

Exhibit B-1

**BIOLOGICAL RESOURCE ASSESSMENT
WITH BOTANICAL SURVEYS
AND DELINEATION OF WATERS OF THE U.S.
for the
LIAO FAMILY VINEYARD PROJECT
APNS 033-040-057 & 058
Napa County, CA**

March 15, 2021

**Prepared by
Northwest Biosurvey**



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1.0 PROJECT DESCRIPTION

1.1 Proposed Project: This Biological Resource Assessment was conducted for a proposed vineyard project on two parcels totaling 42 acres, approximately 11.28 acres of which is proposed for new vineyards. There is an existing vineyard and pond on the eastern parcel. Both parcels were surveyed.

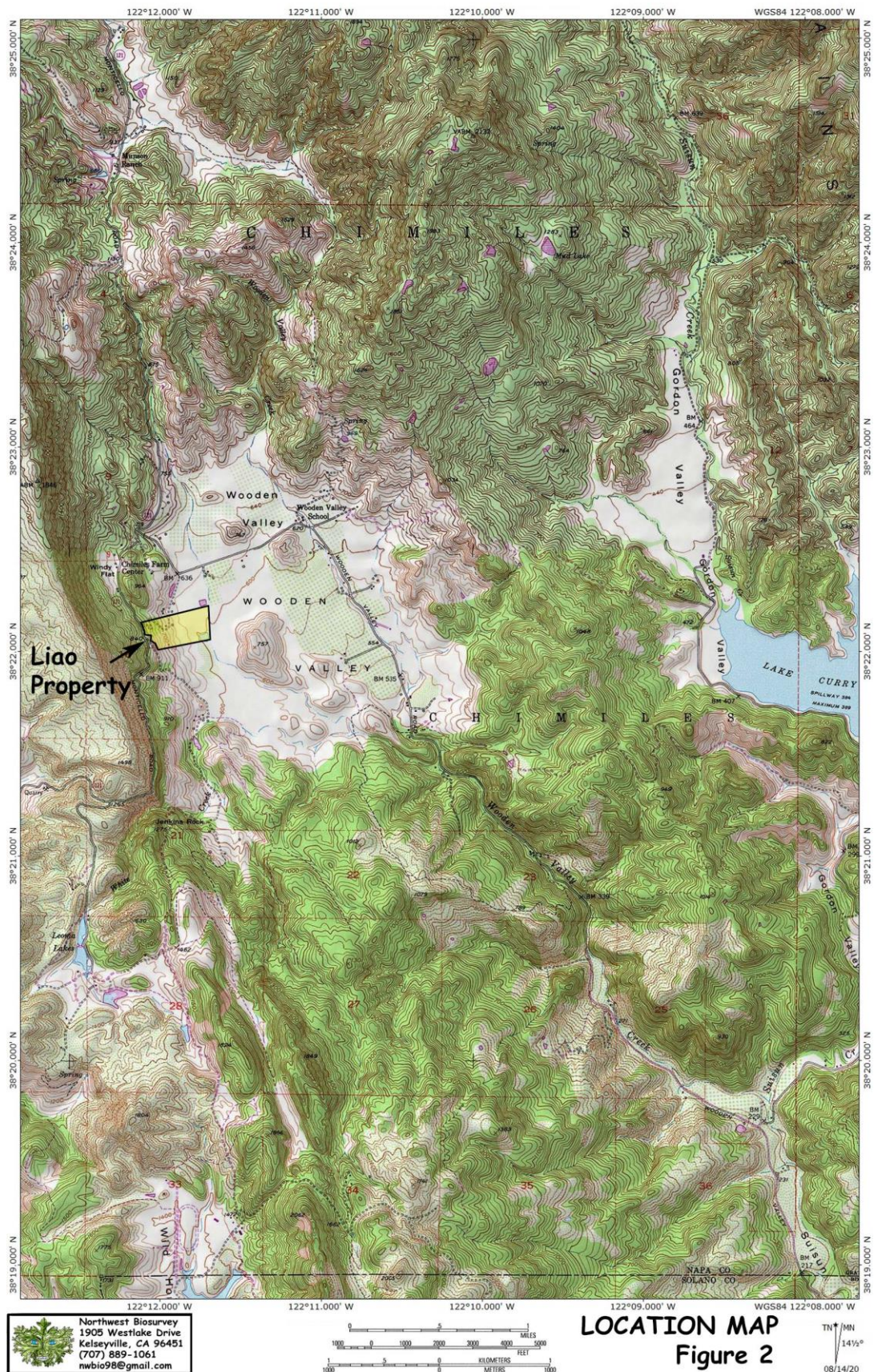
The initial phase of this assessment evaluates the potential of the parcel to contain sensitive plant and wildlife habitat. The second phase consists of a floristic-level botanical survey listing all plant taxa¹ on and around the project area. The assessment will determine whether the property contains 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 (CNDDB) list of "Special Status Plants, Animals and Natural Communities".

Two sections are added to this assessment to meet Napa County environmental review policy. These are the "Napa County Woodland Assessment" (Section 6.0) and "Conformance with the Napa County Baseline Data Report" (Section 7.0).

A delineation of waters of the U.S. was conducted due to the presence of waterways within the parcel. 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 D**.

1.2 Location: The property is located at 3580 Monticello Road, northeast of the City of Napa, California (APN 33-040-057 & 58; T06N R03W, Mt. George, 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.



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 digital 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, 2020
- California Native Plant Society's (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (2020 edition)
- California Department of Fish and Wildlife, *California Wildlife Habitat Relationships System (CWHR)*, Version 9.0
- 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.

The **CWHR database** operates on the same basis as the CNPS inventory. Input includes geographic area, plant community (including development stage), soil structure, and special features such as presence of water, snags, cover, and food (fruit, seeds, insects, etc.).

2.1 Botanical Survey Methods: A full, in-season floristic-level survey was conducted for the project. CNDDDB information and maps for the Mt. George 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"=130' 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 Delineation Methods: The delineation was conducted as prescribed in the *Corps of Engineers Wetlands Delineation Manual*, January 1987, and the *Arid West 2008 Supplement*. 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.

2.3 Woodland Assessment Methods: The proposed vineyard blocks contain two woodland types which are discussed in Section 3.3, Vegetation Types – Oregon white oak and mixed oak woodland. These woodland types cover the wooded areas of the property. One study plot was analyzed for each woodland type for species makeup, diameter and distribution and the results scaled to the total area present within the impacted areas. The methodology is discussed in detail in **Section 6.0** of this report.

2.4 Survey Dates: Site visits for botanical surveys, habitat assessments, the delineation, and mapping were made by Northwest Biosurvey staff on March 2, July 30, and August 5, 2020.

2.5 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.

Mr. Zalusky was assisted in the field and with mapping, the delineation, and the woodland analysis by Leigh Zalusky. Leigh Zalusky has a Bachelor of Science Degree in Engineering from the University of California, Davis. He has also developed extensive skills in plant taxonomy and ecology while managing and assisting in the development of the Seigler Valley Wetland Mitigation Bank and while assisting Northwest Biosurvey staff in field surveys and vegetation mapping over the past four years.

Database review 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 17 years as a field biologist. She has a Bachelor of Arts Degree 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 Liao property lies at the eastern base of a steep ridge in the Howell Mountain Range separating Milliken Canyon to the west from Wooden Valley to the east. The western third of the property descends from the base of the ridge into Wooden Valley, beginning at an elevation of ~900 feet msl (mean sea level) and ending at ~600 feet within the valley bottom. The property drains eastward as sheet flow to an unnamed tributary to Wooden Valley Creek along its eastern boundary. The tributary joins Wooden Valley Creek at the southern end of Wooden Valley. Wooden Valley Creek flows south through steep ridges to Suisun Creek, which flows south through Suisun Valley into a vast wetland marsh before entering Grizzly and Suisun Bays. The topography is shown in **Figure 1**.

3.2 Soils: The property contains the following soil types:

- **Forward silt loam, 3-26% and 5-39% slopes:**

This strongly sloping to steep soil is on hill slopes. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is mainly Douglas fir and ponderosa pines. Runoff is medium and the hazard of erosion is severe. These soils are found on the western parcel.

- **Bale clay loam, 0-2% and 2-5% slopes:**

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. Also included were areas of soils that have a hardpan at a depth of more than 40 inches. 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. The central area containing the existing vineyard contains this soil type.

- **Clear Lake clay, overwashed:**

This very deep poorly drained soil is on alluvial fans and in basins. It is alluvium derived from sedimentary rock. Permeability of this soil is slow. Surface runoff is slow or very slow and hazard of erosion is very slight. Natural vegetation includes annual grasses and forbs and scattered oaks. The easternmost parcel contains this soil type.

3.3 Vegetation Types: Both entire parcels were mapped for vegetation in order to provide project context. The project contains seven plant communities or vegetation types based on or derived from the "Standardized Classification" scheme described in the California Native Plant Society (CNPS) *A Manual of California Vegetation*. These vegetation types and other cover types are listed in **Table 1**. They are described below and shown in the vegetation map provided in **Figure 2**.

TABLE 1. PLANT COMMUNITIES AND OTHER COVER TYPES PRESENT

COVER TYPE	Acres of Cover Type on Property	Percent of Property in Cover Type	Acres of Cover Type in Vineyard Blocks		Total Acres of Cover Types in Vineyard Blocks	Percent of Total Acres on Property in Vineyard Blocks
			A	B		
Oregon White Oak Woodland	1.65	3.85	1.00	0.10	1.10	66.67
Mixed Oak Woodland	7.78	18.16	2.30	-	2.30	29.56
Red Willow Thicket	0.46	1.07	-	-	-	0.00
Sedge Rush Marsh	0.91	2.12	>0.01	-	-	
Black Berry Bramble	0.17	0.40	-	-	-	
Harding Grass Sward	2.02	4.71	1.40	-	1.40	69.31
Wild Oat Grassland	7.82	18.29	4.54	1.08	5.62	71.87
Vineyard	18.98	44.28	-	-	-	
Pond	1.92	4.48	-	-	-	
Ruderal (disturbed)	1.13	2.64	0.86	-	0.86	76.11
Total Acres of Cover Type	42.85	100.00	10.10	1.18	11.28	26.32*

* Percent of total property in proposed vineyard blocks

▪ **Oregon White Oak Woodland:**

Oregon white oak (*Quercus garryana* var. *garryana*) occurs as a mature, closed-canopy woodland on the lower slopes of the property. Much of this small remnant community has been incorporated into the landscaping of the adjacent residence. The shrub layer has been removed and the ground cover consists of the surrounding wild oat grassland with a bias toward more shade-tolerant grasses and forbs. These include perennial ryegrass (*Festuca perennis*), hedgehog dogtail (*Cynosurus echinatus*), Robert's geranium (*Geranium robertianum*), milkmaids (*Cardamine*

californica var. *californica*), endive daisy (*Rhagadiolus stellatus*), and Pacific black snakeroot (*Sanicula crassicaulis*).

- **Mixed Oak Woodland:**

This dense, mature woodland covers the upper west slope of the property. While coast live oak (*Quercus agrifolia*) is dominant, the community includes a mix of other trees that approach co-dominance. These include California black oak (*Quercus kelloggii*), Oregon white oak, Pacific madrone (*Arbutus menziesii*), California bay (*Umbellularia californica*), big leaf maple (*Acer macrophyllum*), and Northern California black walnut (*Juglans hindsii*).

The community lacks a shrub layer, but openings support scattered common manzanita (*Arctostaphylos manzanita* ssp. *manzanita*), toyon (*Heteromeles arbutifolia*), and poison oak (*Toxicodendron diversilobum*). The ground cover is primarily leaf litter with the same mix of forbs and grasses found in the Oregon white oak woodland.

- **Red Willow Thicket:**

Red willow (*Salix laevigata*) occurs as a dense, shrubby thicket on the upslope edge of the sedge rush wetland on the southern edge of the property. This community is generally too dense to support a ground cover layer; however, community edges and openings support the surrounding sedge rush marsh community.

- **Sedge Rush Marsh:**

This diverse wetland community occupies an extensive seep-spring complex along the southern edge of the property. While the species mix shifts depending on the amount of soil saturation, it includes an overall mix of the following hydrophytic species: spiny-fruit buttercup (*Ranunculus muricatus*), seep monkeyflower (*Mimulus guttatus*), blue-eyed grass (*Sisyrinchium bellum*), tall flat sedge (*Cyperus eragrostis*), clustered field sedge (*Carex praegracilis*), and Santa Barbara sedge (*Carex barbarae*).

- **Black Berry Bramble:**

Himalayan blackberry (*Rubus armeniacus*) forms an impenetrable community between the red willow thicket and sedge rush marsh. While these shrubs are typically associated with saturated soils, they require roots in adjacent uplands to obtain sufficient oxygen while sending suckers into anaerobic wetland soils. The community is too dense to support a ground cover layer.

- **Harding Grass Sward:**

Harding grass (*Phalaris aquatica*) occurs in a clumped distribution defined by areas of more mesic (moist) soils on the lower, shallow slopes of the valley. The boundaries

between this community and adjacent wild oat grassland tend to be distinct with Harding grass forming areas of homogenous cover within the surrounding mix of wild oat grassland species.

- **Wild Oat Grassland:**

This is a heterogenous mix of grasses and forbs with shifting dominance based both on the amount of shading, soil moisture, and season. As is typical in this region, forbs dominate the community in spring with grasses and the more xeric (dry soil) forbs providing a dense cover in late spring and summer. Among the wide range of species occurring in this community are hayfield tarweed (*Hemizonia congesta*), yellow star thistle (*Centaurea solstitialis*), Napa star thistle (*Centaurea melitensis*), narrow-leaved milkweed (*Asclepias fascicularis*), red fescue (*Festuca rubra*), rattail sixweeks grass (*Festuca myuros*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), and slender wild oat (*Avena barbata*).

