa chaparral occurs within the Project Site where road improvements are proposed. Vegetation observed within this habitat includes: chamise (*Adenostoma fasciculatum*), Yerba Santa (*Eriodictyon californicum*), common manzanita (*Arctostaphylos manzanita*), poison oak (*Toxicodendron diversilobium*), tanoak (*Notholithocarpus densiflorus*), leather oak (*Quercus durata*), scrub oak (*Quercus dumosa*), whiteleaf manzanita (*Arctostaphylos viscida*), buck brush (*Ceanothus cuneatus*), coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), and evergreen buckthorn (*Rhamnus ilicifolia*). This habitat type is not considered sensitive.

Wetlands and Waters of U.S.

Seasonal wetlands occur adjacent to, but not within the Project Site; setbacks established in the California Forest Practice Rules (CalFire, 2015) are adhered to for the protection of seasonal wetlands, streams, and riparian. A total of one Class II and eight Class III streams occur within the Project Site. Nine stream crossings would be utilized during operation of the Proposed Project. These crossings are discussed in detail below (referenced from left to right) and identified in **Figure 3**.

Stream Crossing 1: This stream crossing is proposed for ATV access from cultivation Area A to Area C. This is a class III ephemeral drainage without riparian buffer vegetation.

Stream Crossing 2: This stream crossing has an existing culvert crossed by a dirt road and is proposed for improvement. This is a class III ephemeral drainage with riparian vegetation on the river right bank.

Stream Crossing 3: This stream crossing has an existing culvert crossed by a dirt road and is proposed for improvement. This is a class II stream without a riparian buffer vegetation until further downstream.

Stream Crossing 4: This stream crossing has an existing culvert crossed by a dirt road and is proposed for improvement. This is a class III ephemeral drainage with riparian vegetation on the river right bank.

Stream Crossing 5: This stream crossing has an existing culvert crossed by a dirt road and is proposed for improvement. This is a class III ephemeral drainage with riparian vegetation on sections of the river right and river left banks.

Stream Crossings 6-9: These stream crossings have an existing culvert crossed by a dirt road and are proposed for improvement. They are all class III ephemeral drainages.

3.2 Roadway Improvements

Developed habitat in the Project Site is limited to the existing dirt roadways. Several dirt access roads outside the Project Site cross Class III drainages. Several road segments are proposed for improvement, including the access road from Highland Springs Road that connects to the Property boundary (see **Figure 5**); the dirt road which accesses development block Building E; and the dirt road which accesses Buildings H, I, and J (see **Figure 2**). These roads are boarded by leather oak – chamise – Santa Yerba

chaparral and annual grassland. Two additional segments are proposed for construction and include a stream crossing to access Cultivation Area A and dirt road to access Cultivation Area B (see **Figure 2**). These areas are within annual grassland habitat.

3.3 SPECIAL-STATUS SPECIES

Data review and special-status species searches list 11 special-status plant species and 11 special-status wildlife species with the potential to occur in the region of the Property (**Attachment A**). The name, regulatory status, distribution, habitat requirements, period of identification, and potential to occur for each species are listed in **Table 1**.

Based on the site-specific habitats and special-status species habitat requirements the Project Site contains suitable habitat to potentially support six special-status plant species: bent-flowered fiddleneck (*Amsinckia lunaris*), small-flowered calycadenia (*Calycadenia micrantha*), Brandegee's eriastrum (*Eriastrum brandegeeae*), glandular western flax (*Hesperolinon adenophyllum*), Colusa layia (*Layia septentrionalis*), and Napa bluecurls (*Trichostema ruygtii*). Species with no potential to occur on the Project Site were ruled out based on lack of suitable habitat, soils, elevation, and necessary substrate. Special-status species were not observed during the May 26, 2021 survey, or during the surveys completed in support of the PEC reports. This includes three protocol-level botanical surveys for special-status plants.

3.4 WILDLIFE MOVEMENT

Wildlife movement is generally unrestricted across the Subject Property and Project Site. While the Project Site does not contain wildlife nurseries or known corridors, wildlife is generally free to cross through the Subject Property. There is no habitat for anadromous fish.

3.5 CRITICAL HABITAT

There is no designated or proposed Critical Habitat within the Project Site (USFWS, 2021c). The nearest Critical Habitat is located 7.9 miles southeast of the Project Site and is designated for slender Orcutt grass (*Orcuttia tenuis*). There is no other Critical Habitat within 10 miles of the Project Site.

