
**BIOLOGICAL RESOURCE ASSESSMENT
WITH BOTANICAL SURVEYS
AND DELINEATION OF WATERS OF THE U.S.
for
THE VINEYARDIST ESTATE**

**APNs 020-430-018, 019 & 027
NAPA COUNTY, CA**

July 19, 2023

**Prepared by
Northwest Biosurvey**



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Prepared for: Dirk Fulton
The Vineyardist Estate
Napa, CA
Dirk.fulton707@gmail.com

Prepared by: Northwest Biosurvey
1905 Westlake Drive
Kelseyville, CA 95451
(707) 889-1061
nwbio98@gmail.com

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1.0 PROJECT DESCRIPTION

1.1 Proposed Project: This Biological Resource Assessment was conducted for five proposed new vineyard blocks on three parcels totaling approximately 107 acres, located in Napa County. The local permitting agency is requesting completion of an assessment of biological resources on the property as part of the California Environmental Quality Act (CEQA) review required for vineyard development.

The initial phase of this assessment evaluates the potential of the parcel to contain sensitive plant and wildlife habitat. The second phase consists of a floristic-level botanical survey listing all plant taxa¹ on and around the project area. The assessment will determine whether the property contains sensitive plants or potentially contains sensitive wildlife requiring mitigation under the California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA). As used here, the terms sensitive plant or wildlife includes all state or federal rare, threatened, or endangered species and all species listed in the California Natural Diversity Database (CNDDDB) list of "Special Status Plants, Animals and Natural Communities." One section is added to this assessment to meet Napa County environmental review policy: This is the "Conformance with the Napa County Baseline Data Report."

A delineation of waters of the U.S. was conducted due to the presence of streams within one of the vineyard blocks; the delineation is limited to this block due to the proposed disturbance of the stream in this location. Due to the fact that wetland delineations are prepared with a standard format for U.S. Army Corps of Engineers review, the delineation is provided as a separate report in **Appendix C**.

1.2 Location: The property is located off of Petrified Forest Road, approximately one-and a half miles west of the city of Calistoga, Napa County, California (APNs 020-430-018, 019 & 027; T08N R07W, Calistoga, Calif. 7½' Topographic Map). A location map is provided in Figure 1.

¹ Many sensitive plants and wildlife are subspecies or varieties which are taxonomic subcategories of species. The term "taxa" refers to species and their sub-specific categories.
The Vineyardist Estate Biological Resource Assessment Report, July 2023



LOCATION MAP
Figure 1

2.0 ASSESSMENT METHODOLOGY

The basis of the biological resource assessment is a comparison of existing habitat conditions within the project boundaries to the geographic range and habitat requirements of sensitive plants and wildlife. It includes all sensitive species that occupy habitats similar to those found in the project area and whose known geographic ranges encompass it. The approach is conservative in that it tends to over-estimate the actual number of sensitive species potentially present. The analysis includes the following site characteristics:

- Location of the project area with regard to the geographic range of sensitive plant and wildlife species
- Location(s) of known populations of sensitive plant and wildlife species as mapped in the California Natural Diversity Database (CNDDDB)
- Soils of the project area
- Elevation
- Presence or absence of special habitat features such as vernal pools and serpentine soils
- Plant communities existing within the project area

In addition to knowledge of the local plants and wildlife, the following computer databases were used to analyze the suitability of the site for sensitive species:

- California Department of Fish and Wildlife (CDFW), *California Natural Diversity Database (CNDDDB)*; RareFind 5, 2023
- California Native Plant Society's (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (2023 edition)
- Napa County *Baseline Data Report* (2005)

The CNDDDB and RareFind 5 databases consist of maps and records of all known populations of sensitive plants and wildlife in California. This data is continually updated by the CDFW with new sensitive species population data.

The CNPS database produces a list of sensitive plants potentially occurring at a site based on the various site characteristics listed above. While use of the CNPS inventory does not in itself eliminate the need for an in-season botanical survey, it can, when used in conjunction with other information, provide a very good indication of the suitability of a site as habitat for sensitive plant species.

2.1 Botanical Survey Methods: A full, in-season floristic-level survey was conducted for the project. CNDDDB information and maps for the Calistoga quadrangle were referenced prior to the survey. Vegetation communities were identified based on the nomenclature of *A Manual of California Vegetation* (Sawyer et al. 2009) as modified by the California Native Plant Society (CNPS) and mapped on a 1"=200' aerial photo. Vegetation community names are based on an assessment of dominant cover species.

Plants occurring on the site were identified using *The Jepson Manual of Higher Plants of California*. Where necessary, species names were updated based on the *CNPS Inventory of Rare and Endangered Plants of California*. A map of the vegetation types is provided in **Figure 2**.

2.2 Bat and Nestling Bird Habitat Survey Methods: Mature trees in woodlands within the proposed vineyard blocks were assessed for their potential as habitat for sensitive bat species and nesting birds. These included searching for hollow trees, trees with open cavities, and trees with exfoliating bark. Any trees meeting bat habitat or nesting bird criteria described above would be photographed, have their GPS coordinates recorded, and then be mapped on an aerial photo.

2.3 Woodland Assessment Methods: The proposed vineyard blocks contain three distinct forest and woodland communities which are discussed in Section 3.3, Vegetation Types. One study plot was selected within the Douglas Fir and Coast Live Oak communities and two from the Black Oak Forest community; these are potentially impacted woodlands based on natural community structure and identifiable geographic references (woodland boundaries, etc.). All trees within each study plot were mapped with a GPS waypoint and a record was made of its species, diameter at breast height (DBH), and any unique characteristics (dead, hollow, acorn storage tree, etc.). The methodology is discussed in detail in **Section 6** of this report.

2.4 Delineation Methods: Delineations are conducted as prescribed in the *Corps of Engineers Wetlands Delineation Manual*, January 1987, the *Arid West 2008 Supplement*, and the *2008/2010 OWHM Field Guide*. Plant taxonomy and nomenclature is from the *Jepson Manual, Higher Plants of California*, 2012. Other texts, such as Munz's *A California Flora and Supplement*, 1973, and Mason's *Flora of the Marshes of California*, 1957, were used as supplemental texts. The survey included use of lidar mapped overlays and an extensive foot survey.

2.5 Survey Dates: Site visits for botanical surveys, habitat assessments, the delineation, and mapping were made by Northwest Biosurvey staff on April 6, May 31, and July 7, 2023.

2.6 Biological Assessment Staff: Field surveys, plant taxonomy, and the delineation were conducted by Steve Zalusky, Northwest Biosurvey principal biologist. Mr. Zalusky has a Master of Science Degree in Biology from the California State University at Northridge and a Bachelor of Science Degree in Zoology from the University of California at Santa Barbara. Mr. Zalusky has over 35 years of experience as a biologist in the government and private sectors.

Database review, field work, and report preparation were conducted by Danielle Zalusky, Northwest Biosurvey principal planner. Ms. Zalusky has 15 years of experience as a planner in local government and the private sector and over 20 years as a field biologist. She has a Bachelor of Arts Degree and all course work toward an M.A. Degree in Rural and Town Planning from Chico State University.

3.0 SITE CHARACTERISTICS

3.1 Topography and Drainage: The Fulton Vineyard property is located along the eastern slopes of the Mayacamas Mountains separating the Napa Valley to the east from the Valley of the Moon and Santa Rosa Plain to the west (see **Figure 1**). The property occupies a steep southeast-to-northwest trending spur on the lower mountain slope.

Elevations range from approximately 1,160 feet msl along the southeastern edge of the property to 600 feet msl at the northeastern corner where the land drains to Cyrus Creek. Runoff is via a series of steep, ephemeral drainages flowing north and northeast to tributaries of Cyrus Creek. Cyrus Creek flows east to the Napa Valley where it joins the Napa River. The topography is shown in **Figure 1**.

3.2 Soils: The property contains the following soil types. A soil report is attached as **Appendix D**.

- **Aiken loam, 15-30%, 30-50% slopes (soil units 101 and 102):**

These sloping to strongly sloping well-drained soils are mainly on foot slopes on uplands. They formed in material weathered from basic volcanic rock. Included with these soils in mapping were small areas of Boomer, Forward, Kidd, and Sobrante soils. Permeability of the Aiken soil is moderately slow. Runoff is medium, and the hazard of erosion is slight to moderate. The natural vegetation consists of ponderosa pine, oaks, redwoods in moist draws, annual grasses, and brush in small areas that have been cleared.

- **Bale clay loam, 2-5% slopes (soil unit 105):**

This nearly level soil is on alluvial fans and flood plains. The surface layer is clay loam. Included with this soil in mapping were small areas of Cole, Clear Lake, and Yolo soils. These soils formed in alluvium derived from rhyolite and basic igneous rock. The plant cover is oak, blackberry, annual grasses, poison-oak, and willows. Runoff is slow, and the hazard of erosion is slight. Permeability is moderate. Temporary ponding is common during periods of high rainfall.

- **Boomer-Forward-Felta complex, 5-30% slopes (soil unit 111):**

The moderately steep soils of this complex are on uplands. The Boomer series consists of well drained soils. These soils formed in material weathered from mixed igneous rocks. The plant cover is Douglas fir, ponderosa pine, black oak, manzanita, poison oak, and madrone. Permeability is moderately slow. The Forward series consists of well drained soils. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Permeability is moderately rapid. The Felta series consists of well drained soils on terraces. These soils formed in material weathered from volcanic tuff mixed with uplifted river sediment and metamorphosed basic rock. The vegetation is madrone, Douglas fir, scrub oak, and manzanita. Permeability is moderate.

- **Forward gravelly loam, 30-75% slopes (soil unit 140):**

This steep and very steep soil is on uplands. Included with this soil in mapping were small areas of Aiken, Boomer, Kidd, and Sobrante soils. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Runoff is very rapid. The hazard of erosion is high to very high. Permeability is moderately rapid. This soil is used for timber, recreation, wildlife habitat, and watershed. Forward soils are used for watershed, wildlife habitat, and limited timber production.

- **Forward-Kidd complex, 11-60% slopes, MLRA 15 (soil unit 141):**

This complex consists of very steep soils on uplands. Commonly, the Forward soils are on toe slopes and the Kidd soils on side slopes. This complex is about 60 percent Forward soils, about 20 percent Kidd soils, and about 20 percent Aiken, Boomer, and Sobrante soils and areas of rock outcrop. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Runoff is rapid and the hazard of erosion is high. Permeability is moderately rapid. The Kidd series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The vegetation includes manzanita, chamise, ceanothus, scrub oak, grasses, and forbs and a few ponderosa pine. Permeability is moderately rapid.

- **Rock outcrop:**

This map unit consists of ridges of igneous bedrock. The areas are more than 90 percent Rock outcrop and less than 10 percent areas of soil material that is less than 6 inches deep. The vegetation consists of small shrubs and a few stunted trees in cracks between lichen-covered rocks. Runoff is very rapid. The hazard of erosion is high.

3.3 Vegetation Types: The site contains five vegetation types based on the "Standardized Classification" scheme described in the California Native Plant Society (CNPS) *A Manual of California Vegetation* (the Vegetation Manual). These vegetation types along with other cover types are listed in **Table 1**. They are described below the table and shown in the vegetation types map provided in **Figure 2**.

TABLE 1. VEGETATION AND OTHER COVER TYPES

COVER TYPE	Total Acres of Cover Type on Property	Percent of Property Supporting Cover Type	Vineyard Blocks (Acres)					Acres of Cover Types in Vineyard Blocks	Percent of Cover Types in Vineyard Blocks
			VB 1	VB 2	VB 3	VB 4	VB 5		
Douglas Fir Forest	61.56	57.72	2.75	-	0.08	1.99	0.98	5.8	9.42
California Black Oak Forest	24.23	22.72	-	2.15	0.56	-	-	2.71	11.18
Coast Live Oak Woodland	3.27	3.07	-	-	-	-	1.28	1.28	39.14
Chamise Chaparral	13.73	12.87	-	-	-	0.14	0.28	0.42	3.06
Wild Oat Grassland	0.42	0.39	-	-	-	-	-	0.00	0.00
Vineyard	2.33	2.18	-	-	-	-	-	0.00	0.00
Ruderal	1.12	1.05	-	-	-	0.05	0.06	0.11	9.82
Total Acres of Cover Type	106.66	100.00	2.75	2.15	0.64	2.18	2.60	10.32	8.58*

* Percent of total property in proposed and existing vineyard blocks

- **Douglas Fir Forest:**

This is a mature forest of dominant Douglas firs (*Pseudotsuga menziesii* var. *menziesii*) but with a co-dominant lower canopy of California black oak (*Quercus kelloggii*). The canopy cover is 90+ percent. Within this forest are scattered California bays (*Umbellularia californica*) and California buckeyes (*Aesculus californica*), generally as a much shorter lower canopy. The shrub layer is generally lacking; however, there is widely scattered toyon (*Heteromeles arbutifolia*). The ground cover is dominated by California fescue (*Festuca californica*) with scattered woodland forbs including mountain sweet cicely (*Osmorhiza berteroi*), Pacific sanicle (*Sanicula crassicaulis*), tripvine (*Symphoricarpos mollis*), poison oak (*Toxicodendron diversilobum*), California tule pea (*Lathyrus jepsonii* var. *californicus*), sub arctic lady fern (*Athyrium filix-femina* var. *cyclosorum*), and baby blue eyes (*Nemophila menziesii* var. *atomaria*). These are over a rocky substrate and a dense cover of duff and leaf litter.

Within steep and deeply shaded canyon bottoms to the east, the dominant cover of mature Douglas fir contains islands of coast redwood (*Sequoia sempervirens*). In addition to California black oak the sub-canopy in these shaded canyons includes tanoak (*Notholithocarpus densiflorus* var. *densiflorus*), coast live oak (*Quercus agrifolia* var. *agrifolia*), California bay, Pacific madrone (*Arbutus menziesii*), and big-leaf maple (*Acer macrophyllum*). The shrub layer consists primarily of seedlings of the upper and lower story trees but includes scattered Napa false indigo (*Amorpha californica* var. *napensis*), California blackberry (*Rubus ursinus*), and ocean spray (*Holodiscus discolor*). The ground cover is primarily duff and leaf litter but includes western sword fern (*Polystichum munitum*), California tule pea, and California fescue.

- **California Black Oak Woodland:**

This mature woodland is dominated by moderate-sized California black oaks that form a nearly homogenous stand that has 80-100% canopy closure. It includes a lower sparse canopy of small buckeyes. The community shares a majority of its species pallet with the Douglas fir forest and differs from it primarily in whether California black oak or Douglas fir dominates. This community essentially continues through the Douglas fir forest as a sub-canopy. The shrub layer is the same as that of the Douglas fir forest.

The ground cover often consists of a dense and continuous stand of California fescue. Other forbs include California tule pea, western buttercup (*Ranunculus occidentalis*), baby blue eyes, goosegrass (*Galium aparine*), and royal larkspur (*Delphinium variegatum* ssp. *variegatum*).

- **Coast Live Oak Woodland:**

This community occurs on the southeast ridgetop where it occupies the transition zone between the shaded Douglas Fir forest on the north-facing slope, and the Chamise Chaparral community on the south-facing slopes. It consists of coast live oaks, sub-dominant Pacific madrones and tan oaks. There is a disbursed shrub layer of common manzanita, interior live oak shrub (*Quercus wislizeni* var. *wislizeni*), bush monkeyflower (*Mimulus aurantiacus* ssp. *aurantiacus*), coyote brush (*Baccharis pilularis*), Sonoma creeping sage (*Salvia sonomensis*), and toyon. The ground cover is primarily leaf litter but it includes tripvine, California tulle pea, and California fescue. This species pallet represents a mix of xeric chaparral species and more mesic Douglas fir species.

- **Chamise Chaparral:**

This community dominates south-facing slopes at the southern end of the property. It consists of a nearly homogenous canopy cover (approximately 90% cover) of chamise (*Adenostoma fasciculatum* var. *fasciculatum*). It includes scattered common and white-leaf common manzanita (*Arctostaphylos manzanita* ssp. *manzanita*, *A. manzanita* ssp. *glaucescens*), poison oak (*Toxicodendron diversilobum*), and scattered interior live oak shrub (*Quercus wislizeni* var. *frutescens*). The ground cover consists of Sonoma creeping sage (*Salvia sonomensis*) with other forbs such as wavy-leaf soap plant (*Chlorogalum pomeridianum*), Diogenes lantern (*Calochortus amabilis*), and xeric grasses such as desert fescue (*Vulpia microstachys* var. *microstachys*). The community includes exposed bands of barren rock outcrop and small islands of California black oak and coast live oak woodland.

- **Wild Oat Grassland:**

This community is present in disturbed areas and along roadways and as a small clearing within surrounding Douglas fir forest. Among the more common species here are slender wild oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), Hartweg's sidalcea (*Sidalcea hartwegii*), California poppy (*Eschscholzia californica*), rose clover, and slender tarweed (*Madia gracilis*).

- **Vineyard:** An existing vineyard occupies a portion of the western property boundary,

- **Ruderal:**

This term refers to roadways, parking areas, structures and other disturbed areas

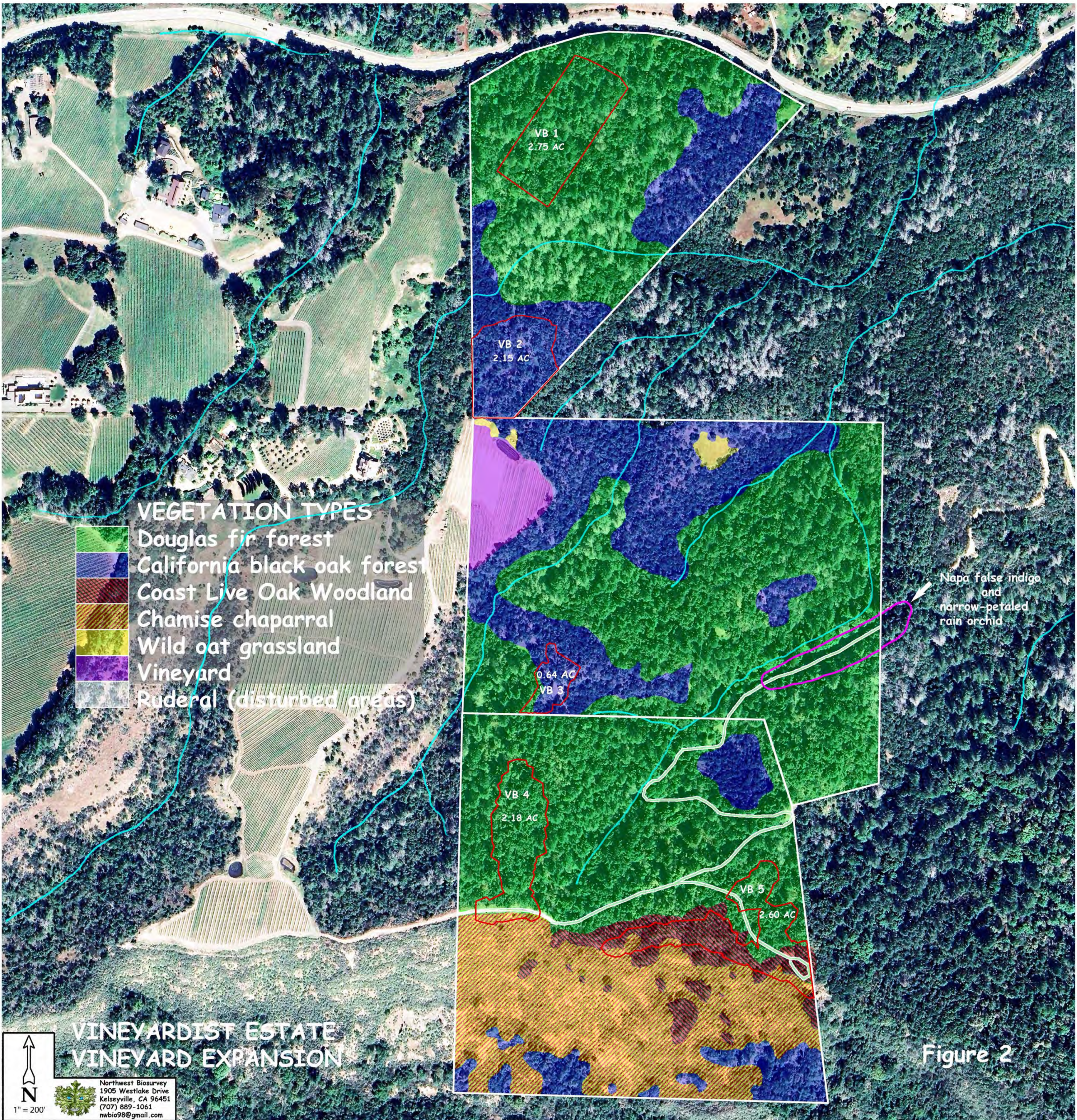


Figure 2

4.0 PRE-SURVEY RESEARCH RESULTS

4.1 CNPS Electronic Inventory Analysis: A California Native Plant Society (CNPS) analysis was conducted for all plants with federal and state regulatory status, and all non-status plants on the CNPS Rare Plant Ranks 1B through 4. The query included all plants within this area of Napa County occurring within the plant communities identified on the project site. The inventory lists species potentially occurring at the site; these are listed in **Table 2**. These species were included in the list of potentially sensitive species specifically searched for during field surveys.