- **Vineyard:**

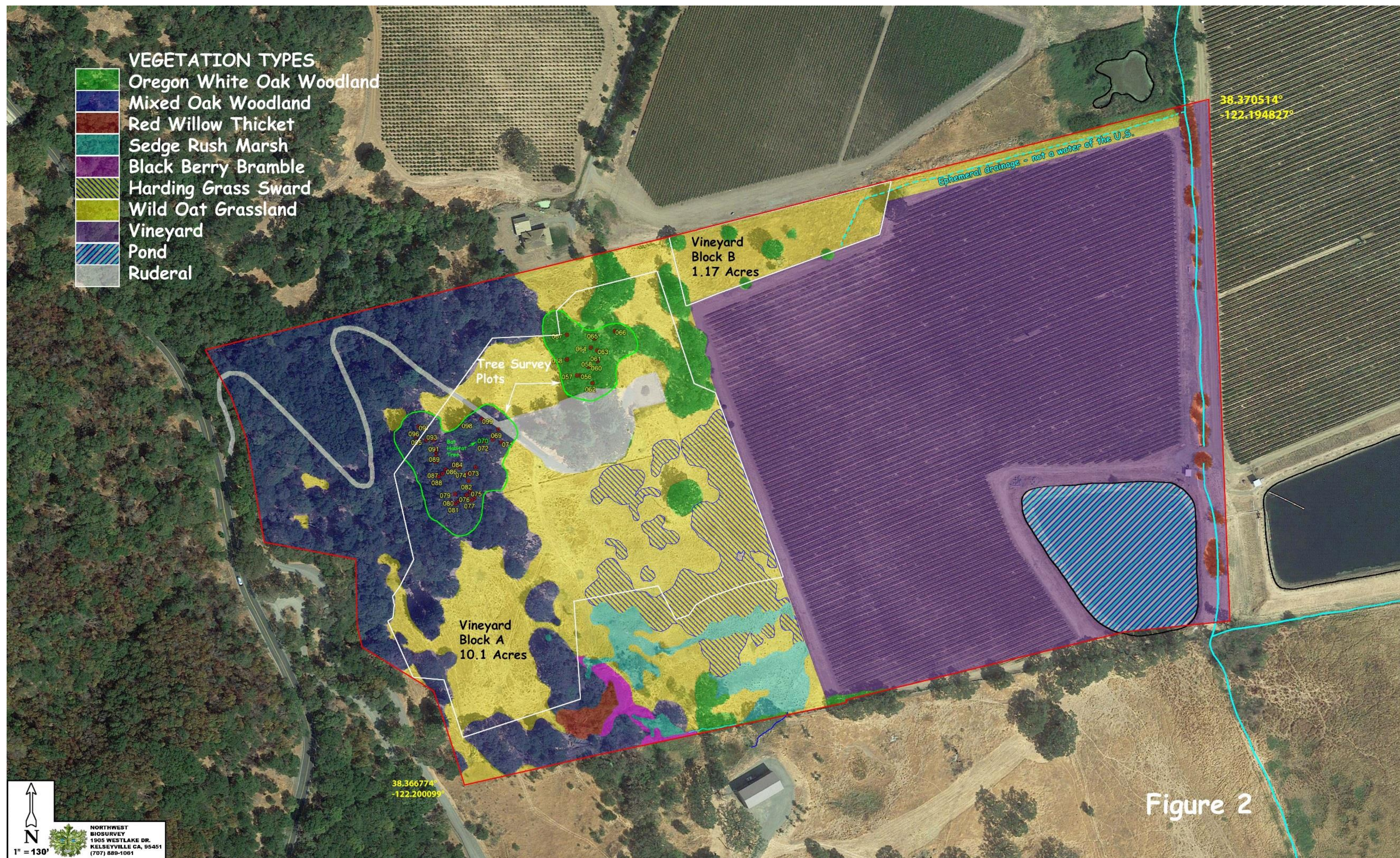
An established vineyard occupies almost the entire eastern (valley end) of the property.

- **Pond:**

A constructed, well-fed pond is located along the southern property boundary. This pond is associated with the existing vineyard operation.

- **Ruderal:**

This term refers to all paved areas, residential structures, and landscaping on the parcel.



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.

Note: *The CNPS list is used to broaden the list of sensitive species considered during the subsequent field surveys; however, it must be used with discretion because the database search does not allow fine-tuning for specific soil types or for many specific habitats required by sensitive plant taxa (e.g., serpentine and vernal pools). Consequently, the CNPS list generated for a site may include several taxa for which the required habitat is not present.*

4.2 California Natural Diversity Database: The California Natural Diversity Database (CNDDDB) and CDFW RareFind 5 data and maps for the Mt. George 7½' quadrangle maps 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

Liao Family Vineyard Property

Scientific Name	Common Name	Family	Lifeform	CRPR	CESA	FESA	Blooming Period	Habitat
<i>Agrostis hendersonii</i>	Henderson's bent grass	Poaceae	annual herb	3.2	None	None	Apr-Jun	Valley and foothill grassland (mesic), Vernal pools
<i>Arabis modesta</i>	modest rockcress	Brassicaceae	perennial herb	4.3	None	None	Mar-Jul	Chaparral, Lower montane coniferous forest
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	Asteraceae	perennial herb	1B.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland; sometimes serpentine
<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; volcanic
<i>Calandrinia breweri</i>	Brewer's calandrinia	Montiaceae	annual herb	4.2	None	None	(Jan)Mar-Jun	Chaparral, Coastal scrub; sandy or loamy, disturbed sites and burns
<i>Ceanothus purpureus</i>	holly-leaved ceanothus	Rhamnaceae	perennial evergreen shrub	1B.2	None	None	Feb-Jun	Chaparral, Cismontane woodland; volcanic, rocky
<i>Downingia pusilla</i>	dwarf downingia	Campanulaceae	annual herb	2B.2	None	None	Mar-May	Valley and foothill grassland (mesic), Vernal pools
<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	Asteraceae	perennial herb	1B.2	None	None	May-Sep	Chaparral (serpentinite or volcanic)
<i>Harmonia nutans</i>	nodding harmonia	Asteraceae	annual herb	4.3	None	None	Mar-May	Chaparral, Cismontane woodland; rocky or gravelly, volcanic
<i>Hesperolinon breweri</i>	Brewer's western flax	Linaceae	annual herb	1B.2	None	None	May-Jul	Chaparral, Cismontane woodland, Valley and foothill grassland; usually serpentinite

Scientific Name	Common Name	Family	Lifeform	CRPR	CESA	FESA	Blooming Period	Habitat
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Asteraceae	annual herb	1B.1	None	FE	Mar-Jun	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools; mesic
<i>Lilium rubescens</i>	redwood lily	Liliaceae	perennial bulbiferous herb	4.2	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest; Sometimes serpentinite, sometimes roadsides
<i>Lomatium repostum</i>	Napa lomatium	Apiaceae	perennial herb	4.3	None	None	Mar-Jun	Chaparral, Cismontane woodland; serpentinite
<i>Monardella viridis</i>	green monardella	Lamiaceae	perennial rhizomatous herb	4.3	None	None	Jun-Sep	Broadleafed upland forest, Chaparral, Cismontane woodland
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	4.2	None	None	Feb-May	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools; mesic
<i>Rhynchospora californica</i>	California beaked-rush	Cyperaceae	perennial rhizomatous herb	1B.1	None	None	May-Jul	Bogs and fens, Lower montane coniferous forest, Meadows and seeps (seeps), Marshes and swamps (freshwater)
<i>Sidalcea hickmanii</i> ssp. <i>napensis</i>	Napa checkerbloom	Malvaceae	perennial herb	1B.1	None	None	Apr-Jun	Chaparral; rhyolitic
<i>Sidalcea hickmanii</i> ssp. <i>viridis</i>	Marin checkerbloom	Malvaceae	perennial herb	1B.1	None	None	May-Jun	Chaparral (serpentinite)
<i>Trichostema ruygtii</i>	Napa bluecurls	Lamiaceae	annual herb	1B.2	None	None	Jun-Oct	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland, Vernal pools
<i>Triteleia lugens</i>	dark-mouthed triteleia	Themidaceae	perennial bulbiferous herb	4.3	None	None	Apr-Jun	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest

Scientific Name	Common Name	Family	Lifeform	CRPR	CESA	FESA	Blooming Period	Habitat
<i>Viburnum ellipticum</i>	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	2B.3	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest

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 MT. GEORGE, CALIF. 7½' QUADRANGLE

Plant Species	Common Name	Habitat Requirements; Fed./State/CNPS* Status	Blooming Season	Habitat Present
<i>Agrostis hendersonii</i>	Henderson's bent grass	Valley and foothill grassland (mesic), vernal pools; --/--/3.2	April-June ann. herb	Moderate habitat present
<i>Arabis modesta</i>	modest rockcress	Chaparral, lower montane conif. forest; --/--/4.3	March-July per. herb	Habitat not present
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	Broadleaved upland forest, chaparral, lower montane conif. forest; --/--/1B.2	May-July per. herb (bulb)	Habitat not present
<i>Calandrinia breweri</i>	Brewer's calandrinia	Chaparral, coastal scrub/sandy or loamy, disturbed sites and burns; --/--/4.2	(Jan)March-June ann. herb	Habitat not present
<i>Ceanothus purpureus</i>	holly-leaved ceanothus	Chaparral, cismontane woodland; volcanic, rocky; --/--/1B.2	Feb.-June shrub(everg.)	Poor habitat present
<i>Centromadia parryi ssp. rudis</i>	Parry's rough tarplant	Valley and foothill grassland, vernal pools/ alkaline, vernal mesic, seeps, sometimes roadsides; --/--/4.2	May-Oct. ann. herb	Poor habitat present
<i>Downingia pusilla</i>	dwarf downingia	Valley & foothill grassland, vernal pools/mesic; --/--/2B.2	March-May ann. herb	Habitat may be present
<i>Erigeron biolettii</i>	streamside daisy	Broadleaved upland forest, cismontane woodland, North Coast coniferous forest /rocky, mesic; --/--/3	June-Oct. per. herb	Poor habitat present
<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	Serpentine chaparral; --/--/1B.2	May-Sept. per. herb	Habitat not present
<i>Harmonia nutans</i>	nodding harmonia	Chaparral, cismontane woodland/rocky or gravelly, volcanic; --/--/4.3	March-May ann. herb	Poor habitat present
<i>Hesperolinon bicarpellatum</i>	two-carpellate western flax	Chaparral/serpentine barrens at edge of chaparral; --/--/1B.2	May-July ann. herb	Habitat not present
<i>Hesperolinon breweri</i>	Brewers western flax	Chaparral, cismontane woodland, valley & foothill grassland/unusually serpentinite; --/--/1B.2	May-July ann. herb	Habitat not present
<i>Leptosiphon acicularis</i>	bristly leptisiphon	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland; --/--/4.2	April-July ann. herb	Habitat may be present
<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 not present
<i>Lilium rubescens</i>	redwood lily	Broadleaved upland forest, chaparral, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest/sometimes serpentinite, sometimes roadsides; --/--/4.2	April-Aug(Sept) bulb. herb	Habitat not present

Plant Species	Common Name	Habitat Requirements; Fed./State/CNPS* Status	Blooming Season	Habitat Present
<i>Lomatium repostum</i>	Napa lomatium	Chaparral, cismontane woodland/serpentine; --/--/4.3	March-July per. herb	Habitat not present
<i>Monardella viridis</i>	green monardella	Broadleaved upland forest, chaparral, cismontane woodland; --/--/4.3	June-Sept. rhizom. herb	Habitat may be 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 may be present
<i>Rhynchospora californica</i>	California beaked rush	Bogs and fens, lower montane conif. forest, meadows & seeps (seeps), marshes & swamps (freshwater); --/-- /1B.1	May-July rhizom. herb	Habitat may be present
<i>Sidalcea hickmanii</i> ssp. <i>napensis</i>	Napa checkerbloom	Chaparral/rhyolitic substrates; --/--/1B.1	April-June per. herb	Habitat not present
<i>Trichostema ruygtii</i>	Napa bluecurls	Chaparral, cismontane woodland, lower montane conif. forest, valley & foothill grassland, vernal pools; -- /--/1B.2	June-Oct. ann. herb	Habitat may be 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 not present
<i>Viburnum ellipticum</i>	oval-leaved viburnum	Chaparral, cismontane woodland, lower montane coniferous forest; --/--/2B.3	May-June decid. shrub	Habitat may be present

*See CNPS list for key

Wildlife Species	Common Name	Habitat Requirements/Status	Season Present	Habitat Present
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	Riparian woodland and shrub habitat of the Central Valley: Typical riparian habitat, woodland etc., is adjacent to streams and rivers; FT/G3/S2	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

Wildlife Species	Common Name	Habitat Requirements/Status	Season Present	Habitat 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/SCT/G3/S2S3	year-round	Habitat is poor on the site
<i>Emys marmorata</i>	western pond turtle	Ponds, lakes, rivers, creeks, marshes & irrigation ditches with abundant vegetation and rocky or muddy bottoms; in woodland, forest, & grassland; SSC/G3G4/S3	year-round	Habitat may be present
<i>Ardea herodias</i>	great blue heron	Shallow ponds and estuaries, & salt and fresh emergent wetlands; G5/S4	sometimes migratory	Habitat is poor on site
<i>Haliaeetus leucocephalus</i>	bald eagle	Large bodies of water with adjacent snags; FD/SE/SFP/G5/S2	wintering & nesting	Habitat is not present
<i>Falco mexicanus</i>	prairie falcon	Dry open terrain, with cliff nesting sites; WL/G5/S4	year-round	Nesting habitat is not present
<i>Taxidea taxus</i>	American badger	Dryer open stages of shrub, forest, & herbaceous habitats. Needs friable soils for burrows and open uncultivated ground; SSC/G5/S3	year-round	Habitat is poor on site

KEY FOR TABLE 3:

SE/ST/SD=State Endangered/Threatened/Delisted
SC/SCT/SCD=State Candidate for Listing/Threatened/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
FC=Federal Candidate

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 yet assessed

4.3 Wildlife Habitat Analysis Results: The California Wildlife Habitat Relationships analysis listed a large number of sensitive and non-sensitive native wildlife species as potentially occurring on the site based on the geographic location and wildlife habitats present. This list is included as **Appendix B**.

4.4 Wildlife Assessment: Based on the pre-survey research conducted for this study, a total of 14 sensitive wildlife species need to be accounted for within the project area. These consist of the nine species identified as present within the Mt. George quadrangle by the CNDDDB and listed in the CWHR analysis. Five additional species included in the Napa County BDR or the CWHR have a potential to be on the parcel and are addressed below. 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.

Habitat for the following species is absent or very poor on the property. Most of these species require perennial water or lakes. Large raptors such as eagles and great blue herons require large nesting platforms or ledges. These species include:

- Valley elderberry longhorn beetle (there are no blue elderberry shrubs on the property)
- Steelhead-Central California Coast DPS (requires cool, fast streams)
- California giant salamander (requires cool perennial streams)
- Foothill yellow-legged frog (requires cool, perennial streams)
- Great blue heron (needs access to large bodies of water and tall trees)
- Bald eagle (nesting is on ledges, rocks, or large trees near large bodies of water)
- Prairie falcon (nesting habitat is on cliffs)
- American badger (require friable soil for burrows)

The stream segment on the east side of the parcel is a warm and short-duration ephemeral stream. It lacks the long-term cold water flows necessary to support fish or sensitive aquatic amphibians. Habitat for the following reptile is likely to be present in the pond:

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

These turtles prefer slow or ponded water with sheltering vegetation but will range widely through less suitable habitat in search of these sites. Stream channels are often used as movement corridors between waterways or ponds. Eggs are laid on land in sheltered nests. Young overwinter in the nest and emerge the following spring in Northern California. Food includes aquatic insects, crustaceans, fish, and riparian vegetation. When present, pond turtles are readily observed basking along shorelines or on logs in shallow water.