TABLE 1

SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS LIST	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR WITHIN THE PROJECT SITE
PLANTS					
Amsinckia lunaris Bent-flowered fiddleneck	--/--/1B.2	Known to occur in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, Sonoma, Sutter and Yolo Counties.	An annual herb that grows on gravelly slopes or serpentine soils. Found in coastal bluff scrub, openings in cismontane woodland, valley and foothill grassland. Elevations range from 3 to 800 meters.	March-June	**Yes.** Suitable habitat occurs within the Project Site.
Arctostaphylos manzanita ssp.elegans Konocti manzanita	--/--/1B.3	Known to occur in Colusa, Glenn, Humboldt, Lake, Mendocino, Napa, Shasta, Sonoma, Tehama, Trinity Counties. Found within The Klamath Range and the North Coast outer Ranges.	A perennial evergreen shrub which generally occurs on volcanic soils within cismontane woodlands, chaparral, and lower montane conifer forest. Elevations range from 220 to 1,850 meters.	February-May	**No**. Suitable habitat is not present to support this species within the Project Site.
Arctostaphylos stanfordiana ssp. *raichei* Raiche's manzanita	--/--/1B.1	Know to occur in south Mendocino, and west Lake Counties.	A perennial evergreen shrub found growing on rocky, often serpentine soils, within chaparral or lower montane coniferous forest openings. Elevations range from 450 to 1,035 meters.	February-April	**No**. Suitable habitat is not present to support this species within the Project Site.
Calycadenia micrantha Small-flowered calycadenia	--/--/1B.2	Known to occur in Colusa, Lake, Monterey, Napa, and Trinity Counties.	An annual herb found along roadsides, on rocky talus/scree, or sparsely vegetated areas in chaparral, meadow and seep, and valley and foothill grassland habitats. Sometimes occurs on serpentine soils. Elevations from 5 to 1,500 meters.	June - September	**Yes.** Suitable habitat occurs within the Project Site.
Cryptantha dissita Serpentine cryptantha	--/--/1B.2	Known to occur in Colusa, Lake, Mendocino, Napa, Shasta, Siskiyou, and Sonoma Counties.	An annual herb that occurs on serpentine soils, rocky outcrops, and gravely slopes within chaparral or foothill woodland habitats. Elevations range from 150 to 900 meters.	March-June	**No**. Suitable habitat is not present to support this species within the Project Site.
Eriastrum brandegeeae Brandegee's eriastrum	--/--/1B.1	Known to occur in Lake County	An annual herb found on open flats of volcanic, shales, or sandy soils within chaparral and cismontane woodland habitats. Elevations range from 425 to 840 meters.	April-August	**Yes.** Suitable habitat occurs within the Project Site.

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS LIST	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR WITHIN THE PROJECT SITE
Hesperolinon adenophyllum glandular western flax	--/--/1B.2	Known to occur in Humboldt, Lake, and Mendocino Counties.	An annual herb found in chaparral, cismontane woodland, and valley and foothill grassland habitats, usually on serpentine soils. Elevation ranges from 150 to 1,315 meters.	May-August	**Yes.** Suitable habitat occurs within the Project Site.
Horkelia bolanderi Bolander's horkelia	--/--/1B.2	Known to occur in Colusa, Lake, and Mendocino Counties.	A perennial herb found on edges and vernally mesic areas within chaparral, lower montane coniferous forest, meadow and seep, and valley and foothill grassland habitats. Elevations range from 450 to 1,100 meters.	May-September	**No**. Suitable habitat is not present to support this species within the Project Site.
Lasthenia burkei Burke's goldfields	FE/CE/1B.1	Known to occur in Lake, Mendocino, Napa, and Sonoma Counties	An annual herb found in mesic meadows and seeps and vernal pools at elevations from 15 to 600 meters.	April-June	**No**. Suitable habitat is not present to support this species within the Project Site.
Layia septentrionalis Colusa layia	--/--/1B.2	Known to occur in Butte, Colusa, Glenn, Lake, Mendocino, Napa, Sonoma, Sutter, Tehama, and Yolo counties.	An annual herb found on sandy or serpentine soils in chaparral, cismontane woodland, valley and foothill grassland habitats. Elevations range from 100 to 1095 meters.	April-June	**Yes.** Suitable habitat occurs within the Project Site.
Trichostema ruygtii Napa bluecurls	--/--/1B.2	Known to occur in Lake, Napa, and Solano Counties.	An annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland habitats. Also, often in seasonally saturated, vernal pools with thin clay soils. Elevations range from 30 to 680 meters.	June-October	**Yes.** Suitable habitat occurs within the Project Site.
ANIMALS					
Amphibians					

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS LIST	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR WITHIN THE PROJECT SITE
Emys marmorata western pond turtle	--/CSC/--	Distribution ranges from Washington to northern Baja California.	Inhabit rivers, streams, lakes, ponds, reservoirs, stock ponds, and permanent wetland habitats with basking sites.	Year-round	**No**. Suitable habitat is not present to support this species within the Project Site.
Rana boylii foothill yellow-legged frog	--/CE, CSC/--	Known from California and Oregon.	Require shallow, flowing water in moderate sized streams with some cobble substrate.	November-March (breeding) June-August (non-breeding)	**No**. Suitable habitat is not present to support this species within the Project Site.
Rana draytonii California red-legged frog	FT/CSC/--	Known to occur along the Coast from Mendocino County to Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada mountains, south to eastern Tulare County, and possibly eastern Kern County. Currently accepted range excludes the Central Valley.	Occurs in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation. Elevations range from 0-1160 meters.	November – March (breeding) June - August (non-breeding)	**No**. Suitable habitat is not present to support this species within the Project Site.
Taricha rivularis Red-bellied newt	--/CSC/--	Known to occur in the Coast Range from Mendocino County to San Diego County. Also known in the Peninsular Ranges, south of Boulder Creek, and in the southern Sierra Nevada foothills.	Occurs primarily in valley-foothill hardwood, hardwood-conifer, coastal scrub, and mixed chaparral but may occur in annual grassland and mixed conifer forests. Elevation ranges from sea level to 1,830 meters.	Fall-Late Spring	**No**. Suitable habitat is not present to support this species within the Project Site.
Birds					
Agelaius tricolor Tricolored blackbird	--/CT, CSC/--	California and Baja California, Mexico.	Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water.	Year-round	**No**. Suitable habitat is not present to support this species within the Project Site.