4.2 California Natural Diversity Database: The California Natural Diversity Database (CNDDB) and CDFW RareFind 5 data and maps for the Calistoga 7½' quadrangle map were reviewed for this project. **Table 3** presents a list of sensitive plant and wildlife species known to occur within the quadrangle. In addition to listing the species present within the quadrangles, the table provides a brief descriptor of the habitat requirements and blooming season, along with an assessment of whether the project area contains the necessary habitat requirements for each species. **Appendix A** at the end of this report lists the species within the nine quadrangles in the vicinity of this property.

TABLE 2. CALIFORNIA NATIVE PLANT SOCIETY'S INVENTORY OF RARE AND ENDANGERED PLANTS

Selected CNPS Plants by Scientific Name

The Vineyardist Property

Scientific Name	Common Name	Family	Lifeform	CRPR	CESA	FESA	Blooming Period	Habitat
<i>Astragalus breweri</i>	Brewer's milk-vetch	Fabaceae	annual herb	4.2	None	None	Apr-Jun	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland (openings, often gravelly)
<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	Fabaceae	annual herb	1B.1	CE	FE	Mar-May	Chaparral (openings), Cismontane woodland, Valley and foothill grassland
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	Themidaceae	perennial bulbiferous herb	1B.2	None	None	May-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	Rhamnaceae	perennial evergreen shrub	1B.1	None	None	Feb-Jun	Chaparral, Cismontane woodland, Closed-cone coniferous forest
<i>Erythronium helenae</i>	St. Helena fawn lily	Liliaceae	perennial bulbiferous herb	4.2	None	None	Mar-May	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland
<i>Harmonia nutans</i>	nodding harmonia	Asteraceae	annual herb	4.3	None	None	Mar-May	Chaparral, Cismontane woodland
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	Polemoniaceae	annual herb	1B.2	None	None	Mar-May	Chaparral, Cismontane woodland, Valley and foothill grassland
<i>Lomatium repostum</i>	Napa lomatium	Apiaceae	perennial herb	4.2	None	None	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland

KEY FOR TABLE 2:

CNPS Rare Plant-Threat Rank Definitions:

CRPR = California Rare Plant Rank

1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California

1B.2 = Rare, threatened, or endangered in California and elsewhere; fairly threatened in California

1B.3 = Rare, threatened, or endangered in California and elsewhere; not very threatened in California

2A = Presumed extinct in California, but extant elsewhere

2B.1 = Rare, threatened, or endangered in Calif., but more common elsewhere; seriously threatened in Calif.

2B.2 = Rare, threatened, or endangered in Calif., but more common elsewhere; fairly threatened in Calif.

2B.3 = Rare, threatened, or endangered in Calif., but more common elsewhere; not very threatened in Calif.

3 = Plants about which we need more information (Review List)

3.1 = Plants about which we need more information (Review List); seriously threatened in California

3.2 = Plants about which we need more information (Review List); fairly threatened in California

3.3 = Plants about which we need more information (Review List); not very threatened in California

4.1 = Plants of limited distribution (watch list); seriously threatened in California

4.2 = Plants of limited distribution (watch list); fairly threatened in California

4.3 = Plants of limited distribution (watch list); not very threatened in California

State and Federal Status:

CESA = California Endangered Species Act

FESA = Federal Endangered Species Act

CR = State Rare

CT = State Threatened

SSC = CDFW Species of Special Concern

WL = CDFW Watch List

FT = Federal Threatened

CE = State Endangered

CD = State Delisted

FP = CDFW Fully Protected

FE = Federal Endangered

FD = Federal Delisted

TABLE 3. CNDDDB SENSITIVE PLANT AND WILDLIFE SPECIES WITHIN THE CALISTOGA, CALIF. 7½' QUADRANGLE

Habitat Type	Habitat Present
Coastal and Valley Freshwater Marsh	No

Plant Species	Common Name	Habitat Requirements, Fed/State/CNPS* Status	Blooming Season	Habitat Present
<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	Broadleaved upland forest, chaparral, cismontane woodland/openings; --/--/1B.2	April-July decid. shrub	Yes; found during surveys
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	Chaparral, cismontane woodland/highly restricted endemic to red rhyolites in Sonoma County; --/--/1B.1	Feb.-April everg. shrub	Habitat is present. Not found during surveys
<i>Astragalus breweri</i>	Brewer's milk-vetch	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland (open, often gravelly)/often serpentinite, volcanic; --/--/4.2	April-June ann. herb	Moderate habitat is present. Not found during surveys
<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	Chaparral, cismontane woodland, valley & foothill grassland/serpentinite or volcanic, rocky, clay; FE/SE/1B.1	March-May ann. herb	Habitat is present. Not found during surveys
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	Broadleaved upland forest, chaparral, lower montane coniferous forest, valley & foothill grassland/volcanic; --/--/1B.2	May-July per. herb	Habitat is present. Not found during surveys
<i>Calamagrostis ophitidis</i>	serpentine reed grass	Chaparral (open, often north-facing slopes), lower montane coniferous forest, meadows and seeps, valley and foothill grassland /serpentinite, rocky; --/--/4.3	April-July per. herb	Habitat is not present
<i>Ceanothus confusus</i>	Rincon ridge ceanothus	Closed cone coniferous forest, chaparral, cismontane woodland; volcanic; --/--/1B.1	Feb.-April everg. shrub	Habitat is present. Not found during surveys
<i>Ceanothus divergens</i>	Calistoga ceanothus	Chaparral, cismontane woodland/serpentine, volcanic, rocky; --/--/1B.2	Feb.-March everg. shrub	Habitat is present. Not found during surveys
<i>Ceanothus sonomensis</i>	Sonoma ceanothus	Chaparral/sandy, serpentine, or volcanic soils; --/--/1B.2	Feb.-April everg. shrub	Habitat is present. Not found during surveys
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	Coastal prairie, meadows & seeps, marshes & swamps (coastal salt), valley & foothill grassland (vernally mesic)/often alkaline; --/--/1B.2	May-Nov. ann. herb	Habitat is not present
<i>Clarkia breweri</i>	Brewer's clarkia	Chaparral, cismontane woodland, coastal scrub/often serpentinite; --/--/4.2	April-June ann. herb	Poor habitat present. Not found during surveys

Plant Species	Common Name	Habitat Requirements, Fed/State/CNPS* Status	Blooming Season	Habitat Present
<i>Erigeron biolettii</i>	streamside daisy	Broadleaved upland forest, cismontane woodland, North Coast coniferous forest /rocky, mesic: --/--/3	June-Oct. per. herb	Habitat is not present
<i>Eryngium constancei</i>	Loch Lomond button-celery	Volcanic ash flow vernal pools; FE/SE/1B.1	April-June ann/per herb	Habitat is not present
<i>Erythronium helenae</i>	St. Helena Fawn lily	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/volcanic or serpentinite; --/--/4.2	Mar-May bulb. herb	Habitat is present. Not found during surveys
<i>Fritillaria purdyi</i>	Purdy's fritillary	Chaparral, cismontane woodland, lower montane coniferous forest; usually serpentinite; --/--/4.3	March-June bulb. herb	Poor habitat present. Not found during surveys
<i>Harmonia nutans</i>	nodding harmonia	Chaparral, cismontane woodland/rocky or gravelly, volcanic; --/--/4.3	March-May ann. herb	Habitat is present. Not found during surveys
<i>Lasthenia burkei</i>	Burke's goldfields	Meadows and seeps, vernal pools and swales; FE/SE/1B.1	April-June ann. herb	Habitat is not present
<i>Leptosiphon acicularis</i>	bristly leptosiphon	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland; --/--/4.2	April-July ann. herb	Habitat is present. Not found during surveys
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	Chaparral, cismontane woodland, grassy slopes/volcanic or serpentine edge; --/--/1B.2	May-July ann. herb	Habitat is present. Not found during surveys
<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	Broad-leaved upland forest, cismontane woodland; --/--/4.3	April-June ann. herb	Habitat is present. Not found during surveys
<i>Lessingia hololeuca</i>	woolly-headed lessingia	Broadleaved upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/clay, serpentinite; --/--/3	June-Oct ann. herb	Habitat is not present
<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	Meadows and seeps, valley & foothill grassland, vernal pools/vernally mesic; FE/SE/1B.1	Apr.-May ann. herb	Habitat is not present
<i>Lomatium repostum</i>	Napa lomatium	Chaparral, cismontane woodland/serpentinite; --/--/4.3	March-July per. herb	Habitat is not present
<i>Lupinus sericatus</i>	Cobb Mountain lupine	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest/gravelly soils, sometimes serpentinite; --/--/1B.2	March-June per. herb	Habitat is present. Not found during surveys
<i>Monardella viridis</i>	green monardella	Broadleaved upland forest, chaparral, cismontane woodland; --/--/4.3	June-Sept. rhizom. herb	Habitat is present. Not found during surveys

Plant Species	Common Name	Habitat Requirements, Fed/State/CNPS* Status	Blooming Season	Habitat Present
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	Cismontane woodland, lower montane coniferous forest, meadows & seeps, valley & foothill grassland, vernal pools, swales/adobe or alkaline soils; --/--/1B.1	May-July ann. herb	Habitat is not present
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	Volcanic ash flow vernal pools; FE/ST/1B.1	May-June ann. herb	Habitat is not present
<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	Chaparral/crevices in rock outcrops and talus slopes; --/--/1B.3	April-Aug. per. herb	Habitat is not present
<i>Plagiobothrys strictus</i>	Calistoga popcorn-flower	Meadows and seeps, valley & foothill grassland, vernal pools. Alkaline sites near thermal springs; FE/ST/1B.1	March-June ann. herb	Habitat is not present
<i>Poa napensis</i>	Napa blue grass	Meadows & seeps, valley & foothill grassland; alkaline, near hot springs; FE/SE/1B.1	May-Aug per. herb	Habitat is not present
<i>Puccinellia simplex</i>	California alkali grass	Meadows and seeps, valley and foothill grasslands, vernal pools; alkaline, vernal mesic sinks, flats, lake margins; --/--/1B.2	March-May ann. herb	Habitat is not present
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	Cismontane woodland, North Coast coniferous forest, valley and foothill grassland, vernal pools/mesic--/--/4.2	Feb.-May ann. herb (aquatic)	Habitat is not present
<i>Sidalcea hickmanii</i> ssp. <i>napensis</i>	Napa checkerbloom	Chaparral/rhyolitic substrates; --/--/1B.1	April-June per. herb	Habitat is present. Not found during surveys
<i>Spergularia macrotheca</i> var. <i>longistyla</i>	long-styled sand-spurrey	Marshes and swamps, meadows and seeps/alkaline; --/--/1B.2	Feb.-May per. herb	Habitat is not present
<i>Trifolium hydrophilum</i>	saline clover	Marshes & swamps, valley & foothill grassland, vernal pools/mesic, alkaline sites; --/--/1B.2	April-June ann. herb	Habitat is not present
<i>Triteleia lugens</i>	dark-mouthed triteleia	Broadleaved upland forest, chaparral, coastal scrub, lower montane coniferous forest; --/--/4.3	April-June bulb. herb	Habitat is present. Not found during surveys

*See CNPS list for key

Wildlife Species	Common Name	Habitat Requirements, Status	Season Present	Habitat Present
<i>Bombus occidentalis</i>	western bumblebee	Once common in the western U.S., these bees are important pollinators of both wild plants and crops. Threats to the bee include insecticides, loss of habitat, climate change and diseases from commercial bee rearing. G4/S1	year-round	Habitat may be present
<i>Syncaris pacifica</i>	California freshwater shrimp	Endemic to Marin, Napa, Sonoma Counties. Vernal pools, low elevation, low gradient streams with moderate to heavy riparian cover; FE/SE/G1/S1	year-round	Habitat not present
<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead-Central California Coast DPS	Small cool fast-flowing tributary streams with gravel beds. Steelhead are anadromous species that require streams that are contiguous with the ocean. Russian River so. to Soquel Creek and to no. of Pajaro River, San Francisco and San Pablo bay basins; FT/G5/S2S3	migratory	Habitat not present
<i>Taricha rivularis</i>	red-bellied newt	Occurs near high to moderate gradient streams and rivers, riffles, pools. Burrows in soil or debris near water, emerges during fall rains to water to breed; SSC/G4/SNR	year-round	Habitat not present
<i>Dicamptodon ensatus</i>	California giant salamander	Cool, moist forest habitats associated with rocky streams; SSC/G3/SNR	year-round	Habitat not present
<i>Rana boylei</i>	foothill yellow-legged frog	Riparian/aquatic: partly-shaded, shallow streams & riffles with a rocky substrate in variety of habitats; SSC/SE/G3/S2S3	year-round	Habitat may be present
<i>Rana draytonii</i>	California red-legged frog	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat. FT/SSC/G2G3/S2S3	year-round	Habitat not present
<i>Emys marmorata</i>	western pond turtle	Aquatic turtle found in ponds, lakes, rivers, creeks, marshes & irrigation ditches with abundant vegetation and rocky or muddy bottoms; In woodland, forest, & grasslands; SSC/G3G4/S3	year-round	Poor habitat present
<i>Accipiter striatus</i>	sharp-shinned hawk	Cool, moist, well-shaded conifer and deciduous forest, north-facing slopes with plucking perches relatively close to water; WL/G5/S4	year-round	Habitat may be present
<i>Falco peregrinus anatum</i>	American peregrine falcon	Volcanic cliffs, steep slopes covered by chaparral with open grassy areas; nesting sites on ledges; D/SD/SFP/G4/S3S4	migratory	Habitat not present
<i>Strix occidentalis caurina</i>	northern spotted owl	Old-growth forests or mixed stands of old-growth & mature trees; occasionally in younger forests with patches of big trees; FT/ST/SSC	year-round	Habitat may be present

Wildlife Species	Common Name	Habitat Requirements, Status	Season Present	Habitat Present
<i>Antrozous pallidus</i>	pallid bat	Open, dry habitats, forest habitats, in caves, tunnels, buildings, bridges; sensitive to human disturbance; SSC/G5/S3	local migrant	Habitat may be present
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	Roosts in open near relatively mesic sites, mainly montane forest habitats; SSC/G3/S2	local migrant	Poor habitat present
<i>Myotis thysanodes</i>	fringed myotis	Caves, mines, buildings; valley foothill hardwood or hardwood-conifer, sometimes redwood forests; G4/S3	local migrant	Habitat may be present
<i>Myotis yumanensis</i>	Yuma myotis	Open conifer forests and riparian woodlands with nearby water. Roosts may be found in caves, mines, under bridges, and buildings; G5/S4	year-round	Habitat may be present

Key for Table 3:

SE/ST/SD=State Endangered/Threatened/Delisted
SC/SCD=State Candidate for Listing/Delisting
SSC=CDFW Species of Special Concern
SFP=CDFW Fully Protected
WL=CDFW Watch List
FE/FT/FD=Federal Endangered/Threatened/Delisted
FPE/FPT/FPD/FP=Federal Proposed Endangered/Threatened/Delisting

NatureServe Conservation Status:

G1/S1 = Global/State Critically Imperiled
G2/S2 = Global/State Imperiled
G3/S3 = Global/State Vulnerable
G4/S4 = Global/State Apparently Secure
G5/S5 = Global/State Secure
SNR=Not rated
FC=Federal Candidate

4.3 Wildlife Assessment: Based on the pre-survey research conducted for this study, the following sensitive wildlife species need to be accounted for within the project area. These consist of the species identified as present within the Calistoga quadrangle by the CNDDDB or identified in the Napa County BDR. Accepted protocol requires that all CNDDDB species in the surrounding U.S.G.S. quadrangle be discussed even though suitable habitat may not occur on the site.

The property currently provides diverse habitats including hardwood and conifer forests, chaparral, annual grassland, and vineyards. While there are ephemeral streams throughout, the lack of perennial water limits the presence of fish and amphibian species that require permanent, cool water. There are no ponds in the project area.

The following species are not likely to occur on the property due to lack of permanent water or other appropriate habitat:

- California freshwater shrimp (low gradient, low elevation, perennial streams)
- Steelhead-Central California Coast DPS (perennial streams)
- Red-bellied newt (high to moderate gradient streams and rivers)
- California giant salamander (damp forests in cool, rocky streams, ponds and lakes)
- California red-legged frog (deep, slow-moving streams with dense bank vegetation)
- American peregrine falcon (nests are in protected cliffs and ledges in canyons)
- Townsend's big-eared bat (relatively mesic roosting sites, buildings, caves)
- Western bumblebee (wet meadows)

The potential for occurrence of the remaining wildlife species is addressed below.

- Foothill yellow-legged frog
- Western pond turtle
- Sharp-shinned hawk
- Northern spotted owl
- Purple martin
- Pallid bat
- Fringed myotis
- Yuma myotis

Note: Even when lacking sensitive status, migratory passerines and birds of prey are protected under the Migratory Bird Treaty Act. All nesting birds are protected under Section 3503 of the California Fish and Game Code. Removal or trimming of trees has a

potential to result in an incidental take of eggs, or nestlings if clearing of tree habitat occurs during the nesting season (February 1 through August 31).

- **Foothill yellow-legged frog (*Rana boylei*):**

These frogs are relatively common along the shaded banks of perennial headwater streams, and they are heavily dependent on the presence of perennial water and are seldom far from pools where they can seek shelter from predation. The larvae require three to four months to mature, making most ephemeral streams unsuitable as breeding sites. Sustainably long duration seasonal streams may occur in deep canyons along the eastern edge of the property. Streams in the western half of the property are short duration ephemeral channels and would not support this species. Additionally, none of the vineyard blocks are near a stream and this species, if present, would not be impacted by vineyard development.

- **Western pond turtle (*Emys marmorata*):**

These turtles prefer slow or ponded water but will range widely through less suitable habitat in search of these sites. There are no ponds within the survey area, although some of the lower, eastern stream segments may be used seasonally as movement corridors between off-site ponds.

- **Sharp-shinned hawk (*Accipiter striatus*):**

This species has been included because it is shown in the CNDDDB for the Calistoga quadrangle. It is on the California Department of Fish and Wildlife Watch List but does not currently have state protected status. However, it remains on the Napa County Baseline Data Report Table 4-7 as a sensitive species. It breeds in woodland and forest habitats, specifically riparian habitats. These hawks roost in dense mid- to high-canopy forest near open areas, and nest in dense, even-aged forest canopy near water. This hawk prefers riparian habitats and requires north-facing slopes with plucking perches. As with all raptors, it remains protected under the Migratory Bird Treaty Act and California Fish and Game Code. The project area provides excellent potential habitat for this species.