Turtles were identified in the pond on this property in 2007. It should be assumed that *Emys marmorata* is still present in this pond and ponds on adjacent properties, and perhaps also in the creek, at least seasonally.

The following birds and bats may occur on the property:

- **White-tailed kite (*Elanus leucurus*):**

Usually found near agricultural areas, the kite prefers open terrain near woodlands and water. These raptors hunt over open country and prefer large, deciduous trees surrounded by expanses of grassland, meadows, farmland, and/or wetlands for nesting and roosting sites. They feed mostly on small diurnal mammals, but will sometimes eat birds, insects, amphibians, and reptiles. The woodlands and forests adjacent to the grassland provide moderate habitat for kites for both nesting and feeding. The wooded grasslands with proximity to water make this site ideal habitat for nesting white-tailed kites.

The California Fully Protected status of these raptors pertains to nesting pairs with an emphasis on protecting nesting habitat. This species, along with all other raptors and some passerines, is also protected under the Migratory Bird Treaty Act.

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

Loggerhead shrikes are classified as rare in the Napa County BDR. These passerines prefer open-canopied woodlands with grass groundcover and grazed open pastures. Preferred habitats include valley-foothill woodlands and riparian. 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. Nesting occurs between March and early July when the young are fully fledged. As with the white-tailed kite, potential habitat for this species may be found in the oak woodlands and grasslands.

- **Lawrence's gold finch (*Carduelis lawrencei*):**

These passerine (perching birds) prefer to nest in the dense foliage of oaks in dry open woodland near brushy and grassy areas or chaparral. Proximity to water is important. Their diet consists primarily of seeds but includes some insects. They frequently nest near other pairs during a breeding season that extends from late March through July, with birds migrating south in August. Suitable habitat occurs on the property for this Napa County sensitive species.

- **Lewis' woodpecker (*Melanerpes lewis*):**

These woodpeckers excavate nest cavities in dead trees and dead limbs of live trees in open woodlands. They hunt insects and eat fruits and berries throughout the spring and summer and shift their diet to cached acorns and emerging insects in the fall and winter. Breeding occurs between early May and July. The open oak woodland contains many dead and downed trees which are likely to provide habitat for this and other woodpecker species. Note: No woodpecker storage trees were identified during the site visits.

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

Optimal habitat for these bats consists of open, dry habitats with rocky areas, but the bats are also found in oak savanna grasslands, and in open forest and woodlands with access to riparian and open water for feeding and drinking in northern California. Foraging occurs over open country. 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; they will also roost in buildings, bridges, and hollow trees. Preferred roosts are high above the ground and inaccessible to terrestrial predators, although they are occasionally found roosting on the ground underneath sacks and other items left by humans. Pallid bats take a variety of prey, including insects, reptiles, and rodents. The bats have a home range of 1 to 3 miles and, like the Townsend's bat, are known to roost with other bat species. This species is extremely sensitive to human disturbance of roosting sites. Populations in California have declined due to habitat destruction and use of pesticides.

The denser woodlands on the property has the potential to contain excellent habitat for pallid bats, including the numerous decadent oaks within the grassland and the proximity to agricultural ponds. Although no bat sign was seen at the time of the visits, trees proposed for removal should be surveyed for the presence of bats prior to disturbance.

5.0 FIELD SURVEY RESULTS

5.1 Botanical Field Survey Results: Table 4 presents the results of the floristic-level botanical survey of the entire parcel. Each of the sensitive plant taxa potentially occurring at within the property and listed in Tables 2 and 3 was specifically searched for during the surveys. A total of 88 native and introduced plant taxa including non-vascular plants were identified. No sensitive plant taxa were found.

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 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 LIAO FAMILY VINEYARD PROPERTY

Habit	Species	Common Name	Family	Origin
forb	<i>Anthriscus caucalis</i>	bur chervil	Apiaceae	A
forb	<i>Conium maculatum</i>	poison hemlock	Apiaceae	A
forb	<i>Sanicula crassicaulis</i>	Pacific sanicle, Pacific blacksnakeroot	Apiaceae	N
forb	<i>Torilis arvensis</i>	field hedge parsley	Apiaceae	A
forb	<i>Asclepias fascicularis</i>	narrow-leaved milkweed	Apocynaceae	N
forb	<i>Centaurea melitensis</i>	totalote, Napa star thistle	Asteraceae	A
forb	<i>Centaurea solstitialis</i>	yellow star thistle	Asteraceae	A
forb	<i>Cirsium brevistylum</i>	clustered thistle, Indian thistle	Asteraceae	N
forb	<i>Cirsium vulgare</i>	bull thistle	Asteraceae	A
forb	<i>Cynara cardunculus</i>	artichoke thistle	Asteraceae	A
forb	<i>Helminthotheca echoides</i>	bristly ox-tongue	Asteraceae	A
forb	<i>Hemizonia congesta</i>	hayfield tarweed	Asteraceae	N
forb	<i>Hieracium bolanderi</i>	Bolander's hawkweed	Asteraceae	N
forb	<i>Hypochaeris radicata</i>	rough cat's-ear	Asteraceae	A
forb	<i>Rhagadiolus stellatus</i>	endive daisy	Asteraceae	A
forb	<i>Amsinckia menziesii</i>	small-flowered fiddleneck, rancher's fireweed	Boraginaceae	N
forb	<i>Plagiobothrys nothofulvus</i>	rusty-haired popcornflower	Boraginaceae	N
forb	<i>Barbarea orthoceras</i>	American wintercress	Brassicaceae	N
forb	<i>Brassica nigra</i>	black mustard	Brassicaceae	A
forb	<i>Cardamine breweri</i>	Brewer's bittercress	Brassicaceae	N
forb	<i>Cardamine californica</i> var. <i>californica</i>	milkmaids	Brassicaceae	N
forb	<i>Carex barbarae</i>	Santa Barbara sedge	Cyperaceae	N
forb	<i>Carex praegracilis</i>	clustered field sedge	Cyperaceae	N
forb	<i>Cyperus eragrostis</i>	tall flat sedge	Cyperaceae	N
forb	<i>Lathyrus latifolius</i>	everlasting pea	Fabaceae	A
forb	<i>Lotus corniculatus</i>	bird's-foot trefoil	Fabaceae	A
forb	<i>Lupinus bicolor</i>	miniature lupine	Fabaceae	N
forb	<i>Medicago polymorpha</i>	California burclover	Fabaceae	A
forb	<i>Pisum sativum</i>	domestic pea	Fabaceae	A
forb	<i>Trifolium hirtum</i>	rose clover	Fabaceae	A
forb	<i>Trifolium longipes</i> ssp. <i>hansenii</i>	Hansen's clover	Fabaceae	N

Habit	Species	Common Name	Family	Origin
forb	<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae	N
forb	<i>Vicia americana</i> var. <i>americana</i>	American vetch	Fabaceae	N
forb	<i>Vicia faba</i>	horse bean, broad bean	Fabaceae	A
forb	<i>Vicia sativa</i> ssp. <i>sativa</i>	spring vetch	Fabaceae	A
forb	<i>Erodium cicutarium</i>	red-stem storksbill	Geraniaceae	A
forb	<i>Geranium robertianum</i>	Robert's geranium	Geraniaceae	A
forb	<i>Sisyrinchium bellum</i>	blue-eyed grass, western blue-eyed grass	Iridaceae	N
forb	<i>Juncus balticus</i>	Baltic rush	Juncaceae	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>Juncus effusus</i> var. <i>pacificus</i>	Pacific bog rush	Juncaceae	N
forb	<i>Stachys albens</i>	cobwebby hedge nettle, white-stem hedge nettle	Lamiaceae	N
forb	<i>Chlorogalum pomeridianum</i>	wavyleaf soap plant	Liliaceae	N
forb	<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	miner's lettuce	Montiaceae	N
forb	<i>Epilobium pallidum</i>	largeflower spike primrose	Onagraceae	N
forb	<i>Castilleja lacera</i>	Cut-leaved owl clover	Orobanchaceae	N
forb	<i>Eschscholzia californica</i>	California poppy	Papaveraceae	N
forb	<i>Mimulus guttatus</i>	seep monkeyflower	Phrymaceae	N
forb	<i>Plantago lanceolata</i>	English rose	Plantaginaceae	A
forb	<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	A
forb	<i>Rumex crispus</i>	curly dock	Polygonaceae	A
forb	<i>Ranunculus muricatus</i>	spiny-fruit buttercup	Ranunculaceae	A
forb	<i>Ranunculus occidentalis</i>	western buttercup	Ranunculaceae	N
forb	<i>Galium aparine</i>	goose grass, common bedstraw	Rubiaceae	N
grass	<i>Avena barbata</i>	slender wild oat	Poaceae	A
grass	<i>Bromus diandrus</i>	ripgut grass, ripgut brome	Poaceae	A
grass	<i>Bromus hordeaceus</i>	soft chess	Poaceae	A
grass	<i>Cynosurus echinatus</i>	hedgehog dogtail, annual dogtail	Poaceae	A
grass	<i>Dactylus glomerata</i>	orchard grass	Poaceae	A
grass	<i>Elymus glaucus</i>	blue wildrye	Poaceae	N
grass	<i>Festuca myuros</i>	rattail sixweeks grass	Poaceae	A

Habit	Species	Common Name	Family	Origin
grass	<i>Festuca perennis</i>	perennial ryegrass, Italian rye grass	Poaceae	A
grass	<i>Festuca rubra</i>	red fescue	Poaceae	N
grass	<i>Glyceria borealis</i>	boreal mannagrass	Poaceae	N
grass	<i>Hordeum marinum ssp. gussoneanum</i>	Mediterranean barley	Poaceae	A
grass	<i>Phalaris aquatica</i>	Harding grass	Poaceae	A
grass	<i>Stipa pulchra</i>	purple needle-grass	Poaceae	N
shrub	<i>Rhus ovata</i>	sugar bush, sugar sumac	Anacardiaceae	N
shrub	<i>Toxicodendron diversilobum</i>	poison oak	Anacardiaceae	N
shrub	<i>Symphoricarpos albus var. laevigatus</i>	common snowberry	Caryophyllaceae	N
shrub	<i>Arctostaphylos manzanita ssp. manzanita</i>	common manzanita	Ericaceae	N
shrub	<i>Cotoneaster franchettii</i>	cotoneaster	Rosaceae	A
shrub	<i>Heteromeles arbutifolia</i>	toyon	Rosaceae	N
shrub	<i>Rosa californica</i>	California wild rose	Rosaceae	N
shrub	<i>Rubus armeniacus</i>	Himalayan blackberry	Rosaceae	A
shrub	<i>Rubus ursinus</i>	California blackberry	Rosaceae	N
tree	<i>Sequoia sempervirens</i> (Landscape)	coast redwood	Cupressaceae	N
tree	<i>Arbutus menziesii</i>	Pacific madrone	Ericaceae	N
tree	<i>Quercus agrifolia</i>	coast live oak	Fagaceae	N
tree	<i>Quercus garryana var. garryana</i>	Oregon white oak	Fagaceae	N
tree	<i>Quercus kelloggii</i>	California black oak	Fagaceae	N
tree	<i>Juglans hindsii</i>	Northern California black walnut; CNPS Rank 1B.1	Juglandaceae	N
tree	<i>Umbellularia californica</i>	California bay	Lauraceae	N
tree	<i>Ficus carica</i>	edible fig	Moraceae	A
tree	<i>Prunus subcordata</i>	Pacific plum, Klamath plum	Rosaceae	N
tree	<i>Salix laevigata</i>	red willow	Salicaceae	N
tree	<i>Acer macrophyllum</i>	big-leaf maple	Sapindaceae	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 Liao Family Vineyard proposed vineyard blocks contain mainly mixed oak woodland and Oregon white oak woodland interspersed with wild oat grassland. The makeup of these communities is described in detail in Section 3.3.

One study plot was selected and analyzed for each of the two woodland types: Oregon White Oak Woodland and Mixed Oak Woodland. The location of each study area was based on how well it represented the community it was intended to sample. The size was based on the need to include enough trees to provide a meaningful statistical sample. These study plots are mapped with the waypoints in **Figure 2**.

Within the study plots, all trees 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 field data for each plot is provided in **Appendix C**.

The data collected for each study plot was then statistically analyzed to provide the following information for each community:

- Woodland species composition
- Average diameter at base height (DBH) for each species
- Average canopy size within woodland
- Average distance between trunks
- Percent of canopy closure

This data is provided below for each woodland type in **Tables 5 and 6**.

TABLE 5. TREE SURVEY DATA SUMMARY – OREGON WHITE OAK WOODLAND

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	AVERAGE # OF TRUNKS PER ACRE ⁴
OWO	13	32.9	32.17
TOTAL	13	32.9	32.17
Total area of sample plot		17,601ft ²	
Average canopy size ¹		1259ft ²	
Average distance between trunks ²		37ft	
Canopy closure ³		93%	

TABLE 6. TREE SURVEY DATA SUMMARY – MIXED OAK WOODLAND

SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	AVERAGE # OF TRUNKS PER ACRE ⁴
BLK	2	32.5	2.79
BLM	3	24.0	4.19
BWAL	1	22.0	1.40
CLO	15	36.2	20.96
OWO	11	22.1	15.37
TOTAL	32	29.5	44.71
Total area of sample plot		31,176ft ²	
Average canopy size ¹		916ft ²	
Average distance between trunks ²		31ft	
Canopy closure ³		94%	

Key:

OWO = Oregon White Oak
BWAL = Black Walnut

BLK = Black Oak
CLO = Coast Live Oak

BLM = Bigleaf Maple

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 7 provides an estimate of the species and number of trees that will be impacted by vineyard development in each of the proposed vineyard blocks based on the analysis provided above.

TABLE 7. ESTIMATED NUMBERS & SPECIES OF TREES IMPACTED WITHIN PROPOSED VINEYARD AREAS*

Block	Number and Species of Trees					Total # of Trees per Block
	BLK	BLM	BWAL	CLO	OWO	
A	6	10	3	48	67	134
B	-	-	-	-	5	5
Total # Each Species	6	10	3	48	72	Total estimated trees in all blocks = <u>139</u>

6.2 Regional Setting and Continuity with Surrounding Woodlands and Other

Habitat: The Liao property lies at the eastern base of a steep ridge in the Howell Mountain Range separating Milliken Canyon to the west from Wooden Valley to the east. The western third of the property descends from the base of the ridge into Wooden Valley, beginning at an elevation of ~900 feet msl (mean sea level) and ending at ~600 feet within the valley bottom. The property drains eastward as sheet flow to an unnamed tributary to Wooden Valley Creek along its eastern boundary. The tributary joins Wooden Valley Creek at the southern end of Wooden Valley. Wooden Valley Creek flows south through steep ridges to Suisun Creek, which flows south through Suisun Valley into a vast wetland marsh before entering Grizzly and Suisun Bays. The topography is shown in **Figure 1**.