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS LIST	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR WITHIN THE PROJECT SITE
Strix occidentalis caurina northern spotted owl	FT/CT; CSC/--	Geographic range extends from British Colombia to northwestern California south to San Francisco. The breeding range includes the Cascade Range, North Coast Ranges, and the Sierra Nevada. Some breeding populations also occur in the Transverse Ranges and Peninsular Ranges.	Resides in mixed conifer, redwood, and Douglas-fir habitats, from sea level up to approximately 2,300 meters. Appear to prefer old-growth forests, but use of managed (previously logged) lands is not uncommon. Owls do not appear to use logged habitat until approximately 60 years after logging unless some larger trees or snags remain after logging. Nesting habitat is a tree or snag cavity, or the broken top of a large tree. Requires a nearby, permanent source of water. Foraging habitat consists of any forest habitat with sufficient prey (e.g. flying squirrels, mice, and voles).	Year-round	**No**. Suitable habitat is not present to support this species within the Project Site.
Fish					
Hypomesus transpacificus Delta smelt	FT/CE/--	Occurs almost exclusively in the Sacramento-San Joaquin estuary, from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. May also occur in the San Francisco Bay.	Estuarine waters. Majority of life span is spent within the freshwater outskirts of the mixing zone (saltwater-freshwater interface) within the Delta.	Consult Agency	**No**. Suitable habitat is not present to support this species within the Project Site.
Lavinia exilicauda chi Clear Lake hitch	--/CT/--	Known to occur in Clear Lake in Lake County.	Most often found in slow warm water in Clear Lake and quiet stretches of rivers tributary to Clear Lake.	February-July (breeding) August-January (non-breeding)	**No**. Suitable habitat is not present to support this species within the Project Site.
Invertebrates					

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS LIST	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR WITHIN THE PROJECT SITE
Syncaris pacifica California freshwater shrimp	FE/CE/--	Known only throughout Marin, Napa, and Sonoma counties.	Small, low-gradient, perennial coastal streams. Prefers relatively shallow streams with depths of 12-36 inches, exposed live roots of trees such as alder and willow, undercut banks greater than 6 inches, overhanging woody debris or stream vegetation and vines. Elevations range from 0-116 meters.	Consult Agency	**No**. Suitable habitat is not present to support this species within the Project Site.
Mammals					
Corynorhinus townsendii Townsend's big-eared bat	--/CSC/--	Known to occur throughout California, excluding subalpine and alpine habitats. Its range extends through Mexico to British Columbia and the Rocky Mountain states. Also occurs in several regions of the central Appalachians.	Requires caves, mines, tunnels, buildings, or other cave analog structures such as hallowed out redwoods for roosting. Hibernation sites must be cold, but above freezing.	Year-round	**No**. Suitable habitat is not present to support this species within the Project Site.
Reptiles					
Chelonia mydas green sea turtle	FT/--/--	Globally distributed and generally found in tropical and subtropical waters along continental coasts and islands between 30° North and 30° South. In the eastern North Pacific, occurs from Baja California to southern Alaska.	Nests on oceanic beaches, feeds in benthic grounds in coastal areas, and frequents convergence zones in the open ocean.	Consult Agency	**No**. Suitable habitat is not present to support this species within the Project Site.

SOURCES: CNPS, CNDBB, IPAC

STATUS CODES:

FEDERAL: United States Fish and Wildlife Service
FE Federally Endangered
FT Federally Threatened
FC Candidate for Federal Listing

STATE: California Department of Fish and Game
CE California Listed Endangered
CT California Listed Threatened
CSC California Species of Special Concern

CNPS: California Native Plant Society (California Rare Plant Rank [CRPR])
1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

CNPS Threat Ranks:
0.1 Seriously Threatened in California (Over 80% of occurrences threatened/high degree and immediacy of threat)
0.2 Fairly Threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
0.3 Not Very Threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

4.0 RESULTS AND RECOMENDATIONS

4.1 HABITAT IMPACTS

The Subject Property consists of mixed oak-pine woodland, annual grassland, leather oak-chamise-Yerba Santa chaparral, seasonal wetlands, and several streams. Additionally, seasonal wetlands, riparian habitat, and streams are appropriately setback from the Project Site and are consistent with setbacks identified in the State Water Resources Control Board Requirements for Cannabis Cultivation. Therefore, the Proposed Project is not anticipated to have significant impacts on these resources. A total of nine stream crossings occur on the Project Site, including eight Class III streams and one Class II stream. The stream crossings total approximately 180 linear feet. Riparian vegetation, if present, consists of species found within the leather oak-chamise-Yerba Santa chaparral and is protected by setbacks. A Lake or Streambed Alteration Agreement (LSAA) from the California Department of Fish and Wildlife would be necessary to perform culvert improvements or additions, and other habitat restoration or stabilization activities required by CDFW. The LSAA would contain environmentally protective measures such as limitation of work to the dry season and avoidance of nesting birds. As the Proposed Project would improve the structure and functionality of stream crossings, with adherence to LSAA terms, habitat quality would be improved with implementation of the Proposed Project. Given the proximity of aquatic habitat setbacks to development areas, **Measure 1** and **Measure 2** below are recommended to ensure setbacks are properly adhered to throughout construction. Installation of electrical transmission poles and lines would occur within ruderal/disturbed habitats along exiting roadways and are assumed to undergo environmental review through PG&E.