- **American peregrine falcon (*Falco peregrinus anatum*):**

This species requires protected cliffs and ledges in canyons for cover and is included in the Calistoga USGS quadrangle. The falcons prefer woodland and forest habitats near water for breeding and will remain year-long in riparian areas. In addition to water, the species requires protective cliffs and ledges for nesting and cover. Population decline has been mostly due to pesticide use.

This species occurs locally at a suitable cliff nesting site. Suitable nesting sites do not occur within the immediate project area; however, the project site is within the normal

home range of this species. The protected status of this species is applied to active nest sites.

- **Northern spotted owl (*Strix caurina occidentalis*):**

These medium-sized owls are usually found in dense, multi-layered old-growth conifer, redwood, and fir forests; occasionally they may also be found in otherwise-suitable newer-growth forests in California. They are intolerant of high temperatures and inhabit cool, moist, well-shaded habitats. In summer, the owls roost in north-facing slopes in dense overhead canopy, while in winter they may roost in oak habitats. They nest in tree or snag cavities, or in broken tops of large trees. Mature multi-layered forests are required for breeding. Territories for the owl are very large. This species is very sensitive to habitat disturbance and destruction, predation by other birds, and low reproductive success. The deeply shaded Douglas fir forest provides ideal potential habitat for this owl.

There are several accounts of these federally threatened owls south of the property which are mapped by the CNDDDB. These accounts are located along north-facing slopes. The species can be considered locally abundant along the extension of the Coast Range that separates the Napa Valley from the Santa Rosa Plain.

The project area has been subject to an ongoing spotted owl survey being conducted separately from this biological resource assessment. The project sponsor will provide the results of this survey to reviewing agencies during the permit review period. It is our understanding that the results for spotted owls within the immediate project area have been negative.

- **Purple martin (*Progne subis*):**

This passerine (perching) bird prefers open, old growth, multilayered woodlands and forests with nearby water or riparian areas. It is a California Species of Special Concern while nesting. These birds may nest as pairs in old woodpecker cavities or in colonies in large hollow snags. Moderately suitable habitat for purple martins occurs on the property. Previous surveys conducted on this property for this species by Northwest Biosurvey were negative; however, the species may be present in the extensive Douglas fir and California black oak forests.

- **Lewis' woodpecker (*Melanerpes lewis*); Lawrence's gold finch (*Carduelis lawrencei*):**

Both of these bird species require open woodlands for nesting. Lewis' woodpeckers excavate nest cavities in dead trees and dead limbs of live trees in open woodlands. Lawrence's goldfinches prefer to nest in the dense foliage of oaks in dry open woodland near brushy and grassy areas or chaparral. The very dense forests on the

parcel and within the proposed vineyard blocks provide poor habitat for these bird species.

- **Loggerhead shrike (*Lanius ludovicianus*):**

This is a Napa County locally sensitive species as described in the BDR. As with the woodpecker and goldfinch discussed above, these passerines prefer open-canopied woodlands with grass groundcover, and grazed pastures. They build well-concealed nests in the dense foliage of oaks and shrubs. They eat large insects but are fairly unique for passerines in that they also eat small amphibians, reptiles, birds, and mammals which they may impale on thorns or barbed wire fences. Shrikes use fence posts or shrubs as observation posts. The dense forests and lack of adjacent grasslands provide poor habitat for these birds.

- **Pallid bats (*Antrozous pallidus*):**

Pallid bats prefer open forest and woodlands with sources of water over which to feed. These bats prefer the cool summer temperatures of caves, crevices, and mines as roosting sites where they are known to wedge themselves into small spaces, but they will also roost in buildings, bridges, and hollow trees. Foraging occurs over open country. Maternity colonies tend to be in the more protected, isolated locations and may consist of more than 100 individuals. These bats have a home range of 1 to 3 miles and are known to roost with other bat species. This species is extremely sensitive to human disturbance of roosting sites.

This species is included in the CNDDDB as occurring north of Calistoga. Suitable nesting structures for this species may occur in the oak woodlands but there is a lack of nearby water that the bats need for feeding. A bat habitat survey was conducted within the proposed vineyard blocks. The proposed vineyard blocks lack older decadent or fire damaged trees that would provide suitable habitat for these bats.

- **Fringed myotis bat (*Myotis thysanodes*):**

This species is included in CNDDDB maps but has no state or federal status. Locally this bat is found at low elevations and is associated with open redwood forests. Maternity colonies are large, with up to 300 individuals, and are located in caves, mines, and buildings. Males roost separately from the maternity colonies near water. This species has a small potential to be present in Douglas fir forests on the property, but the vineyard blocks themselves do not provide good habitat for this species.

- **Yuma myotis (*Myotis yumanensis*):**

This species does not have special status in California. Yuma myotis is a small-sized bat with relatively large feet. Its preferred habitat is open conifer forests and riparian woodlands with nearby water, although it may occur in arid areas if permanent water is present. Day and night roosts are commonly found in caves, mines, under bridges, buildings, and sometimes trees. Its diet includes aquatic emergent insects such as mayflies, midges, caddis flies, along with small beetles, flies, and small moths; these are often gleaned from the surfaces of ponds and other bodies of water. Yuma myotis mate in the fall and births last from late May to mid-June with a peak in early June. Females bear a single young in a year. Threats to this species are from closures of mines and disturbance of maternity roosts in buildings, as well as pest control activities. The property lacks appropriate habitat for Yuma myotis due to the dense woodlands and lack of water.

5.0 FIELD SURVEY RESULTS

5.1 Bat Survey Results: Mature trees within the proposed vineyard blocks were evaluated as potential habitat for bats. These included searching for hollow trees, trees with open cavities, trees with exfoliating bark, and bat sign such as guano, dead bats, or vocalizations. Trees within or adjacent to the vineyard blocks are relatively small and the lack of water makes it unlikely preferred habitat for bats occurs on the property. The trees lack hollows or peeling bark suitable for roosting sites.

5.2 Botanical Field Survey Results: Table 4 presents the results of the floristic-level botanical surveys conducted in 2023. Each of the sensitive plant taxa potentially occurring at or within the property and listed in Tables 2 and 3 was specifically searched for during the surveys. A total of 118 native and introduced plant taxa are included in the plant list.

Two plants with sensitive regulatory status were found on the property during the surveys:

- **Napa false indigo (*Amorpha californica* var. *napensis*)** is ranked by CNPS as a 1B.2 plant.
- **Narrow petaled rein orchid (*Piperia leptopetala*)** is a CNPS Rank 4.2 taxon.

Plants ranked 1B are considered by regulatory agencies to qualify as rare under Section 15380(d) of the California Environmental Quality Act (CEQA) and thus require consideration and subsequent mitigation during CEQA review. The CNPS defines Rank 4.2 plants as "Limited distribution (watch list); fairly endangered in California." Rank 4.3 is a watch list of plants moderately threatened in California but lacking special status.

Note: Even when a site meets the generalized habitat description for a sensitive plant taxon, this is not a guarantee that it is present. The precise habitat requirements for any species cannot be known in most cases. Plants with sensitive regulatory status are rare because they have a narrow band of habitat criteria that must be met. These may include a wide range of factors including microclimate, seasonal soil moisture, soil chemistry and texture, and presence or absence of specific pests or competitors.

At present the specifics of these factors are not known for the vast majority of plant taxa. This issue is understood by regulatory biologists and is dealt with through the requirement that a floristic-level botanical survey be conducted which lists all plants occurring at a site throughout the full range of blooming seasons. Ultimately, the botanical survey determines whether a taxon is present or not present.

TABLE 4. FLORA OF THE VINEYARDIST ESTATE PROJECT

Habit	Species	Common Name	Family	Origin
fern	<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	sub-arctic lady fern	Athyriaceae	N
fern	<i>Dryopteris arguta</i>	coastal wood fern	Dryopteridaceae	N
fern	<i>Polystichum munitum</i>	western sword fern	Dryopteridaceae	N
fern	<i>Pellaea andromedifolia</i>	coffee fern	Pteridaceae	N
fern	<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	gold-back fern	Pteridaceae	N
forb	<i>Anthriscus caucalis</i>	bur chervil	Apiaceae	A
forb	<i>Osmorhiza berteroi</i>	mountain sweet cicely	Apiaceae	N
forb	<i>Sanicula bipinnatifida</i>	purple sanicle	Apiaceae	N
forb	<i>Sanicula crassicaulis</i>	Pacific sanicle, Pacific blacksnakeroot	Apiaceae	N
forb	<i>Agoseris grandiflora</i>	California dandelion, big-flower agoseris	Asteraceae	N
forb	<i>Agoseris heterophylla</i>	annual agoseris	Asteraceae	N
forb	<i>Cirsium brevistylum</i>	clustered thistle, Indian thistle	Asteraceae	N
forb	<i>Cirsium douglasii</i> var. <i>breweri</i>	Brewer's swamp thistle	Asteraceae	N
forb	<i>Cirsium vulgare</i>	bull thistle	Asteraceae	A
forb	<i>Hypochaeris glabrata</i>	smooth cat's ear	Asteraceae	A
forb	<i>Hypochaeris radicata</i>	rough cat's-ear	Asteraceae	A
forb	<i>Lactuca seriola</i>	prickly lettuce	Asteraceae	A
forb	<i>Lasthenia californica</i>	California goldfields	Asteraceae	N
forb	<i>Madia gracilis</i>	slender tarweed	Asteraceae	N
forb	<i>Micropus californicus</i> var. <i>californicus</i>	slender cottonweed, California cottonweed	Asteraceae	N
forb	<i>Senecio vulgaris</i>	common butterweed	Asteraceae	A
forb	<i>Sonchus oleraceus</i>	common sow thistle	Asteraceae	A
forb	<i>Cynoglossum grande</i>	grand hound's tongue	Boraginaceae	N
forb	<i>Brassica nigra</i>	black mustard	Brassicaceae	A
forb	<i>Cardamine breweri</i>	Brewer's bittercress	Brassicaceae	N
forb	<i>Cerastium glomeratum</i>	mouse-ear chickweed, sticky mouse-ear	Caryophyllaceae	A
forb	<i>Petrorhagia dubia</i>	wilding pink	Caryophyllaceae	A
forb	<i>Eremocarpus setigerus</i>	turkey mullein	Euphorbiaceae	N

Habit	Species	Common Name	Family	Origin
forb	<i>Euphorbia oblongata</i>	eggleaf spurge	Euphorbiaceae	A
forb	<i>Lathyrus jepsonii</i> var. <i>californicus</i>	California tule pea	Fabaceae	N
forb	<i>Lathyrus vestitus</i> var. <i>vestitus</i>	perennial sweet pea	Fabaceae	N
forb	<i>Lotus humistratus</i>	hill lotus	Fabaceae	N
forb	<i>Lupinus albifrons</i> var. <i>collinus</i>	silver bush lupine	Fabaceae	N
forb	<i>Trifolium hirtum</i>	rose clover	Fabaceae	A
forb	<i>Trifolium repens</i>	white lawn clover	Fabaceae	A
forb	<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae	N
forb	<i>Vicia villosa</i> ssp. <i>villosa</i>	woolly vetch	Fabaceae	A
forb	<i>Erodium cicutarium</i>	red-stem storksbill	Geraniaceae	A
forb	<i>Nemophila menziesii</i> var. <i>atomaria</i>	baby blue eyes	Hydrophyllaceae	N
forb	<i>Nemophila parviflora</i> var. <i>parviflora</i>	small-flowered nemophila, woodland nemophila	Hydrophyllaceae	N
forb	<i>Iris macrosiphon</i>	bowl-tubed iris	Iridaceae	N
forb	<i>Sisyrinchium bellum</i>	blue-eyed grass	Iridaceae	N
forb	<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	Juncaceae	N
forb	<i>Juncus confusus</i>	Colorado rush	Juncaceae	N
forb	<i>Clinopodium douglasii</i>	yerba buena	Lamiaceae	N
forb	<i>Salvia sonomensis</i>	Sonoma creeping sage	Lamiaceae	N
forb	<i>Stachys albens</i>	white-stem hedge nettle	Lamiaceae	N
forb	<i>Stachys albens</i>	cobwebby hedge nettle, white-stem hedge nettle	Lamiaceae	N
forb	<i>Calochortus amabilis</i>	Diogenes lantern, golden fairy lantern	Liliaceae	N
forb	<i>Chlorogalum pomeridianum</i>	wavy-leaf soap plant	Liliaceae	N
forb	<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	blue dicks	Liliaceae	N
forb	<i>Dichelostemma congestum</i>	ookow	Liliaceae	N
forb	<i>Sidalcea hartwegii</i>	Hartweg's sidalcea	Malvaceae	A
forb	<i>Clarkia gracilis</i> ssp. <i>gracilis</i>	graceful clarkia	Onagraceae	N
forb	<i>Piperia leptopetala</i>	narrow-petaled rein orchid; CNPS 4.3	Orchidaceae	N

Habit	Species	Common Name	Family	Origin
forb	<i>Eschscholzia californica</i>	California poppy	Papaveraceae	N
forb	<i>Plantago elongata</i>	long leaf plantain	Plantaginaceae	N
forb	<i>Plantago lanceolata</i>	English plantain	Plantaginaceae	A
forb	<i>Linanthus bicolor</i>	true baby stars	Polemoniaceae	N
forb	<i>Phlox gracilis</i>	slender phlox	Polemoniaceae	N
forb	<i>Rumex crispus</i>	curly dock	Polygonaceae	A
forb	<i>Claytonia perfoliata ssp. perfoliata</i>	miner's lettuce	Portulacaceae	N
forb	<i>Anagalis arvensis</i>	scarlet pimpernel	Primulaceae	A
forb	<i>Delphinium variegatum ssp. variegatum</i>	royal larkspur	Ranunculaceae	N
forb	<i>Ranunculus occidentalis</i>	western buttercup	Ranunculaceae	N
forb	<i>Sanguisorba minor ssp. muricata</i>	garden burnet	Rosaceae	A
forb	<i>Galium aparine</i>	goose grass, common bedstraw	Rubiaceae	N
forb	<i>Galium murale</i>	tiny bedstraw	Rubiaceae	A
forb	<i>Galium porrigens var. porrigens</i>	climbing bedstraw	Rubiaceae	N
forb	<i>Heuchera micrantha</i>	crevice alumroot	Saxifragaceae	N
forb	<i>Lithophragma parviflorum</i>	woodland star	Saxifragaceae	N
forb	<i>Collinsia sparsiflora</i>	spinster's blue-eyed Mary	Scrophulariaceae	N
grass	<i>Aira caryophyllea</i>	silver European hairgrass	Poaceae	A
grass	<i>Avena barbata</i>	slender wild oat	Poaceae	A
grass	<i>Brachypodium distachyon</i>	purple false brome	Poaceae	A
grass	<i>Bromus diandrus</i>	ripgut brome, ripgut grass	Poaceae	A
grass	<i>Bromus hordeaceus</i>	soft chess	Poaceae	A
grass	<i>Bromus madritensis ssp. rubens</i>	red brome	Poaceae	A
grass	<i>Bromus sterilis</i>	poverty brome	Poaceae	A
grass	<i>Cynosurus echinatus</i>	bristly dogtail grass	Poaceae	A
grass	<i>Festuca arundinacea</i>	tall fescue	Poaceae	A
grass	<i>Festuca californica</i>	California fescue	Poaceae	N
grass	<i>Hordeum marinum ssp. gussoneanum</i>	Mediterranean barley	Poaceae	A
grass	<i>Melica californica</i>	California melic	Poaceae	N

Habit	Species	Common Name	Family	Origin
grass	<i>Melica torreyana</i>	torrey melic	Poaceae	N
grass	<i>Secale cereal</i>	cereal rye	Poaceae	A
grass	<i>Stipa lepida</i>	foothill needle-grass	Poaceae	N
grass	<i>Vulpia microstachys</i> var. <i>microstachys</i>	desert fescue	Poaceae	N
grass	<i>Vulpia myuros</i> var. <i>hirsuta</i>	foxtail fescue	Poaceae	A
shrub	<i>Toxicodendron diversilobum</i>	poison oak	Anacardiaceae	N
shrub	<i>Baccharis pilularis</i>	coyote brush, chaparral broom	Asteraceae	N
shrub	<i>Arctostaphylos manzanita</i> ssp. <i>glaucescens</i>	white-leaf common manzanita	Ericaceae	N
shrub	<i>Arctostaphylos manzanita</i> ssp. <i>manzanita</i>	common manzanita	Ericaceae	N
shrub	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo; CNPS Rank 1B.2	Fabaceae	N
shrub	<i>Quercus wislizeni</i> var. <i>frutescens</i>	interior live oak	Fagaceae	N
shrub	<i>Eriodictyon californicum</i>	California yerba santa	Hydrophyllaceae	N
shrub	<i>Mimulus aurantiacus</i> ssp. <i>aurantiacus</i>	bush monkeyflower, sticky monkeyflower	Phrymaceae	N
shrub	<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>	buckbrush	Rhamnaceae	N
shrub	<i>Adenostoma fasciculatum</i> var. <i>fasciculatum</i>	chamise	Rosaceae	N
shrub	<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	birch-leaf mountain mahogany	Rosaceae	N
shrub	<i>Heteromeles arbutifolia</i>	toyon	Rosaceae	N
shrub	<i>Holodiscus discolor</i>	oceanspray, creambush	Rosaceae	N
shrub	<i>Rosa californica</i>	California wild rose	Rosaceae	N
shrub	<i>Rubus ursinus</i>	California blackberry	Rosaceae	N
tree	<i>Sequoia sempervirens</i>	coast redwood	Cupressaceae	N
tree	<i>Arbutus menziesii</i>	Pacific madrone	Ericaceae	N
tree	<i>Lithocarpus densiflorus</i> var. <i>densiflorus</i>	tanoak	Fagaceae	N
tree	<i>Quercus agrifolia</i>	coast live oak	Fagaceae	N
tree	<i>Quercus douglasii</i>	blue oak	Fagaceae	N
tree	<i>Quercus kelloggii</i>	California black oak	Fagaceae	N
tree	<i>Quercus wislizeni</i> var. <i>wislizeni</i>	interior live oak	Fagaceae	N
tree	<i>Aesculus californica</i>	California buckeye	Hippocastanaceae	N
tree	<i>Umbellularia californica</i>	California bay	Lauraceae	N

Habit	Species	Common Name	Family	Origin
tree	<i>Olea europaea</i>	European olive	Oleaceae	A
tree	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas fir	Pinaceae	N
tree	<i>Acer macrophyllum</i>	big-leaf maple	Sapindaceae	N
vine	<i>Lonicera hispidula</i> var. <i>vacillans</i>	hairy honeysuckle	Caprifoliaceae	N
vine	<i>Symphoricarpos mollis</i>	tripvine, creeping snowberry	Caprifoliaceae	N

Origin: N = Native, A = Alien

6.0 NAPA COUNTY WOODLAND ASSESSMENT

This woodland analysis follows a protocol reviewed and approved by Napa County planning staff in January of 2008.

6.1 Procedure: The proposed vineyard blocks contain areas of Coast live oak woodland, and Douglas fir and California black oak forest, in addition to small areas of chamise chaparral. The makeup of these communities is described in detail in section 3.3.

A representative sample plot was analyzed in each of the forest and woodland communities in order to characterize the species makeup, abundance, age (diameter at base height-DBH) and community structure of each forest or woodland impacted by vineyard development. Two plots were sampled for the Black Oak Forest due to difference in community structure between blocks 2 and 3. The size of the tree sample plot was based on the need to acquire a statistically significant number of trees for analysis. Waypoints for trees used in the analysis are mapped in **Figure 2**, with specific instance information presented in the "Tree Survey Data Sheets" contained in **Appendix C**.