The western edge of the property extends along Monticello Road which provides access to numerous large-acreage residential and agricultural properties along the western edge of Wooden Valley. Most of these properties support vineyard development within their flat valley terrain to the east. This agricultural development dominates the floor of Wooden Valley. The western edge of the valley, west of Monticello Road rises into a near vertical cliff-face which rises to 1,600 feet msl.

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.

As shown in **Figure 2**, woodlands on the Liao property are cut by driveways and residential development. This along with the separation from undeveloped land to

the west by Monticello Road and agricultural lands to the east and the small patch size (aerial extent) significantly reduce the value of these woodlands as 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.

Significant edge exists in the western half of the property between the mixed oak woodlands and the grasslands and wetlands along their eastern edge. This edge benefits local deer and other mammals as well as woodland and grassland birds. A significant portion of this edge will persist between remaining woodlands and the woodland clearing and wetlands in the southern southwest quarter of the property.

- **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) 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.

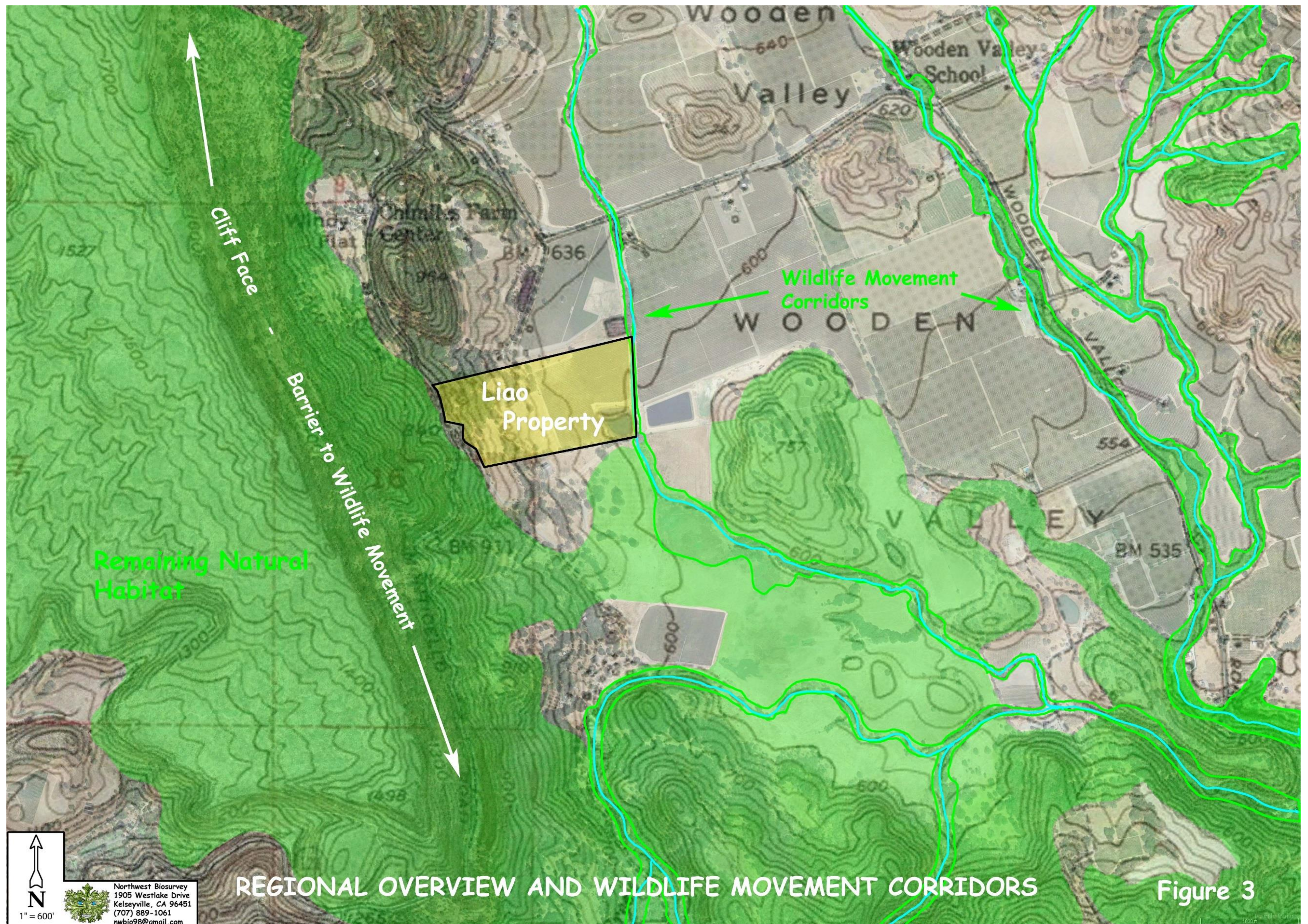
As shown in **Figure 3**, wildlife movement west of the property is excluded by the near vertical cliff-face west of Monticello Road. Access to the north and east is largely excluded by continuous, fenced vineyard development. Wildlife movement corridors within the valley are limited to Wooden Valley Creek and its western tributary which extends along the eastern edge of the Liao property. Both drainages extend from north to south. The property has access to relatively undeveloped land at its southeastern corner via the Wooden Valley Creek tributary which would be accessed via low, poorly maintained fencing along the property's southern boundary.

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

Critical Plant Communities: The Oregon White Oak Woodland mapped in **Figure 2** and described in Section 3.3 is among the 23 plant communities considered sensitive By the California Department of Fish and Wildlife in the Napa County and listed in the Napa County Baseline Data Report. However, much of this small woodland has been incorporated into the adjacent residential landscaping and has lost its native shrub and ground cover layer.

Critical Wildlife Resources: A bat survey conducted during the spring surveys identified a single large, decadent big leaf maple with openings and a hollow structure. No historic or current bat sign was present during the survey. This tree is waypoint 70, marked in Figure 2.

- **Woodland Age Class and Size:** A woodland assessment was conducted for this project (Section 7.0). Based on this assessment, the woodland communities contain a mix of age classes and seral stages. This mix indicates that these forests and woodlands are healthy and regenerating.
- **Trees with Unique Wildlife Value:** A large decadent big-leaf maple (marked as waypoint 70 in Figure 2 provides potential bat habitat; however no historic or current bat sign was found at this site during the survey.



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), California Native Plant Society Electronic Inventory, and California Department of Fish and Wildlife's Wildlife Habitat Relations Program. 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: No special status plants were identified within the survey area.

Wildlife: The property provides potential habitat for the following wildlife species with sensitive regulatory status:

- Western pond turtle
- White-tailed kite
- Lawrence's gold finch
- Lewis' woodpecker
- Loggerhead shrike
- Pallid bat

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.

7.4 Fisheries Resources: No fisheries resources are present on the parcel.

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*, and the California Department of Fish and Wildlife's *Wildlife Habitat Relations System*.
- 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 88 native and introduced plant taxa were identified on the property during the in-season, floristic-level botanical surveys. No sensitive taxa were identified. As used here, the term sensitive includes species having state or federal regulatory status, defined as Rare Plant Ranks 1B through 4 by the California Native Plant Society, or otherwise listed in the California Natural Diversity Database.

Sensitive Wildlife: A total of 14 sensitive wildlife species were assessed for potential occurrence at the site because of inclusion in the CNDDDB database for the Mt. George quadrangle, The Napa County BDR, or the presence of appropriate habitat on the site. Based on the habitat assessment, the following conclusions are made regarding species with sensitive regulatory status:

Sensitive status animal species potentially present on the Liao Family Vineyard property:

- Western pond turtle
- White-tailed kite
- Lawrence's gold finch
- Lewis' woodpecker
- Loggerhead shrike
- Pallid bat

Possible Waters of U.S.: The total area of all delineated waters of the U.S. on the property is 2.93 acres, including wetlands, streams, and a constructed pond (see **Appendix D, Delineation 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 discussed in **Section 6.3**, wildlife access between the Liao property and natural habitats to the west is blocked by a near vertical ridgeline extending along the western edge of Wooden Valley. The valley itself is heavily developed in vineyards. Wildlife movement corridors in the valley are limited to Wooden Valley Creek and its western tributary which extends along the eastern edge of the Liao property. Access to this corridor from the undeveloped portions of the Liao property is blocked by the existing vineyard in the eastern half of the property. Access to the corridor is now limited to movement through the property to the south. Placement of vineyard fencing along the southwestern property boundary would block remaining wildlife movement between the Wooden Valley Creek tributary and habitat in the western half of the Liao property.

Proposed Mitigation for Habitat Fragmentation:

Measure 1: Deer fencing should be restricted to contiguous vineyard block boundaries in order to permit wildlife passage from adjacent properties.

B. Woodland and Forest Resources

Potential Impacts:

As shown in **Table 1** the Liao property contains a total of 9.43 acres of woodland consisting of 1.65 acres of Oregon White Oak and 7.78 acres of Mixed Oak Woodland. The proposed vineyard blocks will contain 1.1 acres (66.67%) of Oregon White Oak woodland and 2.3 acres (29.56%) of Mixed Oak Woodland. As shown in **Table 7** this will account for an estimated 139 trees of various species as listed in the Table.

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 remaining woodlands at a ratio of 3 acres of preservation for each acre removed for vineyard development. The overall loss of 3.4 acres of woodland out of 9.43 acres would account for 36.1 percent of the woodland cover. The woodland loss would need to be decreased by 6.1-percent to meet the standard mitigation requirement. It is recommended that this reduction be within the Oregon White Oak woodland and consist of trees in the northeastern edge of the community.

C. Sensitive Plants and Wildlife

Potential Impacts:

Plants: No plant species with sensitive regulatory status were found within the survey area during the floristic level botanical survey. This includes non-vascular plants, none of which are listed in this USGS quadrangle by the California Natural Diversity Database.

Wildlife: The following wildlife species have a potential to be seasonally present within the proposed vineyard blocks:

- White-tailed kite
- Lawrence's gold finch
- Lewis' woodpecker
- Loggerhead shrike
- Pallid bat

In addition, the following bird species protected under the Migratory Bird Treaty Act and California Fish and Game Code may be present in the oak woodlands during the breeding season (February 1 – August 31):

- Migratory passerines and raptors (perching birds and birds of prey)

Loss of trees during the breeding season or when bats are using trees as roost sites has a potential to result in an incidental take of affected species.

Additionally, loss of grasslands used as hunting habitat for raptors has the potential to add to cumulative, though not clearly quantifiable, impacts on raptors in the region. This issue is addressed in more detail in **Appendix E** which is an excerpt from a letter prepared by Northwest Biosurvey in 2018 in response to a Napa County staff inquiry on another project regarding this issue.

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

Measure 3: In order to avoid impacts 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 the 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 not during the grading season, or graded if this can be done during the grading season.

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. Sensitive Biotic Communities

Potential Impacts:

The Oregon White Oak Woodland on the property is listed in the Napa County BDR as a Sensitive Biotic Community (BDR page 4.41). The community occupies a total of 1.65 acres and consists of mature trees. The proposed vineyard project would remove 1.1 acres (66.67-percent) of this community. This community has been significantly modified through the presence of an existing residence which has incorporated much of the community into its surrounding landscaping. In consequence, the shrub layer has been removed and the remaining woodland surrounds and is directly within the human occupied sphere of the residence. As a consequence, the community is of low to moderate value to wildlife and does not represent an intact plant community.

Proposed Mitigation for Impacts to Sensitive Biotic Communities:

Measure 5: 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-17* which calls for no net loss of sensitive biotic communities.

E. Waters of the U.S.

Potential Impacts:

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

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

Measure 6: It is recommended that all waterways mapped in Appendix D, 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.

F. Erosion Control

Potential Impacts:

Vegetation clearing and grading activities have a potential to result in increased sediment runoff to the Napa River and pertinent tributaries.

Proposed Mitigation for impacts due to Erosion and Sedimentation:

Measure 7: 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 the Napa River. 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: Mt. George Quadrangle