Dirt access roadways have also been established throughout the Project Site, some which require improvements. The entrance road from Highland Springs Road requires low brush clearing to widen to the original road extents and grading to meet Public Resource Code 4290 requirements. This segment is approximately 1,057 linear feet (lf). Improvements to the dirt road which accesses Building E, and the dirt road which accesses Buildings H, I, and J includes approximately 1,728 lf and 1,260 lf, respectively, of low brush clearing and widening. The two roads proposed for construction include a stream crossing to access Cultivation Area A, approximately 193 lf, and dirt road to access Cultivation Area B, approximately 251 lf. These areas are within annual grassland habitat. A total of approximately 0.4 acres of annual grassland and 0.4 acres of leather oak – chamise – Santa Yerba chaparral may be impacted from road improvements and installation of new dirt access roads. In total, the Proposed Project would result in impacts to approximately 19.80 acres of annual grassland and 0.54 acres of leather oak-chamise-Yerba Santa chaparral. These habitat types are not sensitive; thus, impacts are not considered significant.

Measure 1

Prior to construction activities, a qualified biologist shall survey the potential seasonal wetlands and Class II and III watercourses within 200 feet of the Project Site. The qualified biologist shall demarcate setbacks from wetlands, watercourses, and riparian habitat with high-visibility fencing or flagging. No construction or operational project activities shall occur within the setbacks, including the stockpiling of materials or storage of equipment. The demarcation shall remain in place throughout the duration of construction. Following construction, the demarcation may be removed, with the understanding that Project activities within the setback shall not occur.

Measure 2

For the protection of aquatic features adjacent to the Project Site, best management practices (BMPs)

for erosional control measures, such as straw wattles and silt fencing, shall temporarily be placed along existing roadways within stream and wetland setbacks during construction activities. Native vegetation shall be planted along roadsides for long-term erosion control.

4.2 NESTING BIRDS

Migratory birds and their nests are protected from "take" by the Migratory Bird Treaty Act (16 U.SC. 703-711), which makes it unlawful to "…pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess or any part, nest, or egg of any such bird…" (50 CFR 10). Nesting birds are also protected under California Fish and Game Code. Potentially occurring nesting birds within 500 feet of the Project Site could be affected if construction activities commence during the general nesting season. **Measure 3** is recommended to reduce potential impacts to nesting migratory birds.

Measure 3

Should work commence during the nesting season (February 1 through September 15), a preconstruction nesting bird survey shall be conducted by a qualified biologist no more than 5 days prior to the start of ground disturbing activities. Areas on and within 500 feet of construction shall be surveyed as possible for active nests. Should an active nest be identified, a "disturbance-free" buffer shall be established by the qualified biologist based on the needs of the species identified and clearly marked by high-visibility material. The buffer shall remain in place until the biologist determines that the nest is no longer active. Construction activities shall not occur within the buffer. Should construction cease for a period of 5 days or more, an additional pre-construction nesting bird survey shall be conducted.

4.3 SPECIAL-STATUS SPECIES

Six special-status plant species were found to have the potential to occur within the Project Site. No special-status plant species were observed during the three protocol-level surveys; therefore, no further surveys are recommended.

4.4 WILDLIFE MOVEMENT

As discussed above, the streams within or immediately adjacent to the Project Site are Class III and do not provide habitat for anadromous fishes. The terrestrial landscape within and surrounding the Project Site is largely undeveloped and accessible to wildlife. No evidence of significant wildlife corridors or nursery sites were observed within the Project Site. The Proposed Project would impact approximately 26.8 acres of the approximate 513-acre Subject Property. Therefore, approximately 96 percent of the Subject Property would remain undeveloped and available for wildlife use and movement.

5.0 CONCLUSION

The Project Site occurs within Lake County and contains suitable habitat to potentially support six special-status plant species. No special-status plants species were observed during the time of survey. Sensitive habitats have been avoided to the greatest extent feasible via project design. Eight existing stream crossings occur along access roads within the Project Site, and an additional stream crossing is proposed for ATV access. A LSAA from CDFW would be necessary to perform culvert improvements and other stabilization activities. **Measure 1** and **Measure 2** are recommended for the protection of aquatic resources. **Measure 3** is recommended to reduce potential impacts to nesting migratory birds if construction activities are to occur during the general nesting season (February 1 through August 31).

6.0 REFERENCES

California Department of Fish and Wildlife (CDFW), 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline. Accessed June 2021.

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Pinecrest Environmental Consulting (PEC), 2020. Biological Resources Assessment. Completed December 9, 2020.

PEC, 2021a. Results of Early-Season Special-Status Plant Survey. Completed March 31, 2021.

PEC, 2021b. Results of Late-Season Special-Status Plant Survey. Completed May 23, 2021.

U.S. Fish and Wildlife Service (USFWS), 2021a. Information for Planning and Consultation (IPAC) list. Accessed October 5, 2021.

USFWS, 2021b. National Wetlands Inventory (NWI) mapper. Accessed May 20, 2021.

USFWS, 2021c. Critical Habitat for Threatened and Endangered Species. Accessed May 20, 2021.