Tables 5, 6, 7 & 8 provide an estimate of the species pallet, density and structure characteristic of the forests and woodlands that will be impacted by vineyard development in the proposed vineyard blocks based on the mapping methods outlined above. **Table 9** estimates the number and species of trees impacted within each vineyard block based on this analysis.

TABLE 5. TREE SURVEY DATA SUMMARY – DOUGLAS FIR FOREST (Block 1)

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (Inches)	STANDARD DEVIATION DBH (Inches)	AVERAGE # OF TRUNKS PER ACRE ⁴
DFR	18	10.39	5.72	63
BLK	7	16.71	2.87	25
MAD	3	11.67	0.47	10
BUC	1	9	0	3
TOTAL	29	-	-	101
Total area of sample plot		12,567 ft ²		
Average canopy size ¹		390 ft ²		
Average distance between trunks ²		20.81 ft		
Canopy closure ³		90%		

TABLE 6. TREE SURVEY DATA SUMMARY – BLACK OAK WOODLAND (Block 2)

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (Inches)	STANDARD DEVIATION DBH (Inches)	AVERAGE # OF TRUNKS PER ACRE ⁴
BLK	26	11.31	6.05	95
BUC	5	4.90	1.24	18
TOTAL	31	-	-	113
Total area of sample plot		11,984 ft ²		
Average canopy size ¹		347 ft ²		
Average distance between trunks ²		20 ft		
Canopy closure ³		90%		

TABLE 7. TREE SURVEY DATA SUMMARY – BLACK OAK WOODLAND (Block 3)

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (Inches)	STANDARD DEVIATION DBH (Inches)	AVERAGE # OF TRUNKS PER ACRE ⁴
BLK	31	11.71	4.88	93
DFR	5	9.33	4.19	15
MAD	1	5.00	0	3
TOTAL	37	-	-	111
Total area of sample plot		14,565 ft ²		
Average canopy size ¹		276 ft ²		
Average distance between trunks ²		19.84 ft		
Canopy closure ³		70%		

TABLE 8. TREE SURVEY DATA SUMMARY – COAST LIVE OAK WOODLAND (Block 5)

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (Inches)	STANDARD DEVIATION DBH (Inches)	AVERAGE # OF TRUNKS PER ACRE ⁴
CLO	26	15.40	6.93	68
DFR	6	9.33	3.33	16
MAD	5	17.21	12.26	13
TOTAL	37	-	-	99
Total area of sample plot		16,314 ft ²		
Average canopy size ¹		397 ft ²		
Average distance between trunks ²		23.00 ft		
Canopy closure ³		90%		

Key for Tree Data Tables:

DFR = Douglas Fir

MAD = Pacific madrone

BAY = California Bay

BLK = California Black Oak

BUC = Buckeye

GPS waypoint for each tree is indicated on the vegetation map provided in Figure 2.

1. Average canopy size per tree/trunk = (area of test plot X percent canopy closure)/combined # of trees in test plots
2. Average distance between trunks = square root of (sample area/total number of trunks)
3. Total area of canopy in community/total area of community
4. Total number of trunks per acre = ((ft²/acre)/area of test plot)) X number of trunks in test plot

TABLE 9. ESTIMATED NUMBERS & SPECIES OF TREES WITHIN PROPOSED VINEYARD BLOCKS

Area	Number and Species of Trees					TOTAL # of TREES per VINEYARD BLOCK
	CLO	DF	BLK	MAD	BUC	
VB 1	0	173	69	28	8	278
VB 2	-	-	204	-	39	243
VB 3	-	10	60	2	-	72
VB 4	-	125	50	20	6	201
VB 5	87	77	23	26	3	216
Total # Each Species	87	385	406	76	56	Total estimated trees in all Vineyard Blocks = 1,010

6.2 Regional Setting and Continuity with Surrounding Woodlands and Habitat:

The Fulton Vineyard property is located along the eastern slopes of Mayacamas Mountain Range separating the Napa Valley to the east from the Valley of the Moon and Santa Rosa Plain to the west (see **Figure 1**). The property occupies a steep southeast to northwest trending ridge separating the north and east forks of Cyrus Creek. Shaded slopes in this region generally support Douglas fir forest and California black oak forest with enclaves of coast redwood in the most shaded canyons. The exposed west and south-facing slopes typically support coast live oak and blue oak woodland and various chaparral communities. Sources of summer and fall water tend to be limited to a few perennial stream segments in the bottoms of steep canyons or to agricultural ponds.

Figure 3 provides a 1"=3,000' aerial photo showing the regional setting of the Fulton Vineyard property. As can be seen, the property is located within a broad swath of formerly continuous forest and woodland occupying the steep, shaded, east-facing slopes along the western edge of the Napa Valley. Approximately 25-percent of this

forest has been supplanted by vineyard development during the past 20 years. Continuity within this forested habitat is maintained along steep mountain slopes and canyons that are not suitable for vineyard development.

6.3 Wildlife Value of Woodlands in the Survey Area:

- **Core Habitat Value:** Core habitat is habitat provided by a plant community in its pure form without the direct influence of surrounding plant communities and intermediate, overlapping edge habitat (edge effect). While many wildlife species can use a wide range of habitats and may even need a mix of habitats to meet their needs, some species are limited to core habitat within a plant community or at least require the presence of core habitat within their home range. This typically requires that the patch size (overall aerial extent) of the habitat be large enough to exclude the edge effect from the surrounding habitats.

Wildlife dependent on core woodland and forest habitat consist primarily of species using trees as shelter or whose food sources are associated with trees. This includes amphibians and reptiles using downed woody debris for cover and whose food consists of insects associated with woody debris. Woodpeckers are obviously associated with woodlands, but many other passerines (perching birds) also depend on woodland insects and plant material or are dependent on dense woodland for nesting sites and cover. Larger mammals such as deer and their predators typically require sites providing dense cover not provided by more open woodlands and grasslands.

The three Vineyardist property parcels included in this vineyard project contain extensive tracts of continuous Douglas fir and California black oak forest with continuity to lands to the east. The southern end of the property supports extensive chamise chaparral on steep, south-facing slopes. These communities provide excellent core habitat.

- **Cover and Edge Habitat for Surrounding Communities:** Edge habitat consists of boundaries between structurally different vegetation types with particular emphasis on boundaries between woodland or forest and open habitats such as grasslands or shrublands. Edge areas often support an increased density and diversity of wildlife species due to the overlap of two different plant communities and the unique assemblages of wildlife they support. Many species such as raptors require edge. Raptors use tree canopies as perches from which they can scan adjacent grasslands for prey. Deer will feed in open grassland if nearby tree cover is available.

Within the three parcels included in this project, edge habitat is limited to an east-west interface between Douglas fir forest and Coast live oak woodland and chamise chaparral along the southern edge of the property. The Douglas fir forest and California black oak forest share too much basic structure and species makeup between them to provide notable edge between these communities.

- **Value as a Wildlife Corridor:** The project area does not occur within any of the wildlife corridors identified as a *CalWild Linkage* shown in Map 4-2 of the Napa County BDR. It is important to note, however, that these linkage maps pertain to large-scale regional movement of wildlife (typically within valleys).

For local diurnal movement (daily movement between sources of food, cover, and water), wildlife generally follow stream courses when moving up and down slopes and use adjacent habitats (often preferring woodlands and forest) for cover, browse, or hunting. **Figure 3** shows the most likely diurnal movement corridors through the region. These are mapped as green zones along the principal stream courses. The actual width of usable corridors would continually change based on the density of vegetation, steepness of adjacent slopes or presence of unsuitable habitat such as fenced vineyards and residential areas.

As shown in **Figure 3**, the principal wildlife movement corridors follow northeast to-southwest trending stream courses extending down east slopes toward the Napa Valley. As shown in the figure, proposed and existing vineyard blocks have been laid out in a manner that preserves these corridors.

- **Presence of Critical Plant Community or Wildlife Resources:**

Critical Plant Communities: The five plant communities mapped in **Figure 2** and described in Section 3.3 are not among the 23 plant communities considered sensitive in the Napa County Baseline Data Report (BDR).

Old growth (primary) Douglas fir and coast redwood forest may occur within the steep, deeply shaded canyons along the eastern edge of the property. These forests are included among the sensitive communities listed in the BDR. However, these areas are not included within the proposed project footprint and were not formally assessed. Douglas fir forest within the proposed vineyard blocks and surrounding areas in the western and southern portions of the project area appear to be second growth, which are not among the communities considered sensitive in Napa County.

- **Critical Wildlife Resources:** Trees within the proposed vineyard blocks are comparatively young and lack the decadent characteristics such as hollows and peeling bark found in older or damaged trees. The potential for bat habitat in these areas is low.
- **Woodland Age Class and Size:** As analyzed in Section 6.0 and recorded in the tree survey data sheets included in **Appendix B**, the woodlands and forests contain a mix of sizes and age classes. These communities are healthy and regenerating.



7.0 CONFORMANCE WITH NAPA COUNTY BASELINE DATA REPORT (BDR)

Each of the pertinent sections of the Napa County Baseline Data Report was reviewed to determine whether the issues and biological resources with special status in Napa County have been addressed in this biological assessment.

7.1 Sensitive Biotic Communities: The survey area does not contain plant communities listed as sensitive in the Napa County Baseline Data Report.

7.2 Special Status Plants and Wildlife: As noted in Section 2 (Assessment Methodology), the pre-survey research conducted for this project included systematic reviews of the California Natural Diversity Database (CNDDDB), and California Native Plant Society Electronic Inventory. The list of special status plants and wildlife used in the BDR is derived from the CNDDDB. Additionally, Tables 4-6 and 4-7 of the Special Status Plants and Wildlife sections of the BDR were reviewed to assure consistency between the lists. Most species listed in the CNDDDB are subject to CEQA review pursuant to Section 15380 (d) of the CEQA Guidelines.

- **Plants:** Two plant taxa listed in the California Natural Diversity Database were found in steep Douglas fir and coast redwood forest along the eastern edge of the property. The area of occurrence is mapped in a pink polygon in **Figure 2**. These are:

- **Napa false indigo (*Amorpha californica* var. *napensis*):** CNPS Rank 1B.2
- **Narrow-petalled rein orchid (*Piperia leptopetala*):** CNPS Rank 4.3

Plants ranked 1B.2 are plants that are rare throughout their range and are moderately threatened in California. Napa false indigo qualifies as rare under Section 15380(d) of the California Environmental Quality Act (CEQA) and thus requires consideration and subsequent mitigation during CEQA review. The CNPS defines Rank 4.3 plants as "Limited distribution (watch list)" Rank 4.3 is a watch list of plants not very threatened in California but lacking special status.

- **Wildlife:** The Vineyardist property provides moderate-level habitat for the following wildlife species:

- Sharp-shinned hawk
- Northern spotted owl
- Purple martin
- Pallid bat
- Fringed myotis (does not have sensitive status)
- Yuma myotis (does not have sensitive status)

7.3 Potential Wildlife Movement Corridors: The CalWild Linkage Map presented in Map 4-2 of the BDR was reviewed with respect to this project. The project area is not within a movement area as defined by the CalWild database. The ephemeral drainages through the eastern half of the property provide important diurnal (local daily) movement corridors for large and medium sized mammals.

7.4 Fisheries Resources: No fisheries resources are present within stream channels adjacent to the proposed vineyard blocks. Fisheries resources may exist in streams within the deeper, more shaded canyons along the eastern edge of the property.

8.0 SUMMARY, IMPACT ANALYSIS, AND RECOMMENDATIONS

8.1 Summary: This biological resource assessment involved the following analyses and surveys for sensitive plants and wildlife potentially occurring in the vicinity of the project:

- Review of current California Natural Diversity Database (CNDDDB) mapping of known sensitive plant and wildlife populations within the region.
- An analysis of the suitability of the site for sensitive plants and wildlife using the California Native Plant Society *Electronic Inventory of Rare and Endangered Vascular Plants of California*.
- A California Department of Fish and Wildlife protocol, floristic-level field survey of the plants occurring within and in the immediate vicinity of the project.
- A delineation of waters of the U.S. conducted according to the *Corps of Engineers Wetlands Delineation Manual, January 1987* as updated by the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, 2008*.
- Review of the Napa County Baseline Data Report (BDR), 2005.

Sensitive Plants: A total of 118 native and introduced plant taxa were identified on the property during the in-season, floristic-level botanical surveys. Two taxa listed in the California Natural Diversity Database were identified: **Napa false Indigo** (*Amorpha californica* var. *napensis*; CNPS rank 1B.2) and **narrow petaled rein orchid** (*Piperia leptopetala*; CNPS Rank 4.2). Plants ranked 1B.2 are considered by regulatory agencies to qualify as rare under Section 15380(d) of the California Environmental Quality Act (CEQA) and thus require consideration and subsequent mitigation during CEQA review. The CNPS defines Rank 4.3 plants as "Limited distribution (watch list) Rank 4.3 is a watch

list of plants not very threatened in California and lacking special status.

- **Sensitive Wildlife:** The presence of regional wildlife with sensitive regulatory status was assessed for presence based on their being listed and mapped in the CNDDb database for the Calistoga California quadrangle, or otherwise based on our knowledge of species range and habitat requirements. The Vineyardist property provides moderate-level habitat for the following wildlife species with sensitive status:

- Sharp-shinned hawk (CDFW Watch List)
- Northern spotted owl
- Purple martin
- Pallid bat

Possible Waters of U.S.: Possible waters of the U.S. within the property consist of several small ephemeral drainages. The total area of all delineated waters is **0.38 acre**. All Waters of the U.S. occurring within the survey area are defined as "other waters" pursuant of Corps of Engineers Definitions. No federal jurisdictional wetlands were found within the survey area (see **Appendix C, Aquatic Resources Report**).

8.2 Potential Impacts and Proposed Mitigation for Biological Resources: (For all recommended mitigation measures accepted as conditions of approval, the text should be modified to use declarative language, i.e. "should" should become "shall," etc.)

A. Habitat Fragmentation

Potential Impacts:

As shown in **Figures 2 and 3**, the primary wildlife movement corridors follow drainages and the adjacent comparatively level terrain. The proposed vineyard blocks are widely separated and designed to avoid drainages. The proposed placement of these blocks will not significantly impact wildlife movement within the three eastern parcels involved in this vineyard expansion.

Proposed Mitigation for Habitat Fragmentation:

Measure 1: Deer fencing should be restricted to contiguous vineyard block boundaries in order to permit wildlife passage between vineyard blocks. Use of fencing elsewhere on the parcels should be avoided to allow wildlife passage between vineyard blocks and throughout the property.

B. Woodland and Forest Resources

Potential Impacts:

As shown in **Table 1**, the proposed vineyard blocks would supplant 5.8 acres of the 61.42 acres of Douglas fir forest (9.42%), 2.71 acres of the available 24.23 acres of California black oak forest (11.8%), and 1.28 acres of the 3.27 acres of coast live oak forest on the three affected parcels (39.14%). This would result in the estimated loss of 1,010 trees; the species makeup and number of which in each proposed block is shown in **Table 9**.

Proposed Mitigation for Impacts to Woodland and Forest:

Measure 2: The significance of this loss of woodland habitat must be determined by County staff to be in conformance with *Napa County General Plan policy CON-22*. Standard mitigation within the County of Napa calls for preservation of woodlands at a ratio of 70-percent of preservation and 30-percent allowable take. As noted, the proposed blocks would impact only 9.42-percent of Douglas fir forest and 11.80-percent of California black oak forest. Sufficient acreage for mitigation of these communities occurs within the three affected parcels.

A total of 39.12-percent (1.28 acres) of the 3.27 acres of available coast live oak woodland would be supplanted by proposed vineyard block 5. This exceeds the 30-percent allowed take under current Napa County policy. One or a combination of three measures may be considered to offset this loss:

1. Reduce the area of block 5 to preserve 70-percent of the coast live oak woodland.
2. Consider out-of-kind mitigation through the existing excess of Douglas fir and California black oak forest as mitigation. Sufficient acreage of these communities exists to allow a multiple of the required 70-percent take to be considered (e.g. multiples of 1.28 acres of loss).
3. Find additional acreage of coast live oak to make up the 70-percent preservation elsewhere on adjacent parcels under the ownership of the applicant.

It is our opinion, in this instance, that consideration of Alternative 2 would provide sufficient mitigation for impacts to this area of coast live oak woodland. This 3.27-acre woodland has a very small patch size (aerial extent of habitat). It is transitional between Douglas fir forest and chamise chaparral and contains a mix of species from both communities. It consists of a narrow band of habitat along

the southern ridge top and down the adjacent steep, south-facing slope and consists entirely of edge habitat, being too thin to provide core coast live oak habitat. Based on these factors it is of modest to poor quality wildlife habitat as a coast live oak woodland in this setting.

C. Sensitive Plants and Wildlife

Potential Impacts:

- **Plants:** Two plants listed in the California Natural Diversity Database were found along the eastern edge of the property but are not in the vicinity of the proposed vineyard blocks and will not be impacted. These are Napa false indigo and narrow-petaled rein orchid.
- **Wildlife:** There is a potential for the following wildlife species to be present on the property:
 - Sharp-shinned hawk (CDFW Watch List)
 - Northern spotted owl
 - Purple martin
 - Pallid bat
 - Fringed myotis (does not have sensitive status)
 - Yuma myotis (does not have sensitive status)

There is a potential for nesting birds to be present within forest and woodland habitat if clearing within vineyard blocks is conducted during the breeding season (February 1-August 31). Protected birds include species protected under the Migratory Bird Treaty Act and Section 3503 California Fish and Game Code. Additionally, bats may roost in dead hollow trees during the roosting season (April 1-September 15).

Proposed Mitigation for Birds or Bats with Sensitive or Protected Regulatory Status:

Measure 3: In order to avoid impacts to sensitive passerines and raptors protected under the Migratory Bird Treaty Act and California Fish and Game Code, the following recommendation is made:

Removal of trees during the nesting season (February 1 to August 31) must be preceded by a survey for nesting birds conducted by a qualified biologist within 14 days of proposed removal. In the event that nesting birds are identified, a suitable construction buffer will be established around the nest site until either the end of the nesting season or upon determination by a qualified biologist that fledging has been completed, or that the nest has been abandoned.

It is recommended that trees approved for removal be felled outside of the nesting season. This would also pertain to removal of chaparral habitat which should either be grubbed (removed above ground level) if it does not occur during the grading season, or graded if this can be done during the grading season.

A protocol survey for spotted owls is currently underway. Results of the survey should be provided to reviewing agencies during the permit review process.

Measure 4: In order to avoid impacts to bats with sensitive regulatory status, the following recommendation is made:

If work is proposed within 50 feet of woodland habitat during the maternity roosting season (April 1 through September 15), trees with features capable of supporting roosting bats shall be surveyed for bat roosts or evidence of bat roosting (guano, urine staining and scent or dead bats) by a qualified biologist within 14 days of the start of project activities or removal of vegetation. If active roosts are discovered, a buffer of 50 feet around the active roost should be established by the biologist. Removal may occur once active roosting ceases as determined by the biologist. Downed trees should remain on the ground for 24 hours in order to allow any remaining bats to leave.

D. Waters of the U.S.

Potential Impacts:

Placement of fill within any of the possible waters of the U.S. mapped in **Appendix C, Figure W-2** would be regulated under the Clean Water Act.

Proposed Mitigation for Impacts to Waters of the U.S.:

Measure 5: It is recommended that all waterways mapped in Appendix C, Figure W-2 be avoided through the use of setbacks required by Napa County regulations.

Placement of fill within Waters of the U.S. may require a Nationwide Permit by the Corps of Engineers (possibly a non-reporting permit under the Nationwide Permit Program), along with a 401 Water Quality Certification from the Regional Water Quality Control Board, and 1604 Stream Alteration Agreement from the California Department of Fish and Wildlife. The County of Napa may require stream setbacks.