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CAPELL VALLEY	<i>Rana boylei</i>	foothill yellow-legged frog	None	Cand Threat	SSC	-
CAPELL VALLEY	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
CAPELL VALLEY	<i>Ardea herodias</i>	great blue heron	None	None	-	-
CAPELL VALLEY	<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead - central California coast DPS	Threat	None	-	-
CAPELL VALLEY	<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	Threat	None	-	-
CAPELL VALLEY	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
CAPELL VALLEY	<i>Lasiurus blossevillii</i>	western red bat	None	None	SSC	-
CAPELL VALLEY	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
CAPELL VALLEY	Northern Vernal Pool	Northern Vernal Pool	None	None	-	-
CAPELL VALLEY	<i>Antirrhinum virga</i>	twig-like snapdragon	None	None	-	4.3
CAPELL VALLEY	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
CAPELL VALLEY	<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	None	None	-	4.2
CAPELL VALLEY	<i>Castilleja ambigua</i> var. <i>meadii</i>	Mead's owls-clover	None	None	-	1B.1
CAPELL VALLEY	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
CAPELL VALLEY	<i>Clarkia gracilis</i> ssp. <i>tracyi</i>	Tracy's clarkia	None	None	-	4.2
CAPELL VALLEY	<i>Collomia diversifolia</i>	serpentine collomia	None	None	-	4.3
CAPELL VALLEY	<i>Downingia pusilla</i>	dwarf downingia	None	None	-	2B.2
CAPELL VALLEY	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
CAPELL VALLEY	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
CAPELL VALLEY	<i>Hesperolinon breweri</i>	Brewer's western flax	None	None	-	1B.2
CAPELL VALLEY	<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	None	None	-	1B.2
CAPELL VALLEY	<i>Lasthenia conjugens</i>	Contra Costa goldfields	End	None	-	1B.1
CAPELL VALLEY	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
CAPELL VALLEY	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
CAPELL VALLEY	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	End	Threat	-	1B.1
CAPELL VALLEY	<i>Sidalcea keckii</i>	Keck's checkerbloom	End	None	-	1B.1
CAPELL VALLEY	<i>Trichostema ruygtii</i>	Napa bluecurls	None	None	-	1B.2
CORDELIA	<i>Rana boylei</i>	foothill yellow-legged frog	None	Cand Threat	SSC	-
CORDELIA	<i>Rana draytonii</i>	California red-legged frog	Threat	None	SSC	-
CORDELIA	<i>Agelaius tricolor</i>	tricolored blackbird	None	Threat	SSC	-
CORDELIA	<i>Aquila chrysaetos</i>	golden eagle	None	None	FP ; WL	-
CORDELIA	<i>Ardea alba</i>	great egret	None	None	-	-
CORDELIA	<i>Ardea herodias</i>	great blue heron	None	None	-	-
CORDELIA	<i>Athene cunicularia</i>	burrowing owl	None	None	SSC	-
CORDELIA	<i>Buteo swainsoni</i>	Swainson's hawk	None	Threat	-	-
CORDELIA	<i>Coturnicops noveboracensis</i>	yellow rail	None	None	SSC	-
CORDELIA	<i>Egretta thula</i>	snowy egret	None	None	-	-
CORDELIA	<i>Elanus leucurus</i>	white-tailed kite	None	None	FP	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CORDELIA	Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	FP	-
CORDELIA	Haliaeetus leucocephalus	bald eagle	Delisted	End	FP	-
CORDELIA	Melospiza melodia maxillaris	Suisun song sparrow	None	None	SSC	-
CORDELIA	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
CORDELIA	Lavinia exilicauda exilicauda	Sacramento hitch	None	None	SSC	-
CORDELIA	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threat	None	-	-
CORDELIA	Bombus occidentalis	western bumble bee	None	Cand End	-	-
CORDELIA	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threat	None	-	-
CORDELIA	Speyeria callippe callippe	callippe silverspot butterfly	End	None	-	-
CORDELIA	Myotis yumanensis	Yuma myotis	None	None	-	-
CORDELIA	Reithrodontomys raviventris	salt-marsh harvest mouse	End	End	FP	-
CORDELIA	Sorex ornatus sinuosus	Suisun shrew	None	None	SSC	-
CORDELIA	Taxidea taxus	American badger	None	None	SSC	-
CORDELIA	Emys marmorata	western pond turtle	None	None	SSC	-
CORDELIA	Serpentine Bunchgrass	Serpentine Bunchgrass	None	None	-	-
CORDELIA	Balsamorhiza macrolepis	big-scale balsamroot	None	None	-	1B.2
CORDELIA	Castilleja affinis var. neglecta	Tiburon paintbrush	End	Threat	-	1B.2
CORDELIA	Centromadia parryi ssp. parryi	pappose tarplant	None	None	-	1B.2
CORDELIA	Erigeron biolettii	streamside daisy	None	None	-	3
CORDELIA	Eryngium jepsonii	Jepson's coyote-thistle	None	None	-	1B.2
CORDELIA	Helianthella castanea	Diablo helianthella	None	None	-	1B.2
CORDELIA	Iris longipetala	coast iris	None	None	-	4.2
CORDELIA	Isocoma arguta	Carquinez goldenbush	None	None	-	1B.1
CORDELIA	Leptosiphon acicularis	bristly leptosiphon	None	None	-	4.2
CORDELIA	Leptosiphon jepsonii	Jepson's leptosiphon	None	None	-	1B.2
CORDELIA	Symphyotrichum lentum	Suisun Marsh aster	None	None	-	1B.2
CORDELIA	Trifolium amoenum	two-fork clover	End	None	-	1B.1
CORDELIA	Trifolium hydrophilum	saline clover	None	None	-	1B.2
CUTTINGS WHARF	Rana boylei	foothill yellow-legged frog	None	Cand Threat	SSC	-
CUTTINGS WHARF	Rana draytonii	California red-legged frog	Threat	None	SSC	-
CUTTINGS WHARF	Agelaius tricolor	tricolored blackbird	None	Threat	SSC	-
CUTTINGS WHARF	Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
CUTTINGS WHARF	Ardea alba	great egret	None	None	-	-
CUTTINGS WHARF	Ardea herodias	great blue heron	None	None	-	-
CUTTINGS WHARF	Athene cunicularia	burrowing owl	None	None	SSC	-
CUTTINGS WHARF	Buteo regalis	ferruginous hawk	None	None	WL	-
CUTTINGS WHARF	Buteo swainsoni	Swainson's hawk	None	Threat	-	-
CUTTINGS WHARF	Charadrius alexandrinus nivosus	western snowy plover	Threat	None	SSC	-
CUTTINGS WHARF	Charadrius montanus	mountain plover	None	None	SSC	-
CUTTINGS WHARF	Circus hudsonius	northern harrier	None	None	SSC	-
CUTTINGS WHARF	Egretta thula	snowy egret	None	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CUTTINGS WHARF	Elanus leucurus	white-tailed kite	None	None	FP	-
CUTTINGS WHARF	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	None	None	SSC	-
CUTTINGS WHARF	Hydroprogne caspia	Caspian tern	None	None	-	-
CUTTINGS WHARF	Laterallus jamaicensis coturniculus	California black rail	None	Threat	FP	-
CUTTINGS WHARF	Melospiza melodia samuelis	San Pablo song sparrow	None	None	SSC	-
CUTTINGS WHARF	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
CUTTINGS WHARF	Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	None	None	SSC	-
CUTTINGS WHARF	Phalacrocorax auritus	double-crested cormorant	None	None	WL	-
CUTTINGS WHARF	Rallus obsoletus	California Ridgway's rail	End	End	FP	-
CUTTINGS WHARF	Riparia riparia	bank swallow	None	Threat	-	-
CUTTINGS WHARF	Sternula antillarum browni	California least tern	End	End	FP	-
CUTTINGS WHARF	Branchinecta lynchi	vernal pool fairy shrimp	Threat	None	-	-
CUTTINGS WHARF	Syncaris pacifica	California freshwater shrimp	End	End	-	-
CUTTINGS WHARF	Acipenser transmontanus	white sturgeon	None	None	SSC	-
CUTTINGS WHARF	Hypomesus transpacificus	Delta smelt	Threat	End	-	-
CUTTINGS WHARF	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	None	None	-	-
CUTTINGS WHARF	Lampetra ayresii	river lamprey	None	None	SSC	-
CUTTINGS WHARF	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threat	None	-	-
CUTTINGS WHARF	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	None	None	SSC	-
CUTTINGS WHARF	Oncorhynchus tshawytscha pop. 6	chinook salmon - Central Valley spring-run ESU	Threat	Threat	-	-
CUTTINGS WHARF	Pogonichthys macrolepidotus	Sacramento splittail	None	None	SSC	-
CUTTINGS WHARF	Spirinchus thaleichthys	longfin smelt	Cand	Threat	-	-
CUTTINGS WHARF	Antrozous pallidus	pallid bat	None	None	SSC	-
CUTTINGS WHARF	Reithrodontomys raviventris	salt-marsh harvest mouse	End	End	FP	-
CUTTINGS WHARF	Sorex ornatus sinuosus	Suisun shrew	None	None	SSC	-
CUTTINGS WHARF	Taxidea taxus	American badger	None	None	SSC	-
CUTTINGS WHARF	Emys marmorata	western pond turtle	None	None	SSC	-
CUTTINGS WHARF	Coastal Brackish Marsh	Coastal Brackish Marsh	None	None	-	-
CUTTINGS WHARF	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-
CUTTINGS WHARF	Northern Vernal Pool	Northern Vernal Pool	None	None	-	-
CUTTINGS WHARF	Astragalus tener var. tener	alkali milk-vetch	None	None	-	1B.2
CUTTINGS WHARF	Carex lyngbyei	Lyngbye's sedge	None	None	-	2B.2
CUTTINGS WHARF	Castilleja ambigua var. ambigua	johnny-nip	None	None	-	4.2
CUTTINGS WHARF	Chloropyron molle ssp. molle	soft salty bird's-beak	End	Rare	-	1B.2
CUTTINGS WHARF	Downingia pusilla	dwarf downingia	None	None	-	2B.2
CUTTINGS WHARF	Eleocharis parvula	small spikerush	None	None	-	4.3
CUTTINGS WHARF	Extriplex joaquinana	San Joaquin spearscale	None	None	-	1B.2
CUTTINGS WHARF	Lasthenia conjugens	Contra Costa goldfields	End	None	-	1B.1
CUTTINGS WHARF	Lathyrus jepsonii var. jepsonii	Delta tule pea	None	None	-	1B.2
CUTTINGS WHARF	Legenere limosa	legenere	None	None	-	1B.1
CUTTINGS WHARF	Lessingia hololeuca	woolly-headed lessingia	None	None	-	3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
CUTTINGS WHARF	Lilaeopsis masonii	Mason's lilaeopsis	None	Rare	-	1B.1
CUTTINGS WHARF	Polygonum marinense	Marin knotweed	None	None	-	3.1
CUTTINGS WHARF	Ranunculus lobbii	Lobb's aquatic buttercup	None	None	-	4.2
CUTTINGS WHARF	Symphyotrichum lentum	Suisun Marsh aster	None	None	-	1B.2
CUTTINGS WHARF	Trifolium amoenum	two-fork clover	End	None	-	1B.1
CUTTINGS WHARF	Trifolium hydrophilum	saline clover	None	None	-	1B.2
FAIRFIELD NORTH	Dicamptodon ensatus	California giant salamander	None	None	SSC	-
FAIRFIELD NORTH	Rana boylei	foothill yellow-legged frog	None	Cand Threat	SSC	-
FAIRFIELD NORTH	Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
FAIRFIELD NORTH	Athene cunicularia	burrowing owl	None	None	SSC	-
FAIRFIELD NORTH	Buteo swainsoni	Swainson's hawk	None	Threat	-	-
FAIRFIELD NORTH	Egretta thula	snowy egret	None	None	-	-
FAIRFIELD NORTH	Haliaeetus leucocephalus	bald eagle	Delisted	End	FP	-
FAIRFIELD NORTH	Lanius ludovicianus	loggerhead shrike	None	None	SSC	-
FAIRFIELD NORTH	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
FAIRFIELD NORTH	Branchinecta lynchi	vernal pool fairy shrimp	Threat	None	-	-
FAIRFIELD NORTH	Linderiella occidentalis	California linderiella	None	None	-	-
FAIRFIELD NORTH	Bombus crotchii	Crotch bumble bee	None	Cand End	-	-
FAIRFIELD NORTH	Bombus occidentalis	western bumble bee	None	Cand End	-	-
FAIRFIELD NORTH	Danaus plexippus pop. 1	monarch - California overwintering population	None	None	-	-
FAIRFIELD NORTH	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threat	None	-	-
FAIRFIELD NORTH	Saldula usingeri	Wilbur Springs shorebug	None	None	-	-
FAIRFIELD NORTH	Corynorhinus townsendii	Townsend's big-eared bat	None	None	SSC	-
FAIRFIELD NORTH	Lasiurus blossevillii	western red bat	None	None	SSC	-
FAIRFIELD NORTH	Myotis yumanensis	Yuma myotis	None	None	-	-
FAIRFIELD NORTH	Sorex ornatus sinuosus	Suisun shrew	None	None	SSC	-
FAIRFIELD NORTH	Emys marmorata	western pond turtle	None	None	SSC	-
FAIRFIELD NORTH	Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	None	None	-	-
FAIRFIELD NORTH	Astragalus tener var. tener	alkali milk-vetch	None	None	-	1B.2
FAIRFIELD NORTH	Centromadia parryi ssp. parryi	pappose tarplant	None	None	-	1B.2
FAIRFIELD NORTH	Extriplex joaquinana	San Joaquin spearscale	None	None	-	1B.2
FAIRFIELD NORTH	Hesperovax caulescens	hogwallow starfish	None	None	-	4.2
FAIRFIELD NORTH	Hesperolinon breweri	Brewer's western flax	None	None	-	1B.2
FAIRFIELD NORTH	Lasthenia conjugens	Contra Costa goldfields	End	None	-	1B.1
FAIRFIELD NORTH	Legenere limosa	legenere	None	None	-	1B.1
FAIRFIELD NORTH	Navarretia leucocephala ssp. bakeri	Baker's navarretia	None	None	-	1B.1
FAIRFIELD NORTH	Stuckenia filiformis ssp. alpina	slender-leaved pondweed	None	None	-	2B.2
FAIRFIELD NORTH	Symphyotrichum lentum	Suisun Marsh aster	None	None	-	1B.2
FAIRFIELD NORTH	Trifolium amoenum	two-fork clover	End	None	-	1B.1
FAIRFIELD NORTH	Trifolium hydrophilum	saline clover	None	None	-	1B.2
FAIRFIELD NORTH	Viburnum ellipticum	oval-leaved viburnum	None	None	-	2B.3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
FAIRFIELD SOUTH	Ambystoma californiense	California tiger salamander	Threat	Threat	WL	-
FAIRFIELD SOUTH	Rana draytonii	California red-legged frog	Threat	None	SSC	-
FAIRFIELD SOUTH	Agelaius tricolor	tricolored blackbird	None	Threat	SSC	-
FAIRFIELD SOUTH	Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
FAIRFIELD SOUTH	Ardea alba	great egret	None	None	-	-
FAIRFIELD SOUTH	Ardea herodias	great blue heron	None	None	-	-
FAIRFIELD SOUTH	Asio flammeus	short-eared owl	None	None	SSC	-
FAIRFIELD SOUTH	Athene cunicularia	burrowing owl	None	None	SSC	-
FAIRFIELD SOUTH	Botaurus lentiginosus	American bittern	None	None	-	-
FAIRFIELD SOUTH	Buteo swainsoni	Swainson's hawk	None	Threat	-	-
FAIRFIELD SOUTH	Charadrius montanus	mountain plover	None	None	SSC	-
FAIRFIELD SOUTH	Circus hudsonius	northern harrier	None	None	SSC	-
FAIRFIELD SOUTH	Coturnicops noveboracensis	yellow rail	None	None	SSC	-
FAIRFIELD SOUTH	Egretta thula	snowy egret	None	None	-	-
FAIRFIELD SOUTH	Elanus leucurus	white-tailed kite	None	None	FP	-
FAIRFIELD SOUTH	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	None	None	SSC	-
FAIRFIELD SOUTH	Haliaeetus leucocephalus	bald eagle	Delisted	End	FP	-
FAIRFIELD SOUTH	Lanius ludovicianus	loggerhead shrike	None	None	SSC	-
FAIRFIELD SOUTH	Laterallus jamaicensis coturniculus	California black rail	None	Threat	FP	-
FAIRFIELD SOUTH	Melospiza melodia maxillaris	Suisun song sparrow	None	None	SSC	-
FAIRFIELD SOUTH	Melospiza melodia samuelis	San Pablo song sparrow	None	None	SSC	-
FAIRFIELD SOUTH	Numenius americanus	long-billed curlew	None	None	WL	-
FAIRFIELD SOUTH	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
FAIRFIELD SOUTH	Rallus obsoletus obsoletus	California Ridgway's rail	End	End	FP	-
FAIRFIELD SOUTH	Branchinecta conservatio	Conservancy fairy shrimp	End	None	-	-
FAIRFIELD SOUTH	Lepidurus packardii	vernal pool tadpole shrimp	End	None	-	-
FAIRFIELD SOUTH	Linderiella occidentalis	California linderiella	None	None	-	-
FAIRFIELD SOUTH	Acipenser transmontanus	white sturgeon	None	None	SSC	-
FAIRFIELD SOUTH	Hypomesus transpacificus	Delta smelt	Threat	End	-	-
FAIRFIELD SOUTH	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	None	None	-	-
FAIRFIELD SOUTH	Lampetra ayresii	river lamprey	None	None	SSC	-
FAIRFIELD SOUTH	Lavinia exilicauda exilicauda	Sacramento hitch	None	None	SSC	-
FAIRFIELD SOUTH	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Threat	None	-	-
FAIRFIELD SOUTH	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threat	None	-	-
FAIRFIELD SOUTH	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall/late fall-run ESU	None	None	SSC	-
FAIRFIELD SOUTH	Oncorhynchus tshawytscha pop. 6	chinook salmon - Central Valley spring-run ESU	Threat	Threat	-	-
FAIRFIELD SOUTH	Pogonichthys macrolepidotus	Sacramento splittail	None	None	SSC	-
FAIRFIELD SOUTH	Spirinchus thaleichthys	longfin smelt	Cand	Threat	-	-
FAIRFIELD SOUTH	Bombus occidentalis	western bumble bee	None	Cand End	-	-
FAIRFIELD SOUTH	Danaus plexippus pop. 1	monarch - California overwintering population	None	None	-	-
FAIRFIELD SOUTH	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threat	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
FAIRFIELD SOUTH	Speyeria callippe callippe	callippe silverspot butterfly	End	None	-	-
FAIRFIELD SOUTH	Antrozous pallidus	pallid bat	None	None	SSC	-
FAIRFIELD SOUTH	Lasiurus blossevillei	western red bat	None	None	SSC	-
FAIRFIELD SOUTH	Lasiurus cinereus	hoary bat	None	None	-	-
FAIRFIELD SOUTH	Myotis evotis	long-eared myotis	None	None	-	-
FAIRFIELD SOUTH	Myotis lucifugus	little brown bat	None	None	-	-
FAIRFIELD SOUTH	Myotis thysanodes	fringed myotis	None	None	-	-
FAIRFIELD SOUTH	Myotis volans	long-legged myotis	None	None	-	-
FAIRFIELD SOUTH	Myotis yumanensis	Yuma myotis	None	None	-	-
FAIRFIELD SOUTH	Reithrodontomys raviventris	salt-marsh harvest mouse	End	End	FP	-
FAIRFIELD SOUTH	Sorex ornatus sinuosus	Suisun shrew	None	None	SSC	-
FAIRFIELD SOUTH	Emys marmorata	western pond turtle	None	None	SSC	-
FAIRFIELD SOUTH	Coastal Brackish Marsh	Coastal Brackish Marsh	None	None	-	-
FAIRFIELD SOUTH	Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	None	None	-	-
FAIRFIELD SOUTH	Astragalus tener var. tener	alkali milk-vetch	None	None	-	1B.2
FAIRFIELD SOUTH	Atriplex persistens	vernal pool smallscale	None	None	-	1B.2
FAIRFIELD SOUTH	Centromadia parryi ssp. parryi	pappose tarplant	None	None	-	1B.2
FAIRFIELD SOUTH	Chloropyron molle ssp. molle	soft salty bird's-beak	End	Rare	-	1B.2
FAIRFIELD SOUTH	Cicuta maculata var. bolanderi	Bolander's water-hemlock	None	None	-	2B.1
FAIRFIELD SOUTH	Cirsium hydrophilum var. hydrophilum	Suisun thistle	End	None	-	1B.1
FAIRFIELD SOUTH	Erigeron biolettii	streamside daisy	None	None	-	3
FAIRFIELD SOUTH	Eriogonum truncatum	Mt. Diablo buckwheat	None	None	-	1B.1
FAIRFIELD SOUTH	Eryngium jepsonii	Jepson's coyote-thistle	None	None	-	1B.2
FAIRFIELD SOUTH	Extriplex joaquinana	San Joaquin spearscale	None	None	-	1B.2
FAIRFIELD SOUTH	Hesperervax caulescens	hogwallow starfish	None	None	-	4.2
FAIRFIELD SOUTH	Iris longipetala	coast iris	None	None	-	4.2
FAIRFIELD SOUTH	Lasthenia conjugens	Contra Costa goldfields	End	None	-	1B.1
FAIRFIELD SOUTH	Lasthenia ferrisiae	Ferris' goldfields	None	None	-	4.2
FAIRFIELD SOUTH	Lathyrus jepsonii var. jepsonii	Delta tule pea	None	None	-	1B.2
FAIRFIELD SOUTH	Legenere limosa	legenere	None	None	-	1B.1
FAIRFIELD SOUTH	Lilaeopsis masonii	Mason's lilaeopsis	None	Rare	-	1B.1
FAIRFIELD SOUTH	Puccinellia simplex	California alkali grass	None	None	-	1B.2
FAIRFIELD SOUTH	Spergularia macrotheca var. longistyla	long-styled sand-spurrey	None	None	-	1B.2
FAIRFIELD SOUTH	Symphytotrichum lentum	Suisun Marsh aster	None	None	-	1B.2
FAIRFIELD SOUTH	Trifolium hydrophilum	saline clover	None	None	-	1B.2
MT. GEORGE	Dicamptodon ensatus	California giant salamander	None	None	SSC	-
MT. GEORGE	Rana boylei	foothill yellow-legged frog	None	Cand Threat	SSC	-
MT. GEORGE	Ardea herodias	great blue heron	None	None	-	-
MT. GEORGE	Falco mexicanus	prairie falcon	None	None	WL	-
MT. GEORGE	Haliaeetus leucocephalus	bald eagle	Delisted	End	FP	-
MT. GEORGE	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threat	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
MT. GEORGE	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threat	None	-	-
MT. GEORGE	Taxidea taxus	American badger	None	None	SSC	-
MT. GEORGE	Emys marmorata	western pond turtle	None	None	SSC	-
MT. GEORGE	Agrostis hendersonii	Henderson's bent grass	None	None	-	3.2
MT. GEORGE	Arabis modesta	modest rockcress	None	None	-	4.3
MT. GEORGE	Brodiaea leptandra	narrow-anthered brodiaea	None	None	-	1B.2
MT. GEORGE	Calandrinia breweri	Brewer's calandrinia	None	None	-	4.2
MT. GEORGE	Ceanothus purpureus	holly-leaved ceanothus	None	None	-	1B.2
MT. GEORGE	Centromadia parryi ssp. rudis	Parry's rough tarplant	None	None	-	4.2
MT. GEORGE	Downingia pusilla	dwarf downingia	None	None	-	2B.2
MT. GEORGE	Erigeron biolettii	streamside daisy	None	None	-	3
MT. GEORGE	Erigeron greenei	Greene's narrow-leaved daisy	None	None	-	1B.2
MT. GEORGE	Harmonia nutans	nodding harmonia	None	None	-	4.3
MT. GEORGE	Hesperolinon bicarpellatum	two-carpellate western flax	None	None	-	1B.2
MT. GEORGE	Hesperolinon breweri	Brewer's western flax	None	None	-	1B.2
MT. GEORGE	Leptosiphon acicularis	bristly leptosiphon	None	None	-	4.2
MT. GEORGE	Lessingia hololeuca	woolly-headed lessingia	None	None	-	3
MT. GEORGE	Lilium rubescens	redwood lily	None	None	-	4.2
MT. GEORGE	Lomatium repostum	Napa lomatium	None	None	-	4.3
MT. GEORGE	Monardella viridis	green monardella	None	None	-	4.3
MT. GEORGE	Ranunculus lobbii	Lobb's aquatic buttercup	None	None	-	4.2
MT. GEORGE	Rhynchospora californica	California beaked-rush	None	None	-	1B.1
MT. GEORGE	Sidalcea hickmanii ssp. napensis	Napa checkerbloom	None	None	-	1B.1
MT. GEORGE	Trichostema ruygtii	Napa bluecurls	None	None	-	1B.2
MT. GEORGE	Triteleia lugens	dark-mouthed triteleia	None	None	-	4.3
MT. GEORGE	Viburnum ellipticum	oval-leaved viburnum	None	None	-	2B.3
MT. VACA	Rana boylei	foothill yellow-legged frog	None	Cand Threat	SSC	-
MT. VACA	Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
MT. VACA	Buteo swainsoni	Swainson's hawk	None	Threat	-	-
MT. VACA	Falco mexicanus	prairie falcon	None	None	WL	-
MT. VACA	Icteria virens	yellow-breasted chat	None	None	SSC	-
MT. VACA	Entosphenus tridentatus	Pacific lamprey	None	None	SSC	-
MT. VACA	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Threat	None	-	-
MT. VACA	Emys marmorata	western pond turtle	None	None	SSC	-
MT. VACA	Hesperolinon breweri	Brewer's western flax	None	None	-	1B.2
MT. VACA	Ranunculus lobbii	Lobb's aquatic buttercup	None	None	-	4.2
MT. VACA	Sidalcea keckii	Keck's checkerbloom	End	None	-	1B.1
NAPA	Dicamptodon ensatus	California giant salamander	None	None	SSC	-
NAPA	Rana boylei	foothill yellow-legged frog	None	Cand Threat	SSC	-
NAPA	Rana draytonii	California red-legged frog	Threat	None	SSC	-
NAPA	Ardea alba	great egret	None	None	-	-