ATTACHMENT A

SPECIAL-STATUS SPECIES LISTS

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Bartlett Mtn. (3912227) OR Lucerne (3912217))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Arctostaphylos manzanita ssp. elegans Konocti manzanita	PDERI04271	None	None	G5T3	S3	1B.3
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Calycadenia micrantha small-flowered calycadenia	PDAST1P0C0	None	None	G2	S2	1B.2
Ceanothus confusus Rincon Ridge ceanothus	PDRHA04220	None	None	G1	S1	1B.1
Clear Lake Drainage Cyprinid/Catostomid Stream Clear Lake Drainage Cyprinid/Catostomid Stream	CARA2530CA	None	None	GNR	SNR	
Clear Lake Drainage Seasonal Lakefish Spawning Stream Clear Lake Drainage Seasonal Lakefish Spawning Stream	CARA2550CA	None	None	GNR	SNR	
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Dubiraphia brunnescens brownish dubiraphian riffle beetle	IICOL5A010	None	None	G1	S1	
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Hesperolinon adenophyllum glandular western flax	PDLIN01010	None	None	G2G3	S2S3	1B.2
Hesperolinon bicarpellatum two-carpellate western flax	PDLIN01020	None	None	G2	S2	1B.2
Hysterocarpus traskii lagunae Clear Lake tule perch	AFCQK02013	None	None	G5T2T3	S3	SSC
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lavinia exilicauda chi Clear Lake hitch	AFCJB19011	None	Threatened	G4T1	S1	
Layia septentrionalis Colusa layia	PDAST5N0F0	None	None	G2	S2	1B.2

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lupinus antoninus Anthony Peak lupine	PDFAB2B0C0	None	None	G2	S2	1B.2
Martes caurina humboldtensis Humboldt marten	AMAJF01012	Threatened	Endangered	G4G5T1	S1	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti Fisher	AMAJF01020	None	None	G5	S2S3	SSC
Potamogeton zosteriformis eel-grass pondweed	PMPOT03160	None	None	G5	S3	2B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G2	S2	SSC

Record Count: 27

Inventory of Rare and Endangered Plants of California

California Native Plant Society

Search Results

12 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3912217:3912227**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK	PHOTO
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	None	None	1B.2	No Photo Available
Arctostaphylos manzanita ssp. *elegans*	Konocti manzanita	Ericaceae	perennial evergreen shrub	(Jan)Mar-May(Jul)	None	None	1B.3	No Photo Available
Calycadenia micrantha	small-flowered calycadenia	Asteraceae	annual herb	Jun-Sep	None	None	1B.2	No Photo Available
Ceanothus confusus	Rincon Ridge ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	None	None	1B.1	No Photo Available
Hemizonia congesta ssp. *calyculata*	Mendocino tarplant	Asteraceae	annual herb	Jul-Nov	None	None	4.3	No Photo Available
Hesperolinon adenophyllum	glandular western flax	Linaceae	annual herb	May-Aug	None	None	1B.2	No Photo Available
Hesperolinon bicarpellatum	two-carpellate western flax	Linaceae	annual herb	(Apr)May-Jul	None	None	1B.2	No Photo Available
Layia septentrionalis	Colusa layia	Asteraceae	annual herb	Apr-May	None	None	1B.2	No Photo Available
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	4.2	No Photo Available
Leptosiphon latisectus	broad-lobed leptosiphon	Polemoniaceae	annual herb	Apr-Jun	None	None	4.3	No Photo Available
Lupinus antoninus	Anthony Peak lupine	Fabaceae	perennial herb	May-Jul	None	None	1B.2	No Photo Available
Potamogeton zosteriformis	eel-grass pondweed	Potamogetonaceae	annual herb (aquatic)	Jun-Jul	None	None	2B.2	No Photo Available

Showing 1 to 12 of 12 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.0). Website https://www.rareplants.cnps.org [accessed 3 November 2021].

CONTACT US

Send questions and comments to rareplants@cnps.org.

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CONTRIBUTORS

The Calflora Database
The California Lichen Society
California Natural Diversity Database
The Jepson Flora Project
The Consortium of California Herbaria
CalPhotos

Developed by
Rincon Consultants, Inc.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: November 03, 2021
Consultation Code: 08ESMF00-2022-SLI-0284
Event Code: 08ESMF00-2022-E-00856
Project Name: Artemis Farmz

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2022-SLI-0284
Event Code: Some(08ESMF00-2022-E-00856)
Project Name: Artemis Farmz
Project Type: AGRICULTURE
Project Description: Cannabis
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.12770485,-122.81968101299238,14z