E. Erosion Control

Potential Impacts:

Vegetation clearing and grading activities have a potential to result in increased sediment runoff to local waterways.

Proposed Mitigation for impacts due to Erosion and Sedimentation:

Measure 6: All work in or near the delineated ephemeral drainages should include extensive erosion control measures consistent with Napa County Grading Regulations in order to avoid erosion and the potential for transport of sediments to local waterways. Coverage under the National Pollutant Discharge Elimination System (NPDES), General Permit for Storm Water Discharges associated with a Construction Activity (General Permit) and a Storm Water Pollution Prevention Plan (SWPPP) may be required.

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APPENDIX A

CNDDDB SENSITIVE PLANT AND WILDLIFE SPECIES WITHIN THE SURROUNDING CALIF. 7½' QUADS.

Surrounding 9-Quad List: Calistoga Quadrangle

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
AETNA SPRINGS	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
AETNA SPRINGS	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
AETNA SPRINGS	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
AETNA SPRINGS	<i>Agelaius tricolor</i>	tricolored blackbird	None	Threat	SSC	-
AETNA SPRINGS	<i>Ardea herodias</i>	great blue heron	None	None	-	-
AETNA SPRINGS	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
AETNA SPRINGS	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
AETNA SPRINGS	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
AETNA SPRINGS	<i>Vandykea tuberculata</i>	serpentine cypress long-horned beetle	None	None	-	-
AETNA SPRINGS	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
AETNA SPRINGS	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
AETNA SPRINGS	<i>Lasionycteris noctivagans</i>	silver-haired bat	None	None	-	-
AETNA SPRINGS	<i>Lasiurus blossevillii</i>	western red bat	None	None	SSC	-
AETNA SPRINGS	<i>Lasiurus cinereus</i>	hoary bat	None	None	-	-
AETNA SPRINGS	<i>Myotis ciliolabrum</i>	western small-footed myotis	None	None	-	-
AETNA SPRINGS	<i>Myotis evotis</i>	long-eared myotis	None	None	-	-
AETNA SPRINGS	<i>Myotis thysanodes</i>	fringed myotis	None	None	-	-
AETNA SPRINGS	<i>Myotis volans</i>	long-legged myotis	None	None	-	-
AETNA SPRINGS	<i>Myotis yumanensis</i>	Yuma myotis	None	None	-	-
AETNA SPRINGS	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
AETNA SPRINGS	<i>Serpentine Bunchgrass</i>	Serpentine Bunchgrass	None	None	-	-
AETNA SPRINGS	<i>Wildflower Field</i>	Wildflower Field	None	None	-	-
AETNA SPRINGS	<i>Amorpha californica var. napensis</i>	Napa false indigo	None	None	-	1B.2
AETNA SPRINGS	<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	None	None	-	1B.2
AETNA SPRINGS	<i>Antirrhinum virga</i>	twig-like snapdragon	None	None	-	4.3
AETNA SPRINGS	<i>Astragalus breweri</i>	Brewer's milk-vetch	None	None	-	4.2
AETNA SPRINGS	<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	None	None	-	4.3
AETNA SPRINGS	<i>Calandrinia breweri</i>	Brewer's calandrinia	None	None	-	4.2
AETNA SPRINGS	<i>Calochortus uniflorus</i>	pink star-tulip	None	None	-	4.2
AETNA SPRINGS	<i>Calystegia collina ssp. oxyphylla</i>	Mt. Saint Helena morning-glory	None	None	-	4.2
AETNA SPRINGS	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
AETNA SPRINGS	<i>Centromadia parryi ssp. parryi</i>	pappose tarplant	None	None	-	1B.2
AETNA SPRINGS	<i>Clarkia gracilis ssp. tracyi</i>	Tracy's clarkia	None	None	-	4.2

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
AETNA SPRINGS	<i>Collomia diversifolia</i>	serpentine collomia	None	None	-	4.3
AETNA SPRINGS	<i>Cordylanthus tenuis ssp. brunneus</i>	serpentine bird's-beak	None	None	-	4.3
AETNA SPRINGS	<i>Delphinium uliginosum</i>	swamp larkspur	None	None	-	4.2
AETNA SPRINGS	<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	None	None	-	1B.2
AETNA SPRINGS	<i>Erythranthe nudata</i>	bare monkeyflower	None	None	-	4.3
AETNA SPRINGS	<i>Erythronium helenae</i>	St. Helena fawn lily	None	None	-	4.2
AETNA SPRINGS	<i>Fritillaria pluriflora</i>	adobe-lily	None	None	-	1B.2
AETNA SPRINGS	<i>Fritillaria purdyi</i>	Purdy's fritillary	None	None	-	4.3
AETNA SPRINGS	<i>Harmonia hallii</i>	Hall's harmonia	None	None	-	1B.2
AETNA SPRINGS	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
AETNA SPRINGS	<i>Helianthus exilis</i>	serpentine sunflower	None	None	-	4.2
AETNA SPRINGS	<i>Hesperolinon bicarpellatum</i>	two-carpellate western flax	None	None	-	1B.2
AETNA SPRINGS	<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	None	None	-	1B.2
AETNA SPRINGS	<i>Layia septentrionalis</i>	Colusa layia	None	None	-	1B.2
AETNA SPRINGS	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
AETNA SPRINGS	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
AETNA SPRINGS	<i>Lilium bolanderi</i>	Bolander's lily	None	None	-	4.2
AETNA SPRINGS	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
AETNA SPRINGS	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
AETNA SPRINGS	<i>Monardella viridis</i>	green monardella	None	None	-	4.3
AETNA SPRINGS	<i>Navarretia cotulifolia</i>	cotula navarretia	None	None	-	4.2
AETNA SPRINGS	<i>Navarretia jepsonii</i>	Jepson's navarretia	None	None	-	4.3
AETNA SPRINGS	<i>Navarretia paradoxinota</i>	Porter's navarretia	None	None	-	1B.3
AETNA SPRINGS	<i>Navarretia rosulata</i>	Marin County navarretia	None	None	-	1B.2
AETNA SPRINGS	<i>Penstemon newberryi var. sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
AETNA SPRINGS	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
AETNA SPRINGS	<i>Streptanthus hesperidis</i>	green jewelflower	None	None	-	1B.2
AETNA SPRINGS	<i>Streptanthus morrisonii ssp. elatus</i>	Three Peaks jewelflower	None	None	-	1B.2
AETNA SPRINGS	<i>Toxicoscordion fontanum</i>	marsh zigadenus	None	None	-	4.2
CALISTOGA	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
CALISTOGA	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
CALISTOGA	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
CALISTOGA	<i>Taricha rivularis</i>	red-bellied newt	None	None	SSC	-
CALISTOGA	<i>Accipiter striatus</i>	sharp-shinned hawk	None	None	WL	-
CALISTOGA	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
CALISTOGA	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CALISTOGA	<i>Calasellus californicus</i>	An isopod	None	None	-	-
CALISTOGA	<i>Syncaris pacifica</i>	California freshwater shrimp	End	End	-	-
CALISTOGA	<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	SSC	-
CALISTOGA	<i>Hysteroecarpus traskii</i> pomo	Russian River tule perch	None	None	SSC	-
CALISTOGA	<i>Oncorhynchus kisutch</i> pop. 4	coho salmon - central California coast ESU	End	End	-	-
CALISTOGA	<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead - central California coast DPS	Threat	None	-	-
CALISTOGA	<i>Bombus occidentalis</i>	western bumble bee	None	None	-	-
CALISTOGA	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
CALISTOGA	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
CALISTOGA	<i>Myotis evotis</i>	long-eared myotis	None	None	-	-
CALISTOGA	<i>Myotis thysanodes</i>	fringed myotis	None	None	-	-
CALISTOGA	<i>Myotis yumanensis</i>	Yuma myotis	None	None	-	-
CALISTOGA	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
CALISTOGA	<i>Coastal and Valley Freshwater Marsh</i>	Coastal and Valley Freshwater Marsh	None	None	-	-
CALISTOGA	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None	None	-	1B.2
CALISTOGA	<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	None	None	-	1B.1
CALISTOGA	<i>Astragalus breweri</i>	Brewer's milk-vetch	None	None	-	4.2
CALISTOGA	<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	End	End	-	1B.1
CALISTOGA	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
CALISTOGA	<i>Calamagrostis ophitidis</i>	serpentine reed grass	None	None	-	4.3
CALISTOGA	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
CALISTOGA	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
CALISTOGA	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
CALISTOGA	<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	None	None	-	1B.2
CALISTOGA	<i>Clarkia breweri</i>	Brewer's clarkia	None	None	-	4.2
CALISTOGA	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
CALISTOGA	<i>Eryngium constancei</i>	Loch Lomond button-celery	End	End	-	1B.1
CALISTOGA	<i>Erythronium helenae</i>	St. Helena fawn lily	None	None	-	4.2
CALISTOGA	<i>Fritillaria purdyi</i>	Purdy's fritillary	None	None	-	4.3
CALISTOGA	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
CALISTOGA	<i>Lasthenia burkei</i>	Burke's goldfields	End	End	-	1B.1
CALISTOGA	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
CALISTOGA	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
CALISTOGA	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
CALISTOGA	<i>Lessingia hololeuca</i>	woolly-headed lessingia	None	None	-	3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CALISTOGA	<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	End	End	-	1B.1
CALISTOGA	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
CALISTOGA	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
CALISTOGA	<i>Monardella viridis</i>	green monardella	None	None	-	4.3
CALISTOGA	<i>Navarretia leucocephala ssp. bakeri</i>	Baker's navarretia	None	None	-	1B.1
CALISTOGA	<i>Penstemon newberryi var. sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
CALISTOGA	<i>Plagiobothrys strictus</i>	Calistoga popcornflower	End	Threat	-	1B.1
CALISTOGA	<i>Poa napensis</i>	Napa blue grass	End	End	-	1B.1
CALISTOGA	<i>Puccinellia simplex</i>	California alkali grass	None	None	-	1B.2
CALISTOGA	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
CALISTOGA	<i>Sidalcea hickmanii ssp. napensis</i>	Napa checkerbloom	None	None	-	1B.1
CALISTOGA	<i>Spergularia macrotheca var. longistyla</i>	long-styled sand-spurrey	None	None	-	1B.2
CALISTOGA	<i>Trifolium hydrophilum</i>	saline clover	None	None	-	1B.2
CALISTOGA	<i>Triteleia lugens</i>	dark-mouthed triteleia	None	None	-	4.3
DETERT RESERVOIR	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
DETERT RESERVOIR	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
DETERT RESERVOIR	<i>Agelaius tricolor</i>	tricolored blackbird	None	Threat	SSC	-
DETERT RESERVOIR	<i>Falco mexicanus</i>	prairie falcon	None	None	WL	-
DETERT RESERVOIR	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
DETERT RESERVOIR	<i>Progne subis</i>	purple martin	None	None	SSC	-
DETERT RESERVOIR	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
DETERT RESERVOIR	<i>Hysterocarpus traskii pomo</i>	Russian River tule perch	None	None	SSC	-
DETERT RESERVOIR	<i>Oncorhynchus mykiss irideus pop. 8</i>	steelhead - central California coast DPS	Threat	None	-	-
DETERT RESERVOIR	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
DETERT RESERVOIR	<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	None	None	-	-
DETERT RESERVOIR	<i>Trachykele hartmani</i>	serpentine cypress wood-boring beetle	None	None	-	-
DETERT RESERVOIR	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
DETERT RESERVOIR	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
DETERT RESERVOIR	<i>Lasiorycteris noctivagans</i>	silver-haired bat	None	None	-	-
DETERT RESERVOIR	<i>Lasiurus blossevillii</i>	western red bat	None	None	SSC	-
DETERT RESERVOIR	<i>Lasiurus cinereus</i>	hoary bat	None	None	-	-
DETERT RESERVOIR	<i>Myotis ciliolabrum</i>	western small-footed myotis	None	None	-	-
DETERT RESERVOIR	<i>Myotis evotis</i>	long-eared myotis	None	None	-	-
DETERT RESERVOIR	<i>Myotis yumanensis</i>	Yuma myotis	None	None	-	-
DETERT RESERVOIR	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
DETERT RESERVOIR	<i>Northern Vernal Pool</i>	Northern Vernal Pool	None	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
DETERT RESERVOIR	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None	None	-	1B.2
DETERT RESERVOIR	<i>Antirrhinum virga</i>	twig-like snapdragon	None	None	-	4.3
DETERT RESERVOIR	<i>Arctostaphylos manzanita</i> ssp. <i>elegans</i>	Konocti manzanita	None	None	-	1B.3
DETERT RESERVOIR	<i>Asclepias solanoana</i>	serpentine milkweed	None	None	-	4.2
DETERT RESERVOIR	<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	None	None	-	4.3
DETERT RESERVOIR	<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	Jepson's milk-vetch	None	None	-	1B.2
DETERT RESERVOIR	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
DETERT RESERVOIR	<i>Calochortus uniflorus</i>	pink star-tulip	None	None	-	4.2
DETERT RESERVOIR	<i>Calyptidium quadripetalum</i>	four-petaled pussypaws	None	None	-	4.3
DETERT RESERVOIR	<i>Calystegia collina</i> ssp. <i>oxyphylla</i>	Mt. Saint Helena morning-glory	None	None	-	4.2
DETERT RESERVOIR	<i>Calystegia collina</i> ssp. <i>venusta</i>	South Coast Range morning-glory	None	None	-	4.3
DETERT RESERVOIR	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
DETERT RESERVOIR	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
DETERT RESERVOIR	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
DETERT RESERVOIR	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
DETERT RESERVOIR	<i>Collomia diversifolia</i>	serpentine collomia	None	None	-	4.3
DETERT RESERVOIR	<i>Cordylanthus tenuis</i> ssp. <i>brunneus</i>	serpentine bird's-beak	None	None	-	4.3
DETERT RESERVOIR	<i>Cryptantha dissita</i>	serpentine cryptantha	None	None	-	1B.2
DETERT RESERVOIR	<i>Delphinium uliginosum</i>	swamp larkspur	None	None	-	4.2
DETERT RESERVOIR	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
DETERT RESERVOIR	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
DETERT RESERVOIR	<i>Eriogonum umbellatum</i> var. <i>bahiiforme</i>	bay buckwheat	None	None	-	4.2
DETERT RESERVOIR	<i>Erythranthe nudata</i>	bare monkeyflower	None	None	-	4.3
DETERT RESERVOIR	<i>Erythronium helenae</i>	St. Helena fawn lily	None	None	-	4.2
DETERT RESERVOIR	<i>Fritillaria purdyi</i>	Purdy's fritillary	None	None	-	4.3
DETERT RESERVOIR	<i>Harmonia hallii</i>	Hall's harmonia	None	None	-	1B.2
DETERT RESERVOIR	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
DETERT RESERVOIR	<i>Helianthus exilis</i>	serpentine sunflower	None	None	-	4.2
DETERT RESERVOIR	<i>Hesperolinon bicarpellatum</i>	two-carpellate western flax	None	None	-	1B.2
DETERT RESERVOIR	<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	None	None	-	1B.2
DETERT RESERVOIR	<i>Juncus luciensis</i>	Santa Lucia dwarf rush	None	None	-	1B.2
DETERT RESERVOIR	<i>Layia septentrionalis</i>	Colusa layia	None	None	-	1B.2
DETERT RESERVOIR	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
DETERT RESERVOIR	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
DETERT RESERVOIR	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
DETERT RESERVOIR	<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	woolly meadowfoam	None	None	-	4.2