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
NAPA	Ardea herodias	great blue heron	None	None	-	-
NAPA	Baeolophus inornatus	oak titmouse	None	None	-	-
NAPA	Buteo swainsoni	Swainson's hawk	None	Threat	-	-
NAPA	Egretta thula	snowy egret	None	None	-	-
NAPA	Elanus leucurus	white-tailed kite	None	None	FP	-
NAPA	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	None	None	SSC	-
NAPA	Melospiza melodia samuelis	San Pablo song sparrow	None	None	SSC	-
NAPA	Nycticorax nycticorax	black-crowned night heron	None	None	-	-
NAPA	Pandion haliaetus	osprey	None	None	WL	-
NAPA	Riparia riparia	bank swallow	None	Threat	-	-
NAPA	Setophaga petechia	yellow warbler	None	None	SSC	-
NAPA	Strix occidentalis caurina	Northern Spotted Owl	Threat	Threat	-	-
NAPA	Calasellus californicus	An isopod	None	None	-	-
NAPA	Syncaris pacifica	California freshwater shrimp	End	End	-	-
NAPA	Entosphenus tridentatus	Pacific lamprey	None	None	SSC	-
NAPA	Hypomesus transpacificus	Delta smelt	Threat	End	-	-
NAPA	Hysterocarpus traskii pomo	Russian River tule perch	None	None	SSC	-
NAPA	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	None	None	-	-
NAPA	Lampetra ayresii	river lamprey	None	None	SSC	-
NAPA	Lampetra richardsoni	western brook lamprey	None	None	SSC	-
NAPA	Mylopharodon conocephalus	hardhead	None	None	SSC	-
NAPA	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	Threat	None	-	-
NAPA	Pogonichthys macrolepidotus	Sacramento splittail	None	None	SSC	-
NAPA	Spirinchus thaleichthys	longfin smelt	Cand	Threat	-	-
NAPA	Bombus caliginosus	obscure bumble bee	None	None	-	-
NAPA	Bombus occidentalis	western bumble bee	None	Cand End	-	-
NAPA	Antrozous pallidus	pallid bat	None	None	SSC	-
NAPA	Taxidea taxus	American badger	None	None	SSC	-
NAPA	Emys marmorata	western pond turtle	None	None	SSC	-
NAPA	Allium peninsulare var. franciscanum	Franciscan onion	None	None	-	1B.2
NAPA	Astragalus tener var. tener	alkali milk-vetch	None	None	-	1B.2
NAPA	Brodiaea leptandra	narrow-anthered brodiaea	None	None	-	1B.2
NAPA	Calandrinia breweri	Brewer's calandrinia	None	None	-	4.2
NAPA	Castilleja ambigua var. ambigua	johnny-nip	None	None	-	4.2
NAPA	Clarkia gracilis ssp. tracyi	Tracy's clarkia	None	None	-	4.2
NAPA	Downingia pusilla	dwarf downingia	None	None	-	2B.2
NAPA	Eleocharis parvula	small spikerush	None	None	-	4.3
NAPA	Erigeron greenii	Greene's narrow-leaved daisy	None	None	-	1B.2
NAPA	Erythronium helenae	St. Helena fawn lily	None	None	-	4.2
NAPA	Extriplex joaquinana	San Joaquin spearscale	None	None	-	1B.2
NAPA	Harmonia nutans	nodding harmonia	None	None	-	4.3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
NAPA	<i>Lasthenia conjugens</i>	Contra Costa goldfields	End	None	-	1B.1
NAPA	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	None	None	-	1B.2
NAPA	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
NAPA	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
NAPA	<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	None	Rare	-	1B.1
NAPA	<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup	None	None	-	4.2
NAPA	<i>Symphyotrichum lentum</i>	Suisun Marsh aster	None	None	-	1B.2
NAPA	<i>Trichostema ruygtii</i>	Napa bluecurls	None	None	-	1B.2
NAPA	<i>Trifolium amoenum</i>	two-fork clover	End	None	-	1B.1
NAPA	<i>Trifolium hydrophilum</i>	saline clover	None	None	-	1B.2
YOUNTVILLE	<i>Rana boylei</i>	foothill yellow-legged frog	None	Cand Threat	SSC	-
YOUNTVILLE	<i>Ardea alba</i>	great egret	None	None	-	-
YOUNTVILLE	<i>Ardea herodias</i>	great blue heron	None	None	-	-
YOUNTVILLE	<i>Elanus leucurus</i>	white-tailed kite	None	None	FP	-
YOUNTVILLE	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
YOUNTVILLE	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	End	FP	-
YOUNTVILLE	<i>Icteria virens</i>	yellow-breasted chat	None	None	SSC	-
YOUNTVILLE	<i>Phalacrocorax auritus</i>	double-crested cormorant	None	None	WL	-
YOUNTVILLE	<i>Setophaga petechia</i>	yellow warbler	None	None	SSC	-
YOUNTVILLE	<i>Lavinia exilicauda exilicauda</i>	Sacramento hitch	None	None	SSC	-
YOUNTVILLE	<i>Mylopharodon conocephalus</i>	hardhead	None	None	SSC	-
YOUNTVILLE	<i>Oncorhynchus mykiss irideus</i> pop. 8	steelhead - central California coast DPS	Threat	None	-	-
YOUNTVILLE	<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	-
YOUNTVILLE	<i>Antrozous pallidus</i>	pallid bat	None	None	SSC	-
YOUNTVILLE	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
YOUNTVILLE	<i>Astragalus clevelandii</i>	Cleveland's milk-vetch	None	None	-	4.3
YOUNTVILLE	<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None	None	-	1B.2
YOUNTVILLE	<i>Castilleja ambigua</i> var. <i>ambigua</i>	johnny-nip	None	None	-	4.2
YOUNTVILLE	<i>Castilleja ambigua</i> var. <i>meadii</i>	Mead's owls-clover	None	None	-	1B.1
YOUNTVILLE	<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None	None	-	1B.2
YOUNTVILLE	<i>Clarkia gracilis</i> ssp. <i>tracyi</i>	Tracy's clarkia	None	None	-	4.2
YOUNTVILLE	<i>Downingia pusilla</i>	dwarf downingia	None	None	-	2B.2
YOUNTVILLE	<i>Erigeron greenei</i>	Greene's narrow-leaved daisy	None	None	-	1B.2
YOUNTVILLE	<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	None	None	-	1B.2
YOUNTVILLE	<i>Harmonia nutans</i>	nodding harmonia	None	None	-	4.3
YOUNTVILLE	<i>Hesperolinon sharsmithiae</i>	Sharsmith's western flax	None	None	-	1B.2
YOUNTVILLE	<i>Leptosiphon acicularis</i>	bristly leptosiphon	None	None	-	4.2
YOUNTVILLE	<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None	None	-	1B.2
YOUNTVILLE	<i>Leptosiphon latisectus</i>	broad-lobed leptosiphon	None	None	-	4.3
YOUNTVILLE	<i>Limnanthes vincularis</i>	Sebastopol meadowfoam	End	End	-	1B.1
YOUNTVILLE	<i>Lomatium repostum</i>	Napa lomatium	None	None	-	4.3