Counties: Lake County, California

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/1123

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2891

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4338

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

ATTACHMENT B

NATIONAL WETLANDS INVENTORY

U.S. Fish and Wildlife Service

National Wetlands Inventory

NWI

November 3, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ATTACHMENT C

NRCS CUSTOM SOIL MAP

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lake County, California

November 3, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

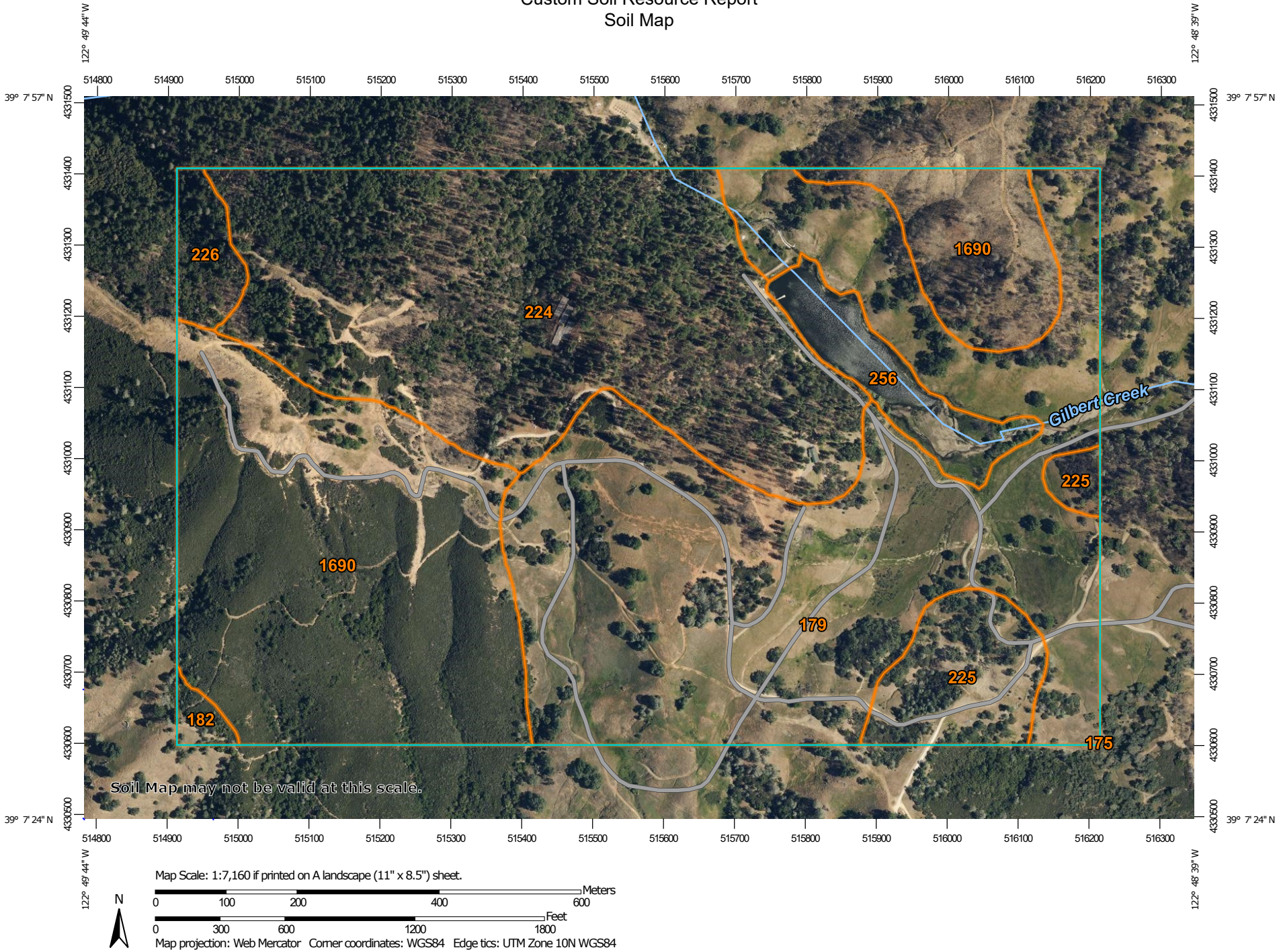
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:7,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County, California
Survey Area Data: Version 18, Sep 6, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—May 10, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
175	Maymen-Millsholm-Bressa complex, 30 to 50 percent slopes	0.0	0.0%
179	Millsholm-Squawrock-Pomo complex, 30 to 50 percent slopes	93.7	35.8%
182	Neice-Sobrante-Hambright complex, 30 to 75 percent slopes	1.3	0.5%
224	Speaker-Marpa-Sanhedrin gravelly loams, 30 to 50 percent slopes	72.5	27.7%
225	Speaker-Maymen-Marpa association, 30 to 50 percent slopes	12.1	4.6%
226	Speaker-Maymen-Marpa association, 50 to 75 percent slopes	4.1	1.6%
256	Water	8.4	3.2%
1690	Maymen-Etsel-Snook complex, 30 to 75 percent slopes, low ffd	69.6	26.6%
Totals for Area of Interest		**261.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties

and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lake County, California

175—Maymen-Millsholm-Bressa complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hf73
Elevation: 300 to 4,250 feet
Mean annual precipitation: 12 to 70 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 130 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Maymen and similar soils: 30 percent
Millsholm and similar soils: 20 percent
Bressa and similar soils: 15 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maymen

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 22 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 12 to 16 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F015XY010CA - Hills >40"ppt
Hydric soil rating: No

Description of Millsholm

Setting

Landform: Hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 11 inches: clay loam
H3 - 11 to 21 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 11 to 15 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD108CA - SHALLOW LOAMY (BLUE OAK/GRASS)
Hydric soil rating: No

Description of Bressa

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 26 inches: clay loam
H3 - 26 to 36 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 26 to 30 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R015XY009CA - Hills 20-40"ppt
Hydric soil rating: No

Minor Components

Snook

Percent of map unit: 7 percent
Hydric soil rating: No

Etsel

Percent of map unit: 7 percent
Hydric soil rating: No

Hopland

Percent of map unit: 7 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 7 percent
Hydric soil rating: No