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
DETERT RESERVOIR	<i>Lomatium hooveri</i>	Hoover's lomatium	None	None	-	4.3
DETERT RESERVOIR	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
DETERT RESERVOIR	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
DETERT RESERVOIR	<i>Navarretia myersii</i> ssp. <i>deminuta</i>	small pincushion navarretia	None	None	-	1B.1
DETERT RESERVOIR	<i>Navarretia paradoxinota</i>	Porter's navarretia	None	None	-	1B.3
DETERT RESERVOIR	<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
DETERT RESERVOIR	<i>Ribes victoris</i>	Victor's gooseberry	None	None	-	4.3
DETERT RESERVOIR	<i>Streptanthus brachiatus</i> ssp. <i>brachiatus</i>	Socrates Mine jewelflower	None	None	-	1B.2
DETERT RESERVOIR	<i>Streptanthus hesperidis</i>	green jewelflower	None	None	-	1B.2
DETERT RESERVOIR	<i>Streptanthus morrisonii</i> ssp. <i>elatus</i>	Three Peaks jewelflower	None	None	-	1B.2
DETERT RESERVOIR	<i>Streptanthus vernalis</i>	early jewelflower	None	None	-	1B.2
DETERT RESERVOIR	<i>Trichostema ruygtii</i>	Napa bluecurls	None	None	-	1B.2
KENWOOD	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
KENWOOD	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
KENWOOD	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
KENWOOD	<i>Taricha rivularis</i>	red-bellied newt	None	None	SSC	-
KENWOOD	<i>Ardea herodias</i>	great blue heron	None	None	-	-
KENWOOD	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
KENWOOD	<i>Syncaris pacifica</i>	California freshwater shrimp	End	End	-	-
KENWOOD	<i>Hysteroecarpus traskii</i> pomo	Russian River tule perch	None	None	SSC	-
KENWOOD	<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead - central California coast DPS	Threat	None	-	-
KENWOOD	<i>Oncorhynchus tshawytscha</i> pop. 17	chinook salmon - California coastal ESU	Threat	None	-	-
KENWOOD	<i>Bombus occidentalis</i>	western bumble bee	None	None	-	-
KENWOOD	<i>Hydroporus leechi</i>	Leech's skyline diving beetle	None	None	-	-
KENWOOD	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
KENWOOD	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
KENWOOD	Northern Vernal Pool	Northern Vernal Pool	None	None	-	-
KENWOOD	Valley Needlegrass Grassland	Valley Needlegrass Grassland	None	None	-	-
KENWOOD	<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion	None	None	-	1B.2
KENWOOD	<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Sonoma alopecurus	End	None	-	1B.1
KENWOOD	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None	None	-	1B.2
KENWOOD	<i>Antirrhinum virga</i>	twig-like snapdragon	None	None	-	4.3
KENWOOD	<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	None	None	-	1B.1
KENWOOD	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
KENWOOD	<i>Calamagrostis ophitidis</i>	serpentine reed grass	None	None	-	4.3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
KENWOOD	<i>Calandrinia breweri</i>	Brewer's calandrinia	None	None	-	4.2
KENWOOD	<i>Calochortus uniflorus</i>	pink star-tulip	None	None	-	4.2
KENWOOD	<i>Calystegia collina ssp. oxyphylla</i>	Mt. Saint Helena morning-glory	None	None	-	4.2
KENWOOD	<i>Castilleja ambigua var. ambigua</i>	johnny-nip	None	None	-	4.2
KENWOOD	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
KENWOOD	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
KENWOOD	<i>Ceanothus gloriosus var. exaltatus</i>	glory brush	None	None	-	4.3
KENWOOD	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
KENWOOD	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
KENWOOD	<i>Clarkia breweri</i>	Brewer's clarkia	None	None	-	4.2
KENWOOD	<i>Cordylanthus tenuis ssp. brunneus</i>	serpentine bird's-beak	None	None	-	4.3
KENWOOD	<i>Downingia pusilla</i>	dwarf downingia	None	None	-	2B.2
KENWOOD	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
KENWOOD	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
KENWOOD	<i>Hosackia gracilis</i>	harlequin lotus	None	None	-	4.2
KENWOOD	<i>Iris longipetala</i>	coast iris	None	None	-	4.2
KENWOOD	<i>Layia septentrionalis</i>	Colusa layia	None	None	-	1B.2
KENWOOD	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
KENWOOD	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
KENWOOD	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
KENWOOD	<i>Lilium rubescens</i>	redwood lily	None	None	-	4.2
KENWOOD	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
KENWOOD	<i>Monardella viridis</i>	green monardella	None	None	-	4.3
KENWOOD	<i>Navarretia heterandra</i>	Tehama navarretia	None	None	-	4.3
KENWOOD	<i>Navarretia leucocephala ssp. bakeri</i>	Baker's navarretia	None	None	-	1B.1
KENWOOD	<i>Penstemon newberryi var. sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
KENWOOD	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
KENWOOD	<i>Sidalcea oregana ssp. valida</i>	Kenwood Marsh checkerbloom	End	End	-	1B.1
KENWOOD	<i>Trichostema ruygtii</i>	Napa bluecurls	None	None	-	1B.2
KENWOOD	<i>Trifolium amoenum</i>	two-fork clover	End	None	-	1B.1
KENWOOD	<i>Triteleia lugens</i>	dark-mouthed triteleia	None	None	-	4.3
KENWOOD	<i>Viburnum ellipticum</i>	oval-leaved viburnum	None	None	-	2B.3
MARK WEST SPR	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
MARK WEST SPR	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
MARK WEST SPR	<i>Taricha rivularis</i>	red-bellied newt	None	None	SSC	-
MARK WEST SPR	<i>Ardea herodias</i>	great blue heron	None	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
MARK WEST SPR	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
MARK WEST SPR	<i>Syncaris pacifica</i>	California freshwater shrimp	End	End	-	-
MARK WEST SPR	<i>Hesperoleucus venustus navarroensis</i>	northern coastal roach	None	None	SSC	-
MARK WEST SPR	<i>Hysteroecarpus traskii pomo</i>	Russian River tule perch	None	None	SSC	-
MARK WEST SPR	<i>Lampetra ayresii</i>	western river lamprey	None	None	SSC	-
MARK WEST SPR	<i>Oncorhynchus kisutch pop. 4</i>	coho salmon - central California coast ESU	End	End	-	-
MARK WEST SPR	<i>Oncorhynchus mykiss irideus pop. 8</i>	steelhead - central California coast DPS	Threat	None	-	-
MARK WEST SPR	<i>Oncorhynchus tshawytscha pop. 17</i>	chinook salmon - California coastal ESU	Threat	None	-	-
MARK WEST SPR	<i>Atractelmis wawona</i>	Wawona riffle beetle	None	None	-	-
MARK WEST SPR	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
MARK WEST SPR	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
MARK WEST SPR	<i>Myotis lucifugus</i>	little brown bat	None	None	-	-
MARK WEST SPR	<i>Myotis thysanodes</i>	fringed myotis	None	None	-	-
MARK WEST SPR	<i>Pekania pennanti</i>	Fisher	None	None	SSC	-
MARK WEST SPR	<i>Taxidea taxus</i>	American badger	None	None	SSC	-
MARK WEST SPR	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
MARK WEST SPR	<i>Anomobryum julaceum</i>	slender silver moss	None	None	-	4.2
MARK WEST SPR	<i>Amorpha californica var. napensis</i>	Napa false indigo	None	None	-	1B.2
MARK WEST SPR	<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	End	End	-	1B.1
MARK WEST SPR	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
MARK WEST SPR	<i>Calandrinia breweri</i>	Brewer's calandrinia	None	None	-	4.2
MARK WEST SPR	<i>Calystegia collina ssp. oxyphylla</i>	Mt. Saint Helena morning-glory	None	None	-	4.2
MARK WEST SPR	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
MARK WEST SPR	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
MARK WEST SPR	<i>Centromadia parryi ssp. parryi</i>	pappose tarplant	None	None	-	1B.2
MARK WEST SPR	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
MARK WEST SPR	<i>Eriogonum umbellatum var. bahiiforme</i>	bay buckwheat	None	None	-	4.2
MARK WEST SPR	<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	None	End	-	1B.2
MARK WEST SPR	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
MARK WEST SPR	<i>Hemizonia congesta ssp. congesta</i>	congested-headed hayfield tarplant	None	None	-	1B.2
MARK WEST SPR	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
MARK WEST SPR	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
MARK WEST SPR	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
MARK WEST SPR	<i>Lilium rubescens</i>	redwood lily	None	None	-	4.2
MARK WEST SPR	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
MARK WEST SPR	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
MARK WEST SPR	<i>Microseris paludosa</i>	marsh microseris	None	None	-	1B.2
MARK WEST SPR	<i>Monardella viridis</i>	green monardella	None	None	-	4.3
MARK WEST SPR	<i>Navarretia leucocephala ssp. bakeri</i>	Baker's navarretia	None	None	-	1B.1
MARK WEST SPR	<i>Navarretia leucocephala ssp. plieantha</i>	many-flowered navarretia	End	End	-	1B.2
MARK WEST SPR	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
MARK WEST SPR	<i>Triteleia lugens</i>	dark-mouthed triteleia	None	None	-	4.3
MARK WEST SPR	<i>Viburnum ellipticum</i>	oval-leaved viburnum	None	None	-	2B.3
MT ST HELENA	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
MT ST HELENA	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
MT ST HELENA	<i>Taricha rivularis</i>	red-bellied newt	None	None	SSC	-
MT ST HELENA	<i>Aquila chrysaetos</i>	golden eagle	None	None	FP ; WL	-
MT ST HELENA	<i>Ardea alba</i>	great egret	None	None	-	-
MT ST HELENA	<i>Ardea herodias</i>	great blue heron	None	None	-	-
MT ST HELENA	<i>Egretta thula</i>	snowy egret	None	None	-	-
MT ST HELENA	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
MT ST HELENA	<i>Pandion haliaetus</i>	osprey	None	None	WL	-
MT ST HELENA	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
MT ST HELENA	<i>Stygobromus cherylae</i>	Barr's amphipod	None	None	-	-
MT ST HELENA	<i>Syncaris pacifica</i>	California freshwater shrimp	End	End	-	-
MT ST HELENA	<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	SSC	-
MT ST HELENA	<i>Hesperoleucus venustus navarroensis</i>	northern coastal roach	None	None	SSC	-
MT ST HELENA	<i>Hysterocarpus traskii pomo</i>	Russian River tule perch	None	None	SSC	-
MT ST HELENA	<i>Oncorhynchus kisutch pop. 4</i>	coho salmon - central California coast ESU	End	End	-	-
MT ST HELENA	<i>Oncorhynchus mykiss irideus pop. 8</i>	steelhead - central California coast DPS	Threat	None	-	-
MT ST HELENA	<i>Oncorhynchus tshawytscha pop. 17</i>	chinook salmon - California coastal ESU	Threat	None	-	-
MT ST HELENA	<i>Trachykele hartmani</i>	serpentine cypress wood-boring beetle	None	None	-	-
MT ST HELENA	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
MT ST HELENA	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
MT ST HELENA	<i>Pekania pennanti</i>	Fisher	None	None	SSC	-
MT ST HELENA	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
MT ST HELENA	<i>Arctostaphylos manzanita ssp. elegans</i>	Konocti manzanita	None	None	-	1B.3
MT ST HELENA	<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	None	None	-	4.3
MT ST HELENA	<i>Astragalus rattanii var. jepsonianus</i>	Jepson's milk-vetch	None	None	-	1B.2
MT ST HELENA	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
MT ST HELENA	<i>Calystegia collina ssp. oxyphylla</i>	Mt. Saint Helena morning-glory	None	None	-	4.2
MT ST HELENA	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
MT ST HELENA	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
MT ST HELENA	<i>Cordylanthus tenuis ssp. brunneus</i>	serpentine bird's-beak	None	None	-	4.3
MT ST HELENA	<i>Delphinium uliginosum</i>	swamp larkspur	None	None	-	4.2
MT ST HELENA	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
MT ST HELENA	<i>Eriogonum nervulosum</i>	Snow Mountain buckwheat	None	None	-	1B.2
MT ST HELENA	<i>Erythronium helenae</i>	St. Helena fawn lily	None	None	-	4.2
MT ST HELENA	<i>Fritillaria purdyi</i>	Purdy's fritillary	None	None	-	4.3
MT ST HELENA	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
MT ST HELENA	<i>Hesperolinon bicarpellatum</i>	two-carpellate western flax	None	None	-	1B.2
MT ST HELENA	<i>Horkelia parryi</i>	Parry's horkelia	None	None	-	1B.2
MT ST HELENA	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
MT ST HELENA	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
MT ST HELENA	<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	End	End	-	1B.1
MT ST HELENA	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
MT ST HELENA	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
MT ST HELENA	<i>Navarretia cotulifolia</i>	cotula navarretia	None	None	-	4.2
MT ST HELENA	<i>Penstemon newberryi var. sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
MT ST HELENA	<i>Sidalcea oregana ssp. valida</i>	Kenwood Marsh checkerbloom	End	End	-	1B.1
MT ST HELENA	<i>Streptanthus brachiatus ssp. hoffmanii</i>	Freed's jewelflower	None	None	-	1B.2
MT ST HELENA	<i>Stuckenia filiformis ssp. alpina</i>	northern slender pondweed	None	None	-	2B.2
RUTHERFORD	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
RUTHERFORD	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
RUTHERFORD	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
RUTHERFORD	<i>Taricha rivularis</i>	red-bellied newt	None	None	SSC	-
RUTHERFORD	<i>Ardea herodias</i>	great blue heron	None	None	-	-
RUTHERFORD	<i>Buteo swainsoni</i>	Swainson's hawk	None	Threat	-	-
RUTHERFORD	<i>Cypseloides niger</i>	black swift	None	None	SSC	-
RUTHERFORD	<i>Elanus leucurus</i>	white-tailed kite	None	None	FP	-
RUTHERFORD	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	End	FP	-
RUTHERFORD	<i>Icteria virens</i>	yellow-breasted chat	None	None	SSC	-
RUTHERFORD	<i>Nycticorax nycticorax</i>	black-crowned night heron	None	None	-	-
RUTHERFORD	<i>Setophaga petechia</i>	yellow warbler	None	None	SSC	-
RUTHERFORD	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
RUTHERFORD	<i>Calasellus californicus</i>	An isopod	None	None	-	-
RUTHERFORD	<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	SSC	-
RUTHERFORD	<i>Hysteroecarpus traskii pamo</i>	Russian River tule perch	None	None	SSC	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
RUTHERFORD	<i>Lampetra ayresii</i>	western river lamprey	None	None	SSC	-
RUTHERFORD	<i>Lampetra richardsoni</i>	western brook lamprey	None	None	SSC	-
RUTHERFORD	<i>Lavinia exilicauda exilicauda</i>	Sacramento hitch	None	None	SSC	-
RUTHERFORD	<i>Mylopharodon conocephalus</i>	hardhead	None	None	SSC	-
RUTHERFORD	<i>Oncorhynchus mykiss irideus pop. 8</i>	steelhead - central California coast DPS	Threat	None	-	-
RUTHERFORD	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
RUTHERFORD	<i>Trachusa gummifera</i>	San Francisco Bay Area leaf-cutter bee	None	None	-	-
RUTHERFORD	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
RUTHERFORD	<i>Erethizon dorsatum</i>	North American porcupine	None	None	-	-
RUTHERFORD	<i>Gonidea angulata</i>	western ridged mussel	None	None	-	-
RUTHERFORD	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
RUTHERFORD	<i>Amorpha californica var. napensis</i>	Napa false indigo	None	None	-	1B.2
RUTHERFORD	<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	None	None	-	1B.2
RUTHERFORD	<i>Arctostaphylos stanfordiana ssp. decumbens</i>	Rincon Ridge manzanita	None	None	-	1B.1
RUTHERFORD	<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	End	End	-	1B.1
RUTHERFORD	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
RUTHERFORD	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
RUTHERFORD	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
RUTHERFORD	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
RUTHERFORD	<i>Clarkia breweri</i>	Brewer's clarkia	None	None	-	4.2
RUTHERFORD	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
RUTHERFORD	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
RUTHERFORD	<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	None	None	-	1B.2
RUTHERFORD	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
RUTHERFORD	<i>Helianthus exilis</i>	serpentine sunflower	None	None	-	4.2
RUTHERFORD	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
RUTHERFORD	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
RUTHERFORD	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
RUTHERFORD	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
RUTHERFORD	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
RUTHERFORD	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
RUTHERFORD	<i>Streptanthus hesperidis</i>	green jewelflower	None	None	-	1B.2
SANTA ROSA	<i>Ambystoma californiense pop. 3</i>	California tiger salamander - Sonoma County DPS	End	Threat	WL	-
SANTA ROSA	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
SANTA ROSA	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
SANTA ROSA	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
SANTA ROSA	<i>Accipiter cooperii</i>	Cooper's hawk	None	None	WL	-
SANTA ROSA	<i>Ardea alba</i>	great egret	None	None	-	-
SANTA ROSA	<i>Coturnicops noveboracensis</i>	yellow rail	None	None	SSC	-
SANTA ROSA	<i>Egretta thula</i>	snowy egret	None	None	-	-
SANTA ROSA	<i>Elanus leucurus</i>	white-tailed kite	None	None	FP	-
SANTA ROSA	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
SANTA ROSA	<i>Nycticorax nycticorax</i>	black-crowned night heron	None	None	-	-
SANTA ROSA	<i>Linderella occidentalis</i>	California linderella	None	None	-	-
SANTA ROSA	<i>Cottus gulosus</i>	rifle sculpin	None	None	SSC	-
SANTA ROSA	<i>Entosphenus tridentatus</i>	Pacific lamprey	None	None	SSC	-
SANTA ROSA	<i>Hesperoleucus venustus navarroensis</i>	northern coastal roach	None	None	SSC	-
SANTA ROSA	<i>Hysterocarpus traskii</i> pomo	Russian River tule perch	None	None	SSC	-
SANTA ROSA	<i>Oncorhynchus kisutch</i> pop. 4	coho salmon - central California coast ESU	End	End	-	-
SANTA ROSA	<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead - central California coast DPS	Threat	None	-	-
SANTA ROSA	<i>Oncorhynchus tshawytscha</i> pop. 17	chinook salmon - California coastal ESU	Threat	None	-	-
SANTA ROSA	<i>Andrena blennospermatis</i>	Blennosperma vernal pool andrenid bee	None	None	-	-
SANTA ROSA	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
SANTA ROSA	<i>Bombus occidentalis</i>	western bumble bee	None	None	-	-
SANTA ROSA	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
SANTA ROSA	<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	None	None	SSC	-
SANTA ROSA	<i>Taxidea taxus</i>	American badger	None	None	SSC	-
SANTA ROSA	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
SANTA ROSA	Valley Needlegrass Grassland	Valley Needlegrass Grassland	None	None	-	-
SANTA ROSA	<i>Triquetrella californica</i>	coastal triquetrella	None	None	-	1B.2
SANTA ROSA	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None	None	-	1B.2
SANTA ROSA	<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	None	None	-	1B.2
SANTA ROSA	<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	None	None	-	1B.1
SANTA ROSA	<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	End	End	-	1B.1
SANTA ROSA	<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	None	None	-	1B.2
SANTA ROSA	<i>Blennosperma bakeri</i>	Sonoma sunshine	End	End	-	1B.1
SANTA ROSA	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
SANTA ROSA	<i>Calochortus uniflorus</i>	pink star-tulip	None	None	-	4.2
SANTA ROSA	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
SANTA ROSA	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
SANTA ROSA	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
SANTA ROSA	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
SANTA ROSA	<i>Fritillaria liliacea</i>	fragrant fritillary	None	None	-	1B.2
SANTA ROSA	<i>Hemizonia congesta ssp. congesta</i>	congested-headed hayfield tarplant	None	None	-	1B.2
SANTA ROSA	<i>Lasthenia burkei</i>	Burke's goldfields	End	End	-	1B.1
SANTA ROSA	<i>Layia septentrionalis</i>	Colusa layia	None	None	-	1B.2
SANTA ROSA	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
SANTA ROSA	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
SANTA ROSA	<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	End	End	-	1B.1
SANTA ROSA	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
SANTA ROSA	<i>Monardella viridis</i>	green monardella	None	None	-	4.3
SANTA ROSA	<i>Navarretia leucocephala ssp. bakeri</i>	Baker's navarretia	None	None	-	1B.1
SANTA ROSA	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
SANTA ROSA	<i>Trifolium amoenum</i>	two-fork clover	End	None	-	1B.1
SANTA ROSA	<i>Trifolium buckwestiorum</i>	Santa Cruz clover	None	None	-	1B.1
SANTA ROSA	<i>Trifolium hydrophilum</i>	saline clover	None	None	-	1B.2
ST. HELENA	<i>Dicamptodon ensatus</i>	California giant salamander	None	None	SSC	-
ST. HELENA	<i>Rana boylei</i>	foothill yellow-legged frog	None	End	SSC	-
ST. HELENA	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
ST. HELENA	<i>Ardea herodias</i>	great blue heron	None	None	-	-
ST. HELENA	<i>Athene cunicularia</i>	burrowing owl	None	None	SSC	-
ST. HELENA	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	End	FP	-
ST. HELENA	<i>Progne subis</i>	purple martin	None	None	SSC	-
ST. HELENA	<i>Setophaga petechia</i>	yellow warbler	None	None	SSC	-
ST. HELENA	<i>Strix occidentalis caurina</i>	Northern Spotted Owl	Threat	Threat	-	-
ST. HELENA	<i>Calasellus californicus</i>	An isopod	None	None	-	-
ST. HELENA	<i>Lavinia exilicauda exilicauda</i>	Sacramento hitch	None	None	SSC	-
ST. HELENA	<i>Oncorhynchus mykiss irideus pop. 8</i>	steelhead - central California coast DPS	Threat	None	-	-
ST. HELENA	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
ST. HELENA	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
ST. HELENA	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
ST. HELENA	<i>Erethizon dorsatum</i>	North American porcupine	None	None	-	-
ST. HELENA	<i>Myotis evotis</i>	long-eared myotis	None	None	-	-
ST. HELENA	<i>Myotis thysanodes</i>	fringed myotis	None	None	-	-
ST. HELENA	<i>Myotis yumanensis</i>	Yuma myotis	None	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
ST. HELENA	<i>Margaritifera falcata</i>	western pearlshell	None	None	-	-
ST. HELENA	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
ST. HELENA	<i>Northern Vernal Pool</i>	Northern Vernal Pool	None	None	-	-
ST. HELENA	<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None	None	-	1B.2
ST. HELENA	<i>Astragalus breweri</i>	Brewer's milk-vetch	None	None	-	4.2
ST. HELENA	<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	End	End	-	1B.1
ST. HELENA	<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	None	None	-	4.3
ST. HELENA	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
ST. HELENA	<i>Calamagrostis ophitidis</i>	serpentine reed grass	None	None	-	4.3
ST. HELENA	<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	None	None	-	4.2
ST. HELENA	<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None	None	-	1B.1
ST. HELENA	<i>Ceanothus divergens</i>	Calistoga ceanothus	None	None	-	1B.2
ST. HELENA	<i>Ceanothus pinetorum</i>	Kern ceanothus	None	None	-	4.3
ST. HELENA	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
ST. HELENA	<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None	None	-	1B.2
ST. HELENA	<i>Clarkia gracilis</i> ssp. <i>tracyi</i>	Tracy's clarkia	None	None	-	4.2
ST. HELENA	<i>Collomia diversifolia</i>	serpentine collomia	None	None	-	4.3
ST. HELENA	<i>Cordylanthus tenuis</i> ssp. <i>brunneus</i>	serpentine bird's-beak	None	None	-	4.3
ST. HELENA	<i>Delphinium uliginosum</i>	swamp larkspur	None	None	-	4.2
ST. HELENA	<i>Erigeron biolettii</i>	streamside daisy	None	None	-	3
ST. HELENA	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
ST. HELENA	<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	None	None	-	1B.2
ST. HELENA	<i>Erythronium helenae</i>	St. Helena fawn lily	None	None	-	4.2
ST. HELENA	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
ST. HELENA	<i>Helianthus exilis</i>	serpentine sunflower	None	None	-	4.2
ST. HELENA	<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	None	None	-	1B.2
ST. HELENA	<i>Layia septentrionalis</i>	Colusa layia	None	None	-	1B.2
ST. HELENA	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
ST. HELENA	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
ST. HELENA	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	1B.2
ST. HELENA	<i>Lupinus sericatus</i>	Cobb Mountain lupine	None	None	-	1B.2
ST. HELENA	<i>Navarretia cotulifolia</i>	cotula navarretia	None	None	-	4.2
ST. HELENA	<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	None	None	-	1B.1
ST. HELENA	<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	None	None	-	1B.3
ST. HELENA	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
ST. HELENA	<i>Sidalcea oregana</i> ssp. <i>hydrophila</i>	marsh checkerbloom	None	None	-	1B.2