QUAD NAME	SCIENTIFIC NAME	COMMON NAME	FEDERAL	CALIF	CDFW	CNPS
YOUNTVILLE	Micropus amphibolus	Mt. Diablo cottonweed	None	None	-	3.2
YOUNTVILLE	Monardella viridis	green monardella	None	None	-	4.3
YOUNTVILLE	Navarretia leucocephala ssp. pauciflora	few-flowered navarretia	End	Threat	-	1B.1
YOUNTVILLE	Penstemon newberryi var. sonomensis	Sonoma beardtongue	None	None	-	1B.3
YOUNTVILLE	Ranunculus lobbii	Lobb's aquatic buttercup	None	None	-	4.2
YOUNTVILLE	Sagittaria sanfordii	Sanford's arrowhead	None	None	-	1B.2
YOUNTVILLE	Streptanthus hesperidis	green jewelflower	None	None	-	1B.2
YOUNTVILLE	Trichostema ruygtii	Napa bluecurls	None	None	-	1B.2

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

WILDLIFE HABITAT RELATIONSHIPS SYSTEM RESULTS



CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS SYSTEM
supported by the
CALIFORNIA INTERAGENCY WILDLIFE TASK GROUP
and maintained by the
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
Database Version: 9.0

SPECIES SUMMARY REPORT

August 12, 2020

FE = Federal Endangered
FT = Federal Threatened
CE = California Endangered
CT = California Threatened

CF = California Fully Protected
CP = California Protected
SC = California Species of Special Concern
PE = Federally-Proposed Endangered

PT = Federally-Proposed Threatened
FC = Federal Candidate
BL = BLM Sensitive
FS = USFS Sensitive

CD = CDF Sensitive
HA = Harvest

Note: Any given status code for a species may apply to the full species or to only one or more subspecies or distinct population segments.

ID	Species Name	Status			Native/ Introduced	
A001	CALIFORNIA TIGER SALAMANDER	FE FT	CT	SC	NATIVE	
A014	CALIFORNIA SLENDER SALAMANDER				NATIVE	
A020	SPECKLED BLACK SALAMANDER				NATIVE	
A071	CALIFORNIA RED-LEGGED FROG	FT	SC		NATIVE	
B052	GREAT EGRET				CD	NATIVE
B053	SNOWY EGRET					NATIVE
B057	CATTLE EGRET					NATIVE
B058	GREEN HERON					NATIVE
B059	BLACK-CROWNED NIGHT HERON					NATIVE
B067	TUNDRA SWAN					NATIVE
B072	ROSS' S GOOSE				HA	NATIVE
B075	CANADA GOOSE				HA	NATIVE
B077	GREEN-WINGED TEAL				HA	NATIVE
B079	MALLARD				HA	NATIVE
B080	NORTHERN PINTAIL				HA	NATIVE
B082	BLUE-WINGED TEAL				HA	NATIVE
B083	CINNAMON TEAL				HA	NATIVE
B084	NORTHERN SHOVELER				HA	NATIVE
B086	EURASIAN WIGEON				HA	NATIVE
B107	RUDDY DUCK				HA	NATIVE
B108	TURKEY VULTURE					NATIVE
B111	WHITE-TAILED KITE	CF		BL		NATIVE
B114	NORTHERN HARRIER	SC				NATIVE
B115	SHARP-SHINNED HAWK					NATIVE
B116	COOPER'S HAWK					NATIVE
B119	RED-SHOULDERED HAWK					NATIVE
B123	RED-TAILED HAWK					NATIVE
B124	FERRUGINOUS HAWK					NATIVE
B125	ROUGH-LEGGED HAWK					NATIVE
B127	AMERICAN KESTREL					NATIVE
B128	MERLIN					NATIVE

ID	Species Name	Status	Native/ Introduced
B131	PRAIRIE FALCON		NATIVE
B143	BLACK RAIL	CT CF BL	NATIVE
B144	CLAPPER RAIL	FE CE CT CF	NATIVE
B146	SORA		NATIVE
B148	COMMON GALLINULE	HA	NATIVE
B159	MOUNTAIN PLOVER	SC BL	NATIVE
B165	GREATER YELLOWLEGS		NATIVE
B166	LESSER YELLOWLEGS		NATIVE
B168	WILLET		NATIVE
B170	SPOTTED SANDPIPER		NATIVE
B172	WHIMBREL		NATIVE
B173	LONG-BILLED CURLEW		NATIVE
B183	WESTERN SANDPIPER		NATIVE
B185	LEAST SANDPIPER		NATIVE
B196	SHORT-BILLED DOWITCHER		NATIVE
B197	LONG-BILLED DOWITCHER		NATIVE
B200	WILSON'S PHALAROPE		NATIVE
B251	BAND-TAILED PIGEON	HA	NATIVE
B262	BARN OWL		NATIVE
B264	WESTERN SCREECH OWL		NATIVE
B265	GREAT HORNED OWL		NATIVE
B267	NORTHERN PYGMY OWL		NATIVE
B269	BURROWING OWL	SC BL	NATIVE
B272	LONG-EARED OWL	SC	NATIVE
B273	SHORT-EARED OWL	SC	NATIVE
B274	NORTHERN SAW-WHET OWL		NATIVE
B277	COMMON POORWILL		NATIVE
B286	BLACK-CHINNED HUMMINGBIRD		NATIVE
B287	ANNA'S HUMMINGBIRD		NATIVE
B289	CALLIOPE HUMMINGBIRD		NATIVE
B291	RUFIOUS HUMMINGBIRD		NATIVE
B292	ALLEN'S HUMMINGBIRD		NATIVE
B294	LEWIS' S WOODPECKER		NATIVE
B299	RED-BREASTED SAPSUCKER		NATIVE
B302	NUTTALL'S WOODPECKER		NATIVE
B303	DOWNY WOODPECKER		NATIVE
B304	HAIRY WOODPECKER		NATIVE
B307	NORTHERN FLICKER		NATIVE
B311	WESTERN WOOD-PEWEE		NATIVE
B318	DUSKY FLYCATCHER		NATIVE
B320	PACIFIC-SLOPE FLYCATCHER		NATIVE

ID	Species Name	Status	Native/ Introduced
B323	SAY'S PHOEBE		NATIVE
B326	ASH-THROATED FLYCATCHER		NATIVE
B333	WESTERN KINGBIRD		NATIVE
B337	HORNED LARK		NATIVE
B338	PURPLE MARTIN	SC	NATIVE
B339	TREE SWALLOW		NATIVE
B340	VIOLET-GREEN SWALLOW		NATIVE
B343	CLIFF SWALLOW		NATIVE
B346	STELLER'S JAY		NATIVE
B348	WESTERN SCRUB-JAY		NATIVE
B352	YELLOW-BILLED MAGPIE		NATIVE
B353	AMERICAN CROW	HA	NATIVE
B354	COMMON RAVEN		NATIVE
B357	CHESTNUT-BACKED CHICKADEE		NATIVE
B358	OAK TITMOUSE		NATIVE
B360	BUSHTIT		NATIVE
B361	RED-BREASTED NUTHATCH		NATIVE
B362	WHITE-BREASTED NUTHATCH		NATIVE
B364	BROWN CREEPER		NATIVE
B368	BEWICK'S WREN	SC	NATIVE
B372	MARSH WREN	SC	NATIVE
B375	GOLDEN-CROWNED KINGLET		NATIVE
B376	RUBY-CROWNED KINGLET		NATIVE
B381	MOUNTAIN BLUEBIRD		NATIVE
B385	SWAINSON'S THRUSH		NATIVE
B389	AMERICAN ROBIN		NATIVE
B390	VARIED THRUSH		NATIVE
B393	NORTHERN MOCKINGBIRD		NATIVE
B404	AMERICAN PIPIT		NATIVE
B410	LOGGERHEAD SHRIKE	FE SC	NATIVE
B415	CASSIN'S VIREO		NATIVE
B417	HUTTON'S VIREO	SC	NATIVE
B418	WARBLING VIREO		NATIVE
B425	ORANGE-CROWNED WARBLER		NATIVE
B426	NASHVILLE WARBLER		NATIVE
B430	YELLOW WARBLER	SC	NATIVE
B435	YELLOW-RUMPED WARBLER		NATIVE
B436	BLACK-THROATED GRAY WARBLER		NATIVE
B437	TOWNSEND'S WARBLER		NATIVE
B461	COMMON YELLOWTHROAT	SC	NATIVE
B471	WESTERN TANAGER		NATIVE

ID	Species Name	Status			Native/ Introduced
B475	BLACK-HEADED GROSBEAK				NATIVE
B483	SPOTTED TOWHEE		SC		NATIVE
B489	CHIPPING SPARROW				NATIVE
B494	VESPER SPARROW		SC		NATIVE
B495	LARK SPARROW				NATIVE
B499	SAVANNAH SPARROW	CE	SC		NATIVE
B501	GRASSHOPPER SPARROW		SC		NATIVE
B506	LINCOLN'S SPARROW				NATIVE
B512	DARK-EYED JUNCO				NATIVE
B521	WESTERN MEADOWLARK				NATIVE
B522	YELLOW-HEADED BLACKBIRD		SC		NATIVE
B524	BREWER'S BLACKBIRD				NATIVE
B528	BROWN-HEADED COWBIRD				NATIVE
B532	BULLOCK'S ORIOLE				NATIVE
B542	PINE SISKIN				NATIVE
B543	LESSER GOLDFINCH				NATIVE
B544	LAWRENCE'S GOLDFINCH				NATIVE
B545	AMERICAN GOLDFINCH				NATIVE
B554	PLUMBEOUS VIREO				NATIVE
B699	BARRED OWL				NATIVE
B773	AMERICAN REDSTART				NATIVE
B799	HARRIS'S SPARROW				NATIVE
B864	CAKCLING GOOSE				NATIVE
M006	ORNATE SHREW	FE	SC		NATIVE
M033	WESTERN RED BAT		SC	FS	NATIVE
M034	HOARY BAT				NATIVE
M037	TOWNSEND'S BIG-EARED BAT		SC	BL FS	NATIVE
M038	PALLID BAT		SC	BL FS	NATIVE
M039	BRAZILIAN FREE-TAILED BAT				NATIVE
M059	SONOMA CHIPMUNK				NATIVE
M077	WESTERN GRAY SQUIRREL			HA	NATIVE
M105	CALIFORNIA KANGAROO RAT		SC		NATIVE
M113	WESTERN HARVEST MOUSE				NATIVE
M116	CALIFORNIA MOUSE				NATIVE
M117	DEER MOUSE		SC		NATIVE
M120	PINYON MOUSE				NATIVE
M134	CALIFORNIA VOLE	FE	CE	SC	BL
M146	COYOTE				HA
M149	GRAY FOX				HA
M151	BLACK BEAR				HA
M157	LONG-TAILED WEASEL				HA

ID	Species Name	Status	Native/ Introduced
M165	MOUNTAIN LION	SC	NATIVE
M177	ELK	HA	NATIVE
R040	SOUTHERN ALLIGATOR LIZARD		NATIVE
R042	NORTHERN ALLIGATOR LIZARD		NATIVE
R051	NORTH AMERICAN RACER		NATIVE
R057	GOPHERSNAKE	SC	NATIVE
R058	EASTERN KINGSLAKE		NATIVE
R061	COMMON GARTERSNAKE	FE CE CF SC	NATIVE
R062	TERRESTRIAL GARTERSNAKE		NATIVE
R071	DESERT NIGHTSNAKE		NATIVE
R076	WESTERN RATTLESNAKE		NATIVE

Total Number of Species: 165

Query Parameters

Included Locations

Napa Co

Included Location Seasons

Migrant, Summer, Winter, Yearlong

Included Habitats & (Stages)

Annual Grassland, Coastal Oak Woodland, Fresh Emergent Wetland, Vineyard

Habitat Suitability Threshold

Reproduction - Low, Cover - Low, Feeding - Low

Included Habitat Seasons

Migrant, Summer, Winter, Yearlong

Excluded Elements

Bank, Barren, Bogs, Campground, Cave, Cliff, Duff, Dump, Fern, Fish, Jetty, Kelp, Lakes, Layer - Shrub, Lithic, Mine, Mud Flats, Nest Box, Nest Island, Nest Platform, Pack Stations, Riparian Inclusion, Rivers, Rock, Salt Ponds, Sand Dune, Shrub/agriculture, Shrub/grass, Shrub/water, Soil - Aerated, Soil - Friable, Soil - Gravelly, Soil - Saline, Soil - Sandy, Springs, Springs - Hot, Springs - Mineral, Steep Slope, Streams - Intermittent, Streams - Permanent, Talus, Tidepools, Tree/shrub, Trees - Fir, Trees - Pine, Vernal Pools, Water, Water - Fast, Water - Slow, Wharf

Included Species All Species Included

Included Special Statuses Native

APPENDIX C

TREE SURVEY DATA

TREE SURVEY DATA – MIXED OAK WOODLAND			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
69	CLO	42	
70	BLM	51 (Bat Habitat Tree)	
71	CLO	36	
72	BLK	51	
73	CLO	60	
74	CLO	24	
75	CLO	22	
76	BLM	13	
77	CLO	38	
78	CLO	21	
79	OWO	12	
80	OWO	23	
81	OWO	47	
82	CLO	46	
83	BLK	14	
84	CLO	39 (Bat Habitat Tree)	
85	CLO	34	
86	OWO	20	
87	OWO	18	
88	CLO	15	
89	OWO	9	
90	CLO	40	
91	BLM	8	
92	OWO	16	
93	OWO	19	
94	OWO	30	
95	CLO	51	
96	CLO	38	
97	CLO	37	
98	BWAL	22	
99	OWO	33	
100	OWO	16	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
BLK	2	32.5	18.5
BLM	3	24.0	19.2
BWAL	1	22.0	NA
CLO	15	36.2	11.50
OWO	11	22.1	10.4
TOTAL	32	29.5	NA

TREE SURVEY DATA – OREGON WHITE OAK WOODLAND			
WAYPOINT	SPECIES	DIAMETER AT BREAST HEIGHT (DBH) (in.)	
56	OWO	32	
57	OWO	40	
58	OWO	16	
59	OWO	24	
60	OWO	10	
61	OWO	38	
62	OWO	46	
63	OWO	20	
64	OWO	36	
65	OWO	35	
66	OWO	42	
67	OWO	44	
68	OWO	45	
SPECIES	NUMBER IN SURVEY AREA	AVERAGE DBH (INCHES)	STD DEVIATION OF DBH (INCHES)
OWO	13	32.9	11.34
TOTAL	13	32.9	NA

Key:

OWO = Oregon White Oak
BWAL = Black Walnut

BLK = Black Oak
CLO = Coast Live Oak

BLM = Bigleaf Maple

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

APPENDIX D

DELINEATION REPORT

DELINEATION OF WATERS OF THE U.S.