Squawrock

Percent of map unit: 7 percent
Hydric soil rating: No

179—Millsholm-Squawrock-Pomo complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hf77
Elevation: 300 to 4,000 feet
Mean annual precipitation: 12 to 60 inches
Mean annual air temperature: 54 to 63 degrees F
Frost-free period: 130 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 31 percent
Squawrock and similar soils: 29 percent
Pomo and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 11 inches: clay loam
H3 - 11 to 21 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 11 to 15 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XY014CA - Loamy Mountains 20-40"ppt
Hydric soil rating: No

Description of Squawrock

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 37 inches: very gravelly sandy clay loam
H3 - 37 to 47 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 37 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Description of Pomo

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 40 inches: gravelly clay loam
H3 - 40 to 58 inches: gravelly clay
H4 - 58 to 68 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 58 to 62 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R015XY014CA - Loamy Mountains 20-40"ppt
Hydric soil rating: No

Minor Components

Bressa

Percent of map unit: 3 percent
Hydric soil rating: No

Maymen

Percent of map unit: 3 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent

Hydric soil rating: No

Skyhigh

Percent of map unit: 3 percent
Hydric soil rating: No

Hopland

Percent of map unit: 3 percent
Hydric soil rating: No

Mayacama

Percent of map unit: 3 percent
Hydric soil rating: No

Yorkville

Percent of map unit: 2 percent
Hydric soil rating: No

182—Neice-Sobrante-Hambright complex, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hf7b
Elevation: 120 to 3,500 feet
Mean annual precipitation: 15 to 50 inches
Mean annual air temperature: 55 to 64 degrees F
Frost-free period: 140 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Neice and similar soils: 40 percent
Sobrante and similar soils: 15 percent
Hambright and similar soils: 15 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Neice

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 11 inches: gravelly loam
H2 - 11 to 20 inches: gravelly clay loam
H3 - 20 to 70 inches: very gravelly clay

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R015XY009CA - Hills 20-40"ppt
Hydric soil rating: No

Description of Hambright

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 4 inches: very gravelly loam
H2 - 4 to 16 inches: very gravelly loam
H3 - 16 to 26 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 16 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XY009CA - Hills 20-40"ppt
Hydric soil rating: No

Description of Sobrante

Setting

Landform: Hills

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 38 inches: clay loam
H3 - 38 to 48 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 38 to 42 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R015XY009CA - Hills 20-40"ppt
Hydric soil rating: No

Minor Components

Unnamed, mod.deep

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 10 percent
Hydric soil rating: No

Millsholm

Percent of map unit: 10 percent
Hydric soil rating: No

224—Speaker-Marpa-Sanhedrin gravelly loams, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hf8p
Elevation: 400 to 5,000 feet

Mean annual precipitation: 20 to 65 inches
Mean annual air temperature: 45 to 59 degrees F
Frost-free period: 100 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Speaker and similar soils: 30 percent
Marpa and similar soils: 25 percent
Sanhedrin and similar soils: 15 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Speaker

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 27 inches: gravelly clay loam
H3 - 27 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 27 to 31 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Description of Marpa

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 15 inches: gravelly loam
H2 - 15 to 25 inches: very gravelly clay loam
H3 - 25 to 35 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 25 to 29 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R015XY014CA - Loamy Mountains 20-40"ppt
Hydric soil rating: No

Description of Sanhedrin

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 57 inches: gravelly clay loam
H3 - 57 to 67 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 57 to 61 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Minor Components

Neuns
Percent of map unit: 5 percent
Hydric soil rating: No

Sanhedrin
Percent of map unit: 5 percent
Hydric soil rating: No

Speaker
Percent of map unit: 5 percent
Hydric soil rating: No

Etsel
Percent of map unit: 5 percent
Hydric soil rating: No

Marpa
Percent of map unit: 5 percent
Hydric soil rating: No

Maymen
Percent of map unit: 5 percent
Hydric soil rating: No

225—Speaker-Maymen-Marpa association, 30 to 50 percent slopes

Map Unit Setting
National map unit symbol: hf8q
Elevation: 400 to 5,000 feet
Mean annual precipitation: 20 to 70 inches
Mean annual air temperature: 45 to 68 degrees F
Frost-free period: 100 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition
Speaker and similar soils: 30 percent
Maymen and similar soils: 25 percent
Marpa and similar soils: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Speaker

Setting
Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 27 inches: gravelly clay loam
H3 - 27 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 27 to 31 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ007CA - Moderately Deep Mesic Hills 40-60"ppt
Hydric soil rating: No

Description of Maymen

Setting

Landform: Mountains, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 22 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 12 to 16 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Ecological site: R005XZ016CA - Shallow Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Marpa

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 15 inches: gravelly loam
H2 - 15 to 25 inches: very gravelly clay loam
H3 - 25 to 35 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 25 to 29 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains 40-60"ppt
Hydric soil rating: No

Minor Components

Etsel

Percent of map unit: 4 percent
Hydric soil rating: No

Bamtush

Percent of map unit: 4 percent
Hydric soil rating: No

Neuns

Percent of map unit: 3 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent
Hydric soil rating: No

Sanhedrin

Percent of map unit: 3 percent
Hydric soil rating: No

Mayacama

Percent of map unit: 3 percent
Hydric soil rating: No

226—Speaker-Maymen-Marpa association, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: hf8r
Elevation: 400 to 5,000 feet
Mean annual precipitation: 20 to 70 inches
Mean annual air temperature: 45 to 68 degrees F
Frost-free period: 100 to 330 days
Farmland classification: Not prime farmland