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
ST. HELENA	<i>Streptanthus hesperidis</i>	green jewelflower	None	None	-	1B.2
ST. HELENA	<i>Toxicoscordion fontanum</i>	marsh zigadenus	None	None	-	4.2
ST. HELENA	<i>Trichostema ruygtii</i>	Napa bluecurls	None	None	-	1B.2
ST. HELENA	<i>Triteleia lugens</i>	dark-mouthed triteleia	None	None	-	4.3

KEY FOR 9-QUAD LIST:

- 1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California
 1B.2 = Rare, threatened, or endangered in California and elsewhere; fairly threatened in California
 1B.3 = Rare, threatened, or endangered in California and elsewhere; not very threatened in California
 2A = Presumed extinct in California, but extant elsewhere
 2B.1 = Rare, threatened, or endangered in Calif., but more common elsewhere; seriously threatened in Calif.
 2B.2 = Rare, threatened, or endangered in Calif., but more common elsewhere; fairly threatened in Calif.
 2B.3 = Rare, threatened, or endangered in Calif., but more common elsewhere; not very threatened in Calif.
 3 = Plants about which we need more information (Review List)
 3.1 = Plants about which we need more information (Review List); seriously threatened in California
 3.2 = Plants about which we need more information (Review List); fairly threatened in California
 3.3 = Plants about which we need more information (Review List); not very threatened in California
 4.2 = Plants of limited distribution (watch list); fairly threatened in California
 4.3 = Plants of limited distribution (watch list); not very threatened in California

SE/ST/SD=State Endangered/Threatened/Delisted

SSC=CDFW Species of Special Concern

WL=CDFW Watch List

FPE/FPT/FPD/FP=Federal Proposed Endangered/Threatened/Delisting

Threat=Threatened

Cand=Candidate

SC/SCD=State Candidate for Listing/Delisting

SFP=State Fully Protected

FE/FT/FD=Federal Endangered/Threatened/Delisted

FC=Federal Candidate

End=Endangered

Prop=Proposed

APPENDIX B

TREE SURVEY DATA SHEETS

TREE SURVEY DATA – DOUGLAS FIR FOREST – <i>BLOCK 1</i>			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
36	BLK	16	
37	BLK	14	
38	DFR	9	
39	DFR	5	
40	DFR	7	
41	DFR	10	
42	MAD	11	
43	BUC	9	
44	DFR	24	
45	MAD	12	
46	BLK	23	
47	DFR	18	
48	BLK	16	
49	DFR	23	
50	BLK	16	
51	BLK	16	
52	MAD	12, 14 (multi-stem) = (18.44)	
53	DFR	7	
54	DFR	8	
55	DFR	10	
56	DFR	10	
57	DFR	5	
58	DFR	4	
59	DFR	8	
60	DFR	10	
61	DFR	13	
62	DFR	5	
63	DFR	8	
64	BLK	17	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
DFR	18	10.39	5.72
BLK	7	16.71	2.87
MAD	3	11.67	0.47
BUC	1	9	0
TOTAL	29	-	-

TREE SURVEY DATA – BLACK OAK WOODLAND – BLOCK 2			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
1	BLK	7	
2	BLK	9	
3	BLK	8	
4	BLK	18, 20=(26.91)	
5	BLK	6	
6	BLK	7	
7	BUC	5	
8	BLK	20	
9	BLK	7	
10	BUC	4, 5=(6.4)	
11	BUC	4	
12	BLK	4	
13	BLK	6	
14	BLK	7	
15	BUC	4	
16	BLK	6	
17	BLK	7	
18	BLK	5	
19	BLK	17	
20	BUC	7	
21	BLK	14	
22	BLK	5, 7=(8.6)	
23	BLK	11	
24	BLK	9	
25	BLK	21	
26	BLK	14	
27	BLK	6	
28	BLK	12, 14=(18.44)	
29	BLK	16	
30	BLK	10, 14=(17.20)	
31	BLK	16	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
BLK	26	11.31	6.05
BUC	5	4.90	1.24
TOTAL	32	-	-

TREE SURVEY DATA – BLACK OAK WOODLAND – BLOCK 3			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
3	BLK	13	
4	BLK	10	
5	BLK	14	
6	BLK	9	
7	BLK	9, 14=(16.64)	
8	DFR	9	
9	DFR	11	
10	BLK	14	
11	DFR	8	
12	BLK	10	
13	BLK	10	
14	BLK	10	
15	BLK	11	
16	BLK	10, 12, 13=(20.32)	
17	BLK	15	
18	BLK	6, 7, 8, 10, 11, 12, 13=(26.13)	
19	DFR	5	
20	BLK	12, 12=(16.97)	
21	BLK	7	
22	BLK	7	
23	BLK	5	
24	BLK	11	
25	BLK	6, 8=(10)	
26	BLK	14	
27	BLK	10, 11=(14.87)	
28	BLK	7, 8=(10.63)	
29	BLK	6	
30	BLK	7, 10=(12.21)	
31	BLK	3, 4, 6=(7.81)	
32	BLK	12, 17=(20.81)	
33	BLK	6	
34	BLK	6	
35	BLK	7, 8=(10.63)	
36	BLK	6	
37	MAD	5	
38	BLK	12	
39	DFR	15	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
BLK	31	11.71	4.88
DFR	5	9.33	4.19
MAD	1	5	0
TOTAL	37	-	-

TREE SURVEY DATA – COAST LIVE OAK WOODLAND – <i>BLOCK 5</i>			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
1	MAD	11,12,12,13,16,16,18=(37.60)	
2	DFR	12	
3	DFR	6	
4	CLO	19	
5	MAD	8,8,9=(14.46)	
6	MAD	18	
7	CLO	6	
8	CLO	7,7=(9.90)	
9	CLO	14	
10	CLO	15	
11	DFR	13	
12	MAD	10	
13	MAD	6	
14	CLO	14	
15	CLO	13	
16	CLO	16	
17	DFR	12	
18	DFR	7	
19	DFR	6	
20	CLO	14	
21	CLO	12,13=(17.69)	
22	CLO	11	
23	CLO	10	
24	CLO	15	
25	CLO	6,6,7,8,9,13=(20.86)	
26	CLO	13,18,21=(30.56)	
27	CLO	15,16=(21.93)	
28	CLO	14	
29	CLO	21,22,24=(38.74)	
30	CLO	11	
31	CLO	11	
32	CLO	12,15=(19.21)	
33	CLO	5,7=(8.60)	
34	CLO	6,6,7=(11.00)	
35	CLO	13	
36	CLO	6,8=(10.00)	
37	CLO	16	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
CLO	26	15.40	6.93
DFR	6	9.33	3.33
MAD	5	17.21	12.26
TOTAL	37	-	-

Key for Tree Survey Data Sheets:

BLK = California Black Oak

BAY = California Bay

BUC = Buckeye

DFR = Douglas Fir

MAD = Madrone

GPS waypoint for each tree is indicated on the vegetation map provided in Figure 2.

APPENDIX C

AQUATIC RESOURCES REPORT

DELINEATION OF WATERS OF THE U.S.

1.0 METHODOLOGY

1.1 Purpose of Delineation: This delineation has been conducted at the request of the local permitting agency in order to determine the extent of possible waters of the U.S. on the project.

1.2 Delineation Procedure: The delineation has been conducted as prescribed in the *Corps of Engineers Wetlands Delineation Manual*, January 1987, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, 2008, and the 2008, 2010 OHWM Field Guide.

Plant taxonomy and nomenclature is from the *Jepson Manual, Higher Plants of California*, 2012. Other texts, such as Munz's *A California Flora and Supplement* 1973, and Mason's *Flora of the Marshes of California*, 1957, were used as supplemental texts; however, all nomenclature and wetland indicator status have been checked with the U.S. Army Corps of Engineers. 2016. *National Wetland Plant Lists: Arid West and California*. The survey included use of Google satellite images, 7.5' USGS quadrangle maps, and LIDAR mapped overlays along with an extensive foot survey.

1.3 Delineation Dates: Delineation fieldwork was conducted by Northwest Biosurvey staff on April 6, May 31, and July 7, 2023.

1.4 Delineation Staff: The delineation was conducted by Steve Zalusky, Northwest Biosurvey principal biologist. Mr. Zalusky has a Master of Science Degree in Biology from the California State University at Northridge and a Bachelor of Science Degree in Zoology from the University of California at Santa Barbara. Mr. Zalusky has more than 35 years of experience as a biologist in the government and private sectors. He completed his wetland delineation training under Terry Huffman of Huffman & Associates, Inc.

2.0 EXISTING CONDITIONS

2.1 Location: The property is located off of Petrified Forest Road, approximately one-and a half miles west of the city of Calistoga, Napa County, California (APNs 020-430-018, 019 and 027; T08N R07W, Section 2 & 3, Calistoga, Calif. 7½' Topographic Map). A location map is provided in **Figure 1**.



2.2 Topography and Drainage: The Fulton Vineyard property is located along the eastern slopes of the mountain range separating the Napa Valley to the east from the Valley of the Moon and Santa Rosa Plain to the west (see **Figure 1**). The property occupies a steep southeast-to-northwest trending spur on the lower mountain slope.

Elevations range from approximately 1,160 feet msl along the southeastern edge of the property to 600 feet msl at the northeastern corner where the land drains to Cyrus Creek. Runoff is via a series of steep, ephemeral drainages flowing north and northeast to tributaries of Cyrus Creek. Cyrus Creek flows east to the Napa Valley where it joins the Napa River. The topography is shown in **Figure 1**.

2.3 Soils: The property contains the following soil types. A Soil Report is attached.

▪ **Aiken loam, 15-30%, 30-50% slopes (soil units 101 and 102):**

These sloping to strongly sloping well-drained soils are mainly on foot slopes on uplands. They formed in material weathered from basic volcanic rock. Included with these soils in mapping were small areas of Boomer, Forward, Kidd, and Sobrante soils. Permeability of the Aiken soil is moderately slow. Runoff is medium, and the hazard of erosion is slight to moderate. The natural vegetation consists of ponderosa pine, oaks, redwoods in moist draws, annual grasses, and brush in small areas that have been cleared.

▪ **Bale clay loam, 2-5% slopes (soil unit 105):**

This nearly level soil is on alluvial fans and flood plains. The surface layer is clay loam. Included with this soil in mapping were small areas of Cole, Clear Lake, and Yolo soils. These soils formed in alluvium derived from rhyolite and basic igneous rock. The plant cover is oak, blackberry, annual grasses, poison-oak, and willows. Runoff is slow, and the hazard of erosion is slight. Permeability is moderate. Temporary ponding is common during periods of high rainfall.

▪ **Boomer-Forward-Felta complex, 5-30% slopes (soil unit 111):**

The moderately steep soils of this complex are on uplands. The Boomer series consists of well drained soils. These soils formed in material weathered from mixed igneous rocks. The plant cover is Douglas fir, ponderosa pine, black oak, manzanita, poison oak, and madrone. Permeability is moderately slow. The Forward series consists of well drained soils. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Permeability is moderately rapid. The Felta series consists of well drained soils on terraces. These soils formed in material weathered from volcanic tuff mixed with uplifted river sediment and

metamorphosed basic rock. The vegetation is madrone, Douglas fir, scrub oak, and manzanita. Permeability is moderate.

- **Forward gravelly loam, 30-75% slopes (soil unit 140):**

This steep and very steep soil is on uplands. Included with this soil in mapping were small areas of Aiken, Boomer, Kidd, and Sobrante soils. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Runoff is very rapid. The hazard of erosion is high to very high. Permeability is moderately rapid. This soil is used for timber, recreation, wildlife habitat, and watershed. Forward soils are used for watershed, wildlife habitat, and limited timber production.

- **Forward-Kidd complex, 11-60% slopes, MLRA 15 (soil unit 141):**

This complex consists of very steep soils on uplands. Commonly, the Forward soils are on toe slopes and the Kidd soils on side slopes. This complex is about 60 percent Forward soils, about 20 percent Kidd soils, and about 20 percent Aiken, Boomer, and Sobrante soils and areas of rock outcrop. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is Douglas fir, madrone, scrub oak, pepper, and bay trees. Runoff is rapid and the hazard of erosion is high. Permeability is moderately rapid. The Kidd series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The vegetation includes manzanito, chamise, ceanothus, scrub oak, grasses, and forbs and a few ponderosa pine. Permeability is moderately rapid.

- **Rock outcrop:**

This map unit consists of ridges of igneous bedrock. The areas are more than 90 percent Rock outcrop and less than 10 percent areas of soil material that is less than 6 inches deep. The vegetation consists of small shrubs and a few stunted trees in cracks between lichen-covered rocks. Runoff is very rapid. The hazard of erosion is high.

3.0 AQUATIC RESOURCES RESULTS

Waters of the U.S: Possible Waters of the U.S. within the property consist of high-gradient ephemeral tributaries to Cyrus Creek, which drains approximately ¾ miles east through the southern slopes of the Mayacamas Range onto the Santa Rosa Plain west of the City of Calistoga. Cyrus Creek flows east across the northern end of the Napa Valley to the Napa River which drains south to Suisun Bay. All Waters of the U.S. occurring within the survey area are defined as "other waters" pursuant of Corps of Engineers Definitions. No federal jurisdictional wetlands were found within the survey area.

While all waterways within the property are mapped, only the northern-most (ED 1) has a potential to be impacted by a possible access road to proposed vineyard block VB1. This channel has undergone a formal delineation pursuant to the OHWM Guidelines. A copy of the form and photos are included as **Attachments 1 and 2**. Waypoints are mapped in **Figure W1**, which is a Lidar depiction of the surrounding terrain, and in **Figure W2**, which is an aerial photo base map. The results are shown in **Table 1**.

4.0 RECOMMENDATIONS

Any work proposed within the possible waters of the U.S. will require permits from the following:

- U.S. Army Corps of Engineers (Nationwide Permit)
- Regional Water Quality Control Board (Water Quality Certification 401 permit)
- California Department of Fish and Wildlife (1602 Stream Alteration Agreement)

TABLE 1. POSSIBLE AQUATIC RESOURCES WITHIN THE SURVEY AREA

Waters Name	State	Cowardin Code	HGM Code	Meas. Type	Amount	Units	Waters Type	NWPR Determine Code	Latitude	Longitude	Local Waterway
ED1	California	R6	-	Area	0.038	Acre	B3EPHEMERAL	Yes	38.575798N	-122.613025	Cyrus Creek

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ATTACHMENT 1

OHWM DELINEATION FORM

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Vineyardist Vineyard expansion Project Number: Stream: tributary to Cyrus Creek Investigator(s): Steve Zalusky		Date: 5-31-23 Town: Calistoga Photo begin file#: 1		Time: 1:30 p.m. State: California Photo end file#: 3					
Y ☒ / N ☐ Do normal circumstances exist on the site?		Location Details: Access via Petrified Forest Road							
Y ☐ / N ☒ Is the site significantly disturbed?		Projection: Mercator Datum: WGS84 Coordinates: lat, lon, D							
Brief site description: This is a high-gradient tributary to Cyrus Creek draining the south slope of the Mayacamas Range onto the northern end of the Napa Valley. It flows east across the Valley to its confluence with the Napa River at the eastern edge of Valley.									
Checklist of resources (if available): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> ☒ Aerial photography Dates: May 13, 2023 ☒ Topographic maps ☐ Geologic maps ☒ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☐ Global positioning system (GPS) ☐ Other studies: </td> <td style="width: 50%; vertical-align: top;"> ☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>						☒ Aerial photography Dates: May 13, 2023 ☒ Topographic maps ☐ Geologic maps ☒ Vegetation maps ☒ Soils maps ☐ Rainfall/precipitation maps ☐ Existing delineation(s) for site ☐ Global positioning system (GPS) ☐ Other studies:	☐ Stream gage data Gage number: Period of record: ☐ History of recent effective discharges ☐ Results of flood frequency analysis ☐ Most recent shift-adjusted rating ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event		
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Hydrogeomorphic Floodplain Units									
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW: 1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site. 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units. 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units. a) Record the floodplain unit and GPS position. b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit. c) Identify any indicators present at the location. 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section. 5. Identify the OHW and record the indicators. Record the OHW position via: <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 50%;">☐ Mapping on aerial photograph</td> <td style="width: 50%;">☐ GPS</td> </tr> <tr> <td>☐ Digitized on computer</td> <td>☐ Other:</td> </tr> </table>						☐ Mapping on aerial photograph	☐ GPS	☐ Digitized on computer	☐ Other:
☐ Mapping on aerial photograph	☐ GPS								
☐ Digitized on computer	☐ Other:								

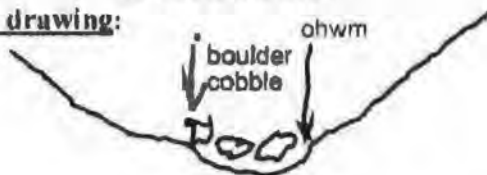
Project ID:

Cross section ID:

Date:

Time:

Cross section drawing:



OHWM

GPS point: wpt 33 (38 575791W, -122.613048N)

Indicators:

- ☒ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover

- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

This is a boulder/cobble channel with particle size ranging from 10-50 cm. The channel lacks riparian or hydrophytic vegetation. Adjacent slopes are steep and support zonal vegetation of Douglas fir forest with a substrate of duff, leaf litter and exposed soil substrate. See Photos 1-3 attached

Floodplain unit:

☒ Low-Flow Channel

☐ Active Floodplain

☐ Low Terrace

GPS point: 38.575708W, 122.613025N waypoint 35 - See Figures W1 and W2

Characteristics of the floodplain unit:

Average sediment texture: Boulder/cobble

Total veg cover: 0 % Tree: % Shrub: % Herb: %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches

- ☐ Soil development
- ☐ Surface relief
- ☒ Other: Scour Zone
- ☐ Other: _____
- ☐ Other: _____

Comments:

This high-gradient ephemeral channel lacks a defined floodplain. The substrate transitions immediately from scoured boulder and cobble to adjacent steep soil substrate. The channel is definable by transition from scour to soil substrate

Project ID: _____ Cross section ID: _____ Date: _____ Time: _____

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: 38.575802W, -122.613017N wpt 34

Characteristics of the floodplain unit:
 Average sediment texture: Pebble, granule, very coarse sand
 Total veg cover: 30 % Tree: 30 % Shrub: _____ % Herb: _____ %
 % Community successional stage:
☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☒ Late (herbaceous, shrubs, mature trees)

Indicators:
☐ Mudcracks ☒ Soil development
☐ Ripples ☒ Surface relief
☐ Drift and/or debris ☐ Other: _____
☒ Presence of bed and bank ☐ Other: _____
☐ Benches ☐ Other: _____

Comments: Same as above comments. The channel lacks a defined floodplain. Transition is directly from scour zone to steep soil bank with mature Douglas fir forest

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:
 Average sediment texture: _____
 Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %
 Community successional stage:
☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Indicators:
☐ Mudcracks ☐ Soil development
☐ Ripples ☐ Surface relief
☐ Drift and/or debris ☐ Other: _____
☐ Presence of bed and bank ☐ Other: _____
☐ Benches ☐ Other: _____

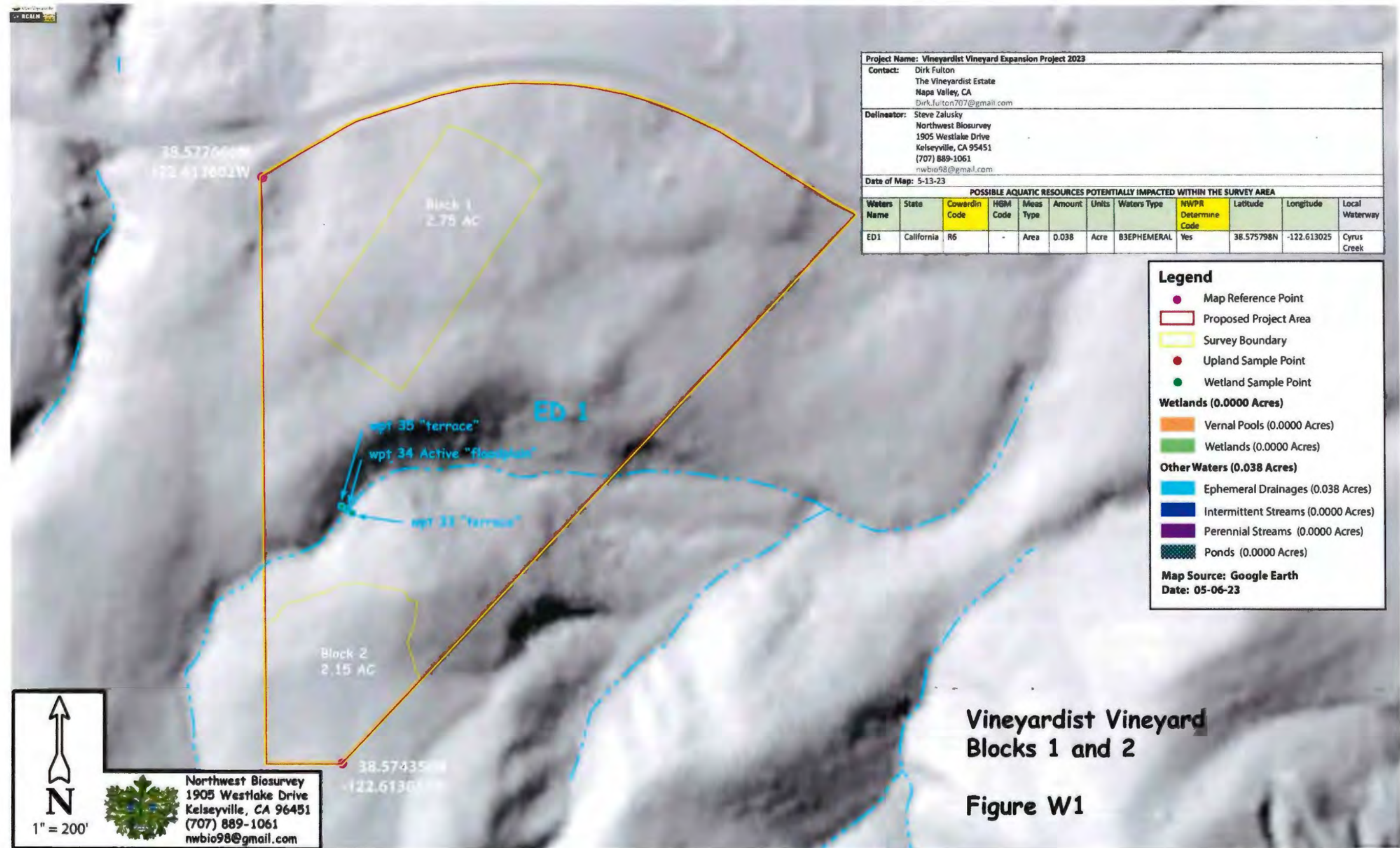
Comments:

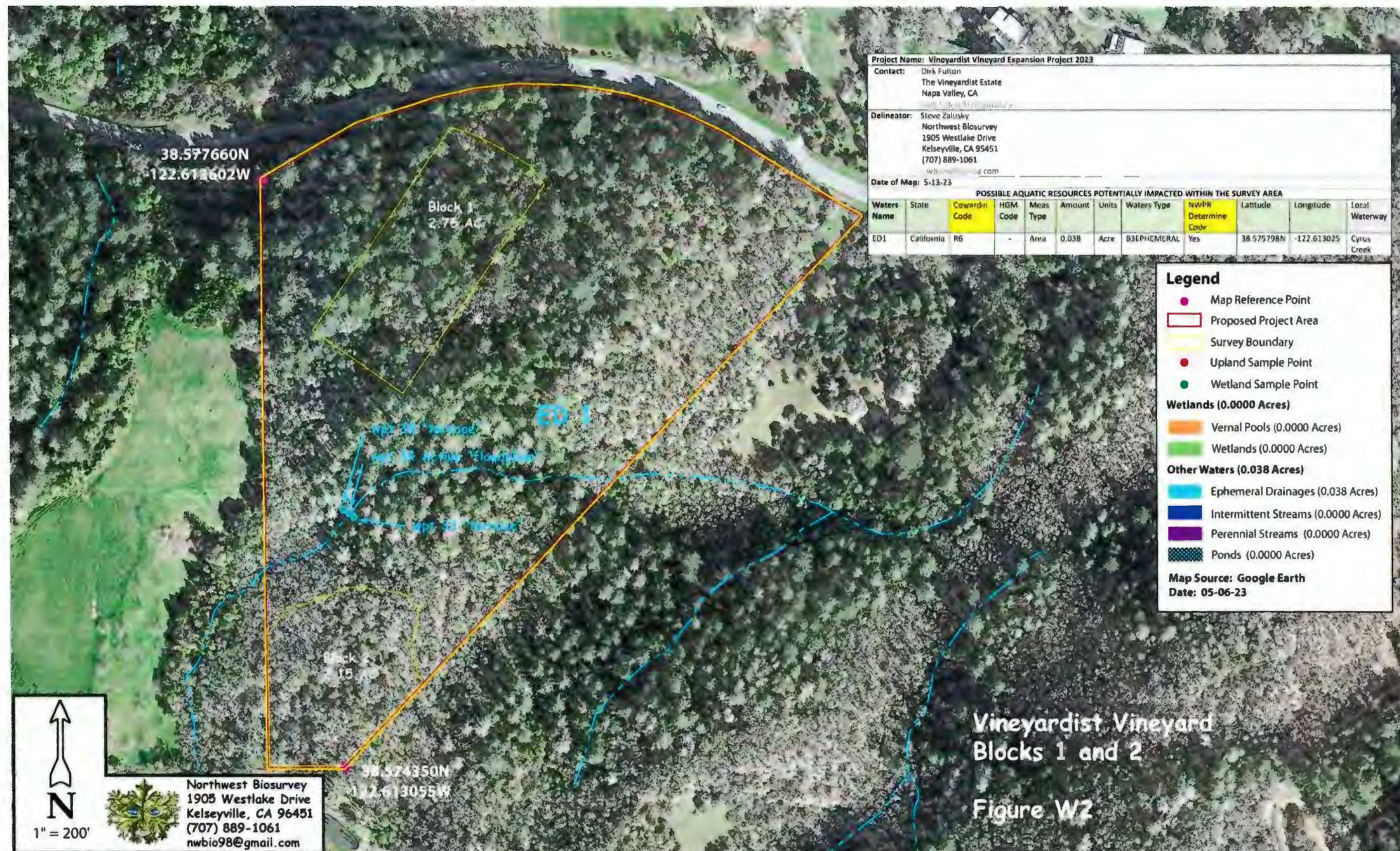
ATTACHMENT 2

PHOTOS OF STREAM SEGMENT ED1









APPENDIX D

SOIL REPORT



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 **Napa County, California**

The Vineyardist Soils



July 12, 2023

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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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.

Custom Soil Resource

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.

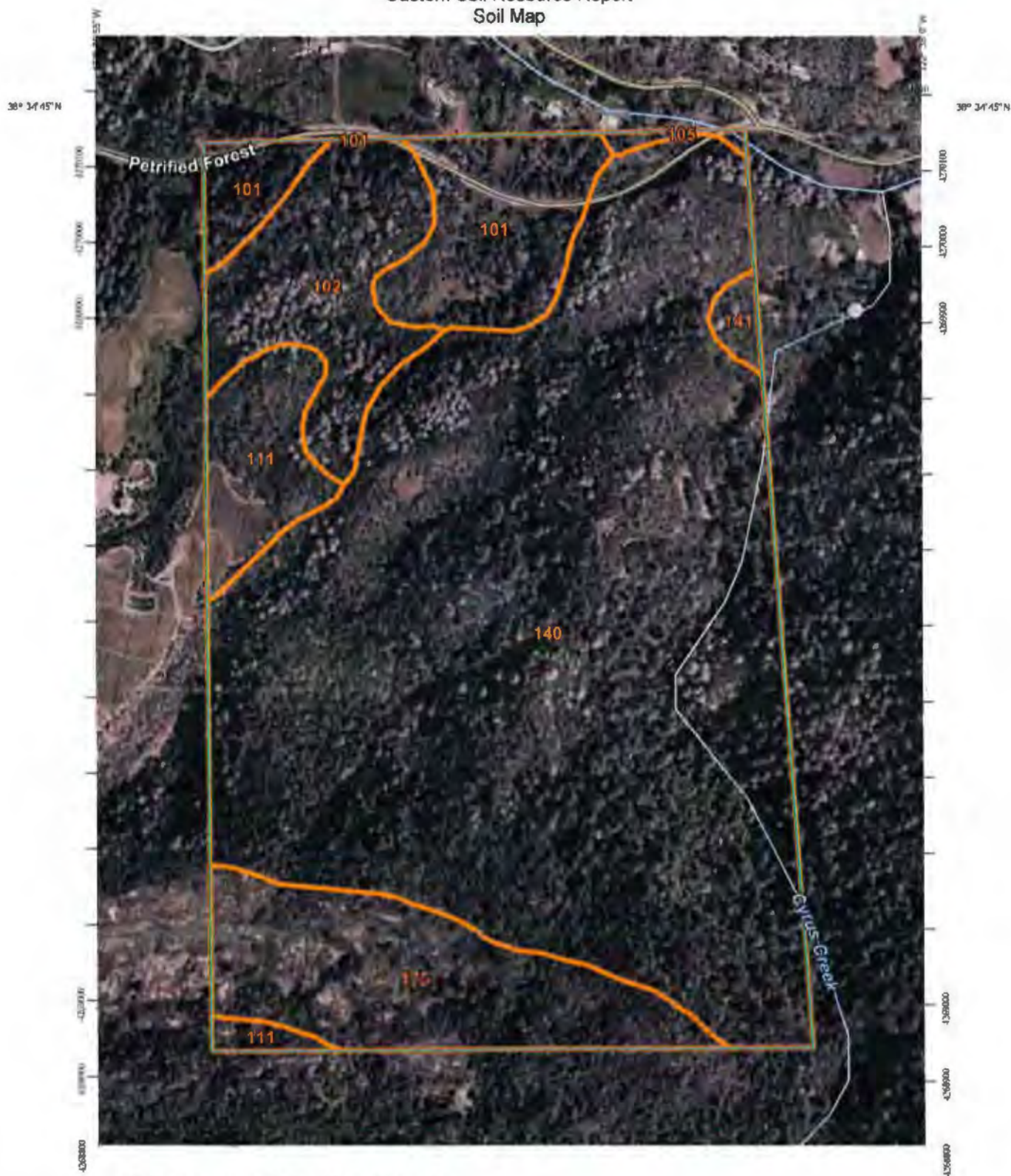
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

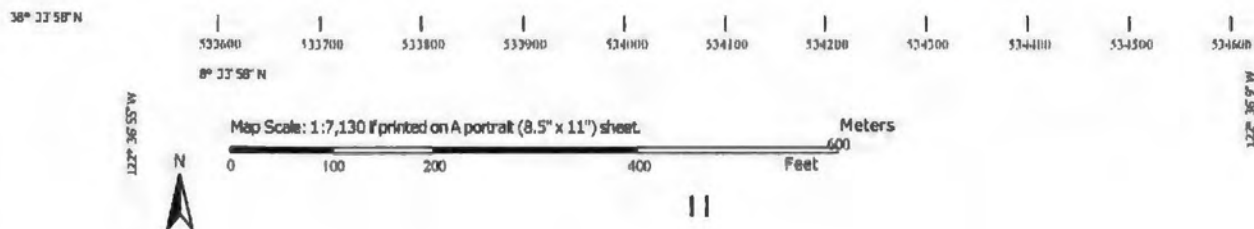
Soil Map

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



Soil Map may not be valid at this scale.



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)		Spoil Area
Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
Soil Map Unit Polygons		Wet Spot
Soil Map Unit Lines		Other
Soil Map Unit Points		Special Line Features
Special Point Features		Water Features
Blowout		Streams and Canals
Borrow Pit		Transportation
Clay Spot		Rails
Closed Depression		Interstate Highways
Gravel Pit		US Routes
Gravelly Spot		Major Roads
Landfill		Local Roads
Lava Flow		Background
Marsh or swamp		Aerial Photography
Mine or Quarry		
Miscellaneous Water		
Perennial Water		
Rock Outcrop		
Saline Spot		
Sandy Spot		
Severely Eroded Spot		
Sinkhole		
Slide or Slip		
Sodic Spot		

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: Napa County, California Survey
Area Date: Version 15, Sep 1, 2022

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

Date(s) aerial images were photographed: Mar 26, 2022—Apr 25, 2022

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
101	Aiken loam, 15 to 30 percent slopes	18.3	8.0%
102	Aiken loam, 30 to 50 percent slopes	18.7	8.2%
105	Bale clay loam, 2 to 5 percent slopes	0.8	0.3%
111	Boomer-Forward-Felta complex, 5 to 30 percent slopes	10.8	4.7%
140	Forward silt loam, 12 to 57 percent slopes, MLRA 15	153.5	67.2%
141	Forward-Kidd complex, 11 to 60 percent slopes, MLRA 15	1.5	0.7%
175	Rock outcrop	24.9	10.9%
Totals for Area of Interest		228.5	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.

Custom Soil Resource

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.

Napa County, California

101—Aiken loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hdk1

Elevation: 300 to 3,000 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 54 to 55 degrees F

Frost-free period: 200 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the map unit.

Description of Aiken

Setting

Landform: Hillsides

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 8 inches: loam

H2 - 8 to 14 inches: clay loam

H3 - 14 to 44 inches: clay

H4 - 44 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: 40 to 60 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

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e Land

capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

102—Aiken loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hdk2

Elevation: 300 to 3,000 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 54 to 55 degrees F

Frost-free period: 200 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the map unit.

Description of Aiken

Setting

Landform: Hillsides

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

M1 - 0 to 8 inches: loam

M2 - 8 to 14 inches: clay loam

M3 - 14 to 44 inches: clay

M4 - 44 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 40 to 60 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

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e Land

capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Hydric soil rating: No

105—Bale clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hdk5
Elevation: 20 to 400 feet
Mean annual precipitation: 25 to 35 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 220 to 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Bale and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Bale Setting

Landform: Flood plains, terraces
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from rhyolite and/or alluvium derived from igneous rock

Typical profile

H1 - 0 to 24 inches: clay loam
H2 - 24 to 60 inches: stratified gravelly sandy loam to loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained *Runoff*
class: Low
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: About 48 to 72 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w *Land*
capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: R014XG907CA - Loamy Bottom
Hydric soil rating: No

111—Boomer-Forward-Felta complex, 5 to 30 percent slopes

Map Unit Setting

National map unit symbol: hdkc

Elevation: 100 to 5,500 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 54 to 55 degrees F

Frost-free period: 210 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Boomer and similar soils: 40 percent

Forward and similar soils: 35 percent

Felta and similar soils: 20 percent

Estimates are based on observations, descriptions, and transects of the map unit

Description of Boomer Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residual weathered from igneous rock

Typical profile

H1 - 0 to 4 inches: loam

H2 - 4 to 44 inches: clay loam

H3 - 44 to 59 inches: weathered bedrock

Properties and qualities

Slope: 5 to 30 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Medium

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

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e *Land*

capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: F005XZ010C/A - Very Deep Gravelly Mesic Hills 40-60"ppt

Hydric soil rating: No

Description of Forward

Setting

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

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 35 inches: gravelly loam
H3 - 35 to 59 inches: weathered bedrock

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic 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
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): 6e Land
capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F005XZ007CA - Moderately Deep Mesic Hills 40-60"ppt
Hydric soil rating: No

Description of Felta Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from tuff and/or alluvium derived from
metavolcanics

Typical profile

H1 - 0 to 7 inches: very gravelly loam
H2 - 7 to 26 inches: very gravelly clay loam
H3 - 26 to 60 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium

Custom Soil Resource

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

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 6c Land

capability classification (nonirrigated): 6c

Hydrologic Soil Group: B

Ecological site: F005XZ003CA - Terraces

Hydric soil rating: No

140—Forward silt loam, 12 to 57 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2xc9y

Elevation: 310 to 2,370 feet

Mean annual precipitation: 33 to 56 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 260 to 338 days

Farmland classification: Not prime farmland

Map Unit Composition

Forward and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the map unit

Description of Forward

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Rhyolitic residuum weathered from volcanic rock

Typical profile

Ol - 0 to 2 inches: slightly decomposed plant material

A - 2 to 6 inches: silt loam

BA - 6 to 12 inches: silt loam *Bw1 -*

12 to 19 inches: silt loam *Bw2 - 19*

to 28 inches: silt loam

Bw3 - 28 to 37 inches: gravelly silt loam

Cr - 37 to 51 inches: bedrock

Properties and qualities

Slope: 12 to 57 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 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)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 7e Land
capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R015XY009CA - Hills 20-40"ppt
Hydric soil rating: No

Minor Components Aiken

Percent of map unit: 5 percent

Boomer

Percent of map unit: 5 percent

Kidd

Percent of map unit: 3 percent

Sobrante

Percent of map unit: 2 percent

141—Forward-Kidd complex, 11 to 60 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2y0fr
Elevation: 240 to 2,410 feet
Mean annual precipitation: 27 to 49 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 262 to 343 days
Farmland classification: Not prime farmland

Map Unit Composition

Forward and similar soils: 50 percent
Kidd and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Forward

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Rhyolitic residuum weathered from volcanic rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 6 inches: silt loam

BA - 6 to 12 inches: silt loam *Bw1 -*

12 to 19 inches: silt loam *Bw2 - 19*

to 28 inches: silt loam

Bw3 - 28 to 37 inches: gravelly silt loam

Cr - 37 to 51 inches: bedrock

Properties and qualities

Slope: 11 to 60 percent

Depth to restrictive feature: 20 to 40 inches to paradiithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 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)

Sodium adsorption ratio, maximum: 4.0

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified *Land*

capability classification (nonirrigated): 7c *Hydrologic Soil*

Group: C

Ecological site: R015XD130CA - STEEP SHALLOW LOAMY UPLANDS

Hydric soil rating: No

Description of Kidd Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from rhyolite

Typical profile

A - 0 to 4 inches: gravelly loam

Bw1 - 4 to 10 inches: loam *Bw2 -*

10 to 14 inches: loam

R - 14 to 25 inches: bedrock

Properties and qualities

Slope: 11 to 60 percent
Depth to restrictive feature: 5 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 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)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XD131CA - VERY SHALLOW
Hydric soil rating: No

Minor Components Aiken

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

Toomes

Percent of map unit: 3 percent

Rock outcrop

Percent of map unit: 2 percent

175—Rock outcrop

Map Unit Composition

Rock outcrop: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Rock Outcrop Setting

Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum

Typical profile

H1 - 0 to 10 inches: bedrock

Properties and qualities

Slope: 15 to 75 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

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