Map Unit Composition

Speaker and similar soils: 30 percent
Maymen and similar soils: 25 percent
Marpa and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Speaker

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 27 inches: gravelly clay loam
H3 - 27 to 60 inches: bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 27 to 31 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F005XZ007CA - Moderately Deep Mesic Hills 40-60"ppt
Hydric soil rating: No

Description of Maymen

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 22 inches: bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 12 to 16 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R005XZ016CA - Shallow Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Marpa

Setting

Landform: Ridges, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 15 inches: gravelly loam
H2 - 15 to 25 inches: very gravelly clay loam
H3 - 25 to 35 inches: bedrock

Properties and qualities

Slope: 50 to 75 percent

Depth to restrictive feature: 25 to 29 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains 40-60"ppt
Hydric soil rating: No

Minor Components

Bamtush

Percent of map unit: 5 percent
Hydric soil rating: No

Sanhedrin

Percent of map unit: 4 percent
Hydric soil rating: No

Etsel

Percent of map unit: 4 percent
Hydric soil rating: No

Mayacama

Percent of map unit: 4 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 4 percent
Hydric soil rating: No

Neuns

Percent of map unit: 4 percent
Hydric soil rating: No

256—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

1690—Maymen-Etsel-Snook complex, 30 to 75 percent slopes, low ffd

Map Unit Setting

National map unit symbol: 2y4jl
Elevation: 1,670 to 3,310 feet
Mean annual precipitation: 31 to 55 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 196 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Maymen and similar soils: 35 percent
Etsel and similar soils: 25 percent
Snook and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maymen

Setting

Landform: Hillslopes, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Parent material: Colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale

Typical profile

A - 0 to 4 inches: gravelly loam
Bw - 4 to 12 inches: gravelly loam
R - 12 to 22 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Description of Etsel

Setting

Landform: Hillslopes, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Parent material: Colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale

Typical profile

A1 - 0 to 3 inches: gravelly loam
A2 - 3 to 10 inches: very gravelly loam
R - 10 to 20 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 4 to 12 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Description of Snook

Setting

Landform: Mountains, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Parent material: Colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale

Typical profile

A - 0 to 5 inches: loam
R - 5 to 15 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 5 to 9 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Ecological site: F015XY010CA - Hills >40"ppt
Hydric soil rating: No

Minor Components

Mayacama

Percent of map unit: 7 percent
Landform: Hillslopes, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Hydric soil rating: No

Hopland

Percent of map unit: 7 percent
Landform: Hillslopes, mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 6 percent
Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

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TECHNICAL MEMORANDUM

TO:	Autumn Karcey Lake Co. Development, LLC 371 Lakeport Blvd. #174 Lakeport, CA 95453
FROM:	Jed Dowell, Biologist Analytical Environmental Services (AES) 1801 7th Street Suite 100 Sacramento, CA 95811
SUBJECT:	Bloom Survey Results
DATE:	7/13/2022

INTRODUCTION

This memorandum has been prepared for the Highland Farms Cannabis Cultivation Project (Proposed Project) located west of Kelseyville in Lake County, CA on an approximate 513-acre property (Subject Property; APNs 007-006-34, 007-006-35, 007-006-40, 007-006-27, 007-006-41, 007-057-01, and 007-057-02). The Proposed Project consists of 27.7 acres of disturbed development area and includes commercial outdoor cannabis canopy and associated ancillary facilities. Infrastructure improvement activities include laying of irrigation lines and utility transmission lines, installation of 11 PG&E electrical transmission poles, and improvements to roadways and ingress, including re-compacting, re-graveling, grading, and culvert upgrades. The purpose of this memorandum is to document results of the biological resources survey conducted on June 22, 2022. A biological survey of the Property was conducted by AES biologists in May 2021 with survey goals consisting of identifying habitat types, sensitive habitats, wetlands, waters of the U.S., and special-status species. The June 2022 survey was conducted in accordance with Measure 4 of the February 2022 Biological Memorandum prepared by AES. Measure 4 included an additional botanical survey during the bloom period of two potentially occurring special-status plant species as identified in the 2022 memorandum: small-flowered calycadenia (*Calycadenia micrantha*) and Napa bluecurls (*Trichostema ruygtii*).

METHODOLOGY

AES biologist Jedidiah Dowell conducted a protocol-level bloom survey on July 22, 2022 to document potentially occurring special-status plant species which included small-flowered calycadenia (*Calycadenia micrantha*) and Napa bluecurls (*Trichostema ruygtii*), identified as having the potential to occur on the Proposed Project site. The bloom survey was consistent with the California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* in order to meet County Standards for evaluation of biological resources. Transects were walked across the Proposed Project site for these special-status plant species.

RESULTS AND RECOMMENDATIONS

Special-Status Plants

No special-status plants were observed during the survey. No occurrence of small-flowered calycadenia and Napa bluecurls were observed within the Proposed Project site. Additionally, none of the remaining four special status plant species identified as having potential to occur within the Subject Property were observed, including bent-flowered fiddleneck (*Amsinckia lunaris*), Brandegee's eriastrum (*Eriastrum brandegeeae*), glandular western flax (*Hesperolinon adenophyllum*), and Colusa layia (*Layia septentrionalis*). As the bloom period for small-flowered calycadenia and Napa bluecurls coincided with the negative findings of the June 2022 survey, and no additional special-status plants were observed, no further action is required.