1.0 **Methodology**

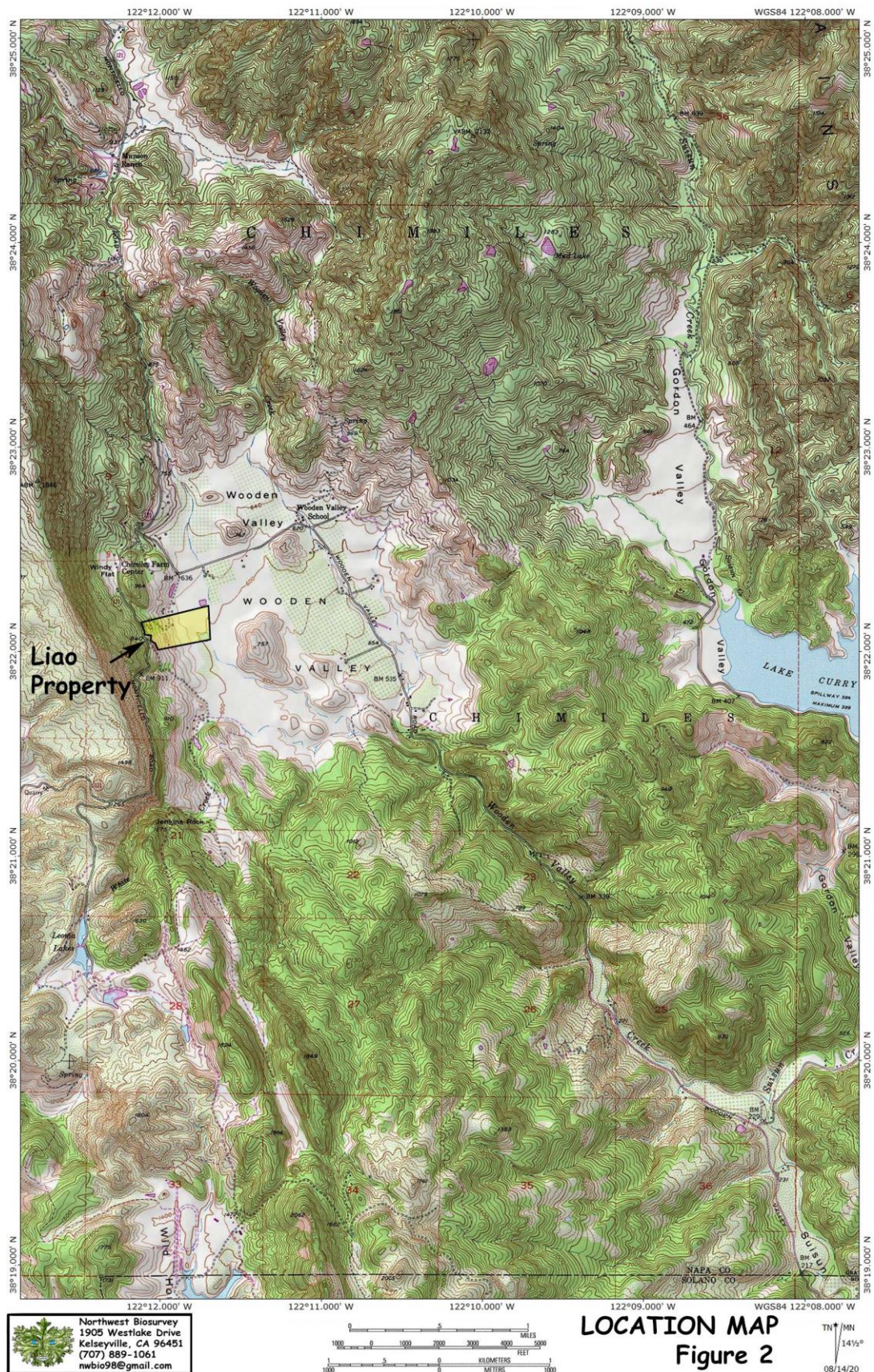
1.1 Purpose of Delineation: This delineation has been conducted at the request of the local permitting agency in order to determine the extent of possible waters of the U.S. on the project.

1.2 Delineation Procedure: This delineation has been conducted as prescribed in the *Corps of Engineers Wetlands Delineation Manual*, January 1987, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, 2008. 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 completed on March 2, 2020.

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.

Fieldwork and the delineation were also conducted by Leigh Zalusky. Leigh Zalusky has a Bachelor of Science Degree in Engineering from the University of California, Davis. Leigh also received formal delineation training under Terry Huffman of Huffman & Associates, Inc.



2.0 **Existing Conditions**

2.1 Location: The property is located at 3580 Monticello Road, northeast of the City of Napa, California (APN 33-040-057 & 58; T06N R03W, Mt. George, Calif. 7½' Topographic Map). A location map is provided in **Figure 1**.

2.2 Topography and Drainage: The Liao property lies at the eastern base of a steep ridge in the Howell Mountain Range separating Milliken Canyon to the west from Wooden Valley to the east. The western third of the property descends from the base of the ridge into Wooden Valley, beginning at an elevation of ~900 feet msl (mean sea level) and ending at ~600 feet within the valley bottom. The property drains eastward as sheet flow to an unnamed tributary to Wooden Valley Creek along its eastern boundary. The tributary joins Wooden Valley Creek at the southern end of Wooden Valley. Wooden Valley Creek flows south through steep ridges to Suisun Creek, which flows south through Suisun Valley into a vast wetland marsh before entering Grizzly and Suisun Bays. The topography is shown in **Figure 1**.

2.3 Soils: The property contains the following soil types:

- **Forward silt loam, 3-26% and 5-39% slopes:**

This strongly sloping to steep soil is on hill slopes. The Forward series consists of well drained soils on uplands. These soils formed in material weathered from rhyolite. The plant cover is mainly Douglas fir and ponderosa pines. Runoff is medium and the hazard of erosion is severe. These soils are found on the western parcel.

- **Bale clay loam, 0-2% and 2-5% slopes:**

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. Also included were areas of soils that have a hardpan at a depth of more than 40 inches. 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. The central area containing the existing vineyard and the one-acre proposed block contain this soil type.

- **Clear Lake clay, overwashed:**

This very deep poorly drained soil is on alluvial fans and in basins. It is alluvium derived from sedimentary rock. Permeability of this soil is slow. Surface runoff is slow or very slow and hazard of erosion is very slight. Natural vegetation includes annual

grasses and forbs and scattered oaks. The easternmost parcel contains this soil type.

3.0 Aquatic Resources Results

3.1 Wetland Vegetation:

Nearly half of the property is developed in vineyard. The wetland itself is herbaceous. Plants identified within the wetland are listed below in **Table 1** with their stratum and indicator status. Since 2008, a number of changes in wetland indicator status of several plant species have been made pursuant to the Army Corps of Engineer's *The National Wetland Plant List* and the *Arid West 2016 Regional Wetland Plant List*. Additionally, a number of species and common names were revised in the 2012 Jepson Manual.

TABLE 1. PLANTS OCCURRING WITHIN WETLANDS AT THE LIAO FAMILY VINEYARD PROPERTY

Stratum	Species	Common name	Wetland Indicator Status*
herb	<i>Carex praeegracilis</i>	clustered field sedge	FACW
herb	<i>Carex barbarae</i>	Santa Barbara sedge	FACW
herb	<i>Geranium robertianum</i>	Robert's geranium	FACU
herb	<i>Juncus balticus</i>	Baltic rush	FACW
herb	<i>Juncus confusus</i>	Colorado rush	FAC
herb	<i>Juncus effusus var. pacificus</i>	Pacific bog rush	FACW
herb	<i>Juncus oxymeris</i>	pointed rush	FACW
herb	<i>Juncus effusus var. pacificus</i>	Pacific bog rush	FACW
herb	<i>Lotus corniculatus</i>	bird's-foot trefoil	FAC
herb	<i>Phalaris aquatica</i>	Harding grass	FACU

*Wetland Indicator Status:

- OBL = Occurs in aquatic resources >99% of time
- FACW = Occurs in aquatic resources 67-99% of time
- FAC = Occurs in aquatic resources 34-66% of time
- FACU = Occurs in aquatic resources 1-33% of time
- UPL = Occurs in uplands >99% of time
- NI = Indicator status not known in this region

3.2 Wetland Soils:

The soils within the wetlands are classified as Forward silt loam 3-26% slopes. This is not a hydric soil based on the Natural Resources Conservation District's National Wetland Indicator criteria. However, some of the soils tested were identified as hydric soils.

Soils within the wetlands are mainly two types: WSP (Wetland Sample Point) 3 and WSP 8 in Wetlands 1 and 3 are gleys; the colors are G1/2.5/10Y for WSP 3, and G1/3/N for WSP 8. These two sample points are described as Sandy mucky mineral (S1), or Sandy gleyed matrix (S4) and Redox dark surface (F6), respectively. Gley soils are hydric soils and are typically dark grey or black.

Wetland sample points 6, 10, and 12 have a color of 7.5YR/3/1, with a 40% matrix colored 2.5YR/4/6. These are all sandy clay loam in texture and are described a Redox dark surface (F6). WSP has similar characteristics in the first 8 inches but is 100% 7.5YR/4/4 for the next 10 inches.

3.3 Wetland Hydrology:

WSPs 8, 10 and 12 had some surface water (Hydrology Indicator A1) to one or two inches in March. Other hydrologic indicators at these sample points were High Water Table (A2), Saturation (A3), Water Marks (B1), and Water-stained Leaves (B9).

3.4 Waters of the U.S:

The results of the delineation are shown on the aerial photo base map provided in **Figure W-2** of this report. Waters of the U.S. within the property consist of wetlands, stream channels, and a pond. The Wetland Sample Points (WSPs) that qualify as wetland and upland are mapped in Figure W-2. Delineation forms corresponding to each numbered WSP are provided in **Attachment A**. The total area of all delineated waters is **2.9335 acres**. The delineation results are shown in **Table 2**.

TABLE 2. POSSIBLE AQUATIC RESOURCES WITHIN THE SURVEY AREA

Name	Cowardin Code	HGM Code	Waters Type	Latitude	Longitude	Length (ft)	Width (ft)	Area (acres)
Stream Segments								
IS1	R4	-	RPW	38.367043°	-122.198392°	112	1.5	0.0039
IS2	R4	-	RPW	38.367089°	-122.198011°	8	2	0.0004
ED1	R6	-	NRPW	38.370162°	-122.196353°	781	1.75	0.0314
ED2	R6	-	NRPW	38.369149°	-122.194910°	1063	3	0.0732
Total Stream Segments:								0.1089
Wetlands								
WL1	PEM	Slope	Isolate	38.367530°	-122.199493°	-	-	0.0041
WL2	PEM	Slope	Isolate	38.367600°	-122.198968°	-	-	0.4714
WL3	PEM	Slope	Isolate	38.367320°	-122.197888°	-	-	0.4070
WL4	PEM	Slope	Isolate	38.367042°	-122.198688°	-	-	0.0479
Total Wetlands:								0.9304
Ponds								
P1	PAB	-	Isolate	38.367970°	-122.195361°	-	-	1.8942
Total Ponds:								1.8942
Total Possible Waters of U.S. Within Survey Area								2.9335

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)

5.0 BIBLIOGRAPHY

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Project Name: Liao Family Vineyard Project								
Contact: Doug Hill Oak Knoll Farming PO Box 2288 Yountville, CA 94599 doug@oakknollfarming.com								
Delineator: Leigh Zalusky Northwest Biosurvey 1905 Westlake Drive Kelseyville, CA 95451 (707) 889-1061								
Date of Map: May 11, 2020								
POSSIBLE AQUATIC RESOURCES WITHIN THE SURVEY AREA								
Name	Cowardin Code	HGM Code	Waters Type	Latitude	Longitude	Length (ft)	Width (ft)	Area (acres)
Stream Segments								
IS1	R4	-	RPW	38.367043°	-122.198392°	112	1.5	0.0039
IS2	R4	-	RPW	38.367089°	-122.198011°	8	2	0.0004
ED1	R6	-	NRPW	38.370162°	-122.196353°	791	1.75	0.0314
ED2	R6	-	NRPW	38.369149°	-122.194910°	1063	3	0.0732
Total Stream Segments:								0.1089
Wetlands								
WL1	PEM	Slope	Isolate	38.367530°	-122.195493°	-	-	0.0041
WL2	PEM	Slope	Isolate	38.367600°	-122.196968°	-	-	0.4714
WL3	PEM	Slope	Isolate	38.367320°	-122.197888°	-	-	0.4070
WL4	PEM	Slope	Isolate	38.367042°	-122.196688°	-	-	0.0479
Total Wetlands:								0.9304
Ponds								
P1	PAB	-	Isolate	38.367970°	-122.195361°	-	-	1.8942
Total Ponds:								1.8942
Total Possible Waters of U.S. Within Survey Area								2.9335

Legend

- Map Reference Point
- Proposed Project Area
- Survey Boundary
- Upland Sample Point
- Wetland Sample Point

Wetlands (0.9304 Acres)

- Vernal Pools (0.0000 Acres)
- Wetlands (0.9304 Acres)

Other Waters (2.0031 Acres)

- Ephemeral Drainages (0.1046 Acres)
- Intermittent Streams (0.0043 Acres)
- Perennial Streams (0.0000 Acres)
- Ponds (1.8942 Acres)

Map Source: Google Earth
Date: 9/14/2018

LIAO FAMILY FARM
POSSIBLE WATERS OF THE U.S.

NORTHWEST BIOSURVEY
1905 WESTLAKE DR.
KELSEYVILLE CA, 95451
(707) 889-1061

1" = 130'

FIGURE W3

Attachment A

WETLAND DELINEATION DATA FORMS FOR SAMPLE POINTS 1 – 12

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: <u>Liao Family Vineyard Project</u>		City/County: <u>Napa Co.</u>	Sampling Date: <u>4/2/2020</u>
Applicant/Owner: <u>Doug Hill, Oak Knoll Farming</u>		State: <u>CA</u>	Sampling Point: <u>WSP1</u>
Investigator(s): <u>Steve Zalusky, Leigh Zalusky</u>		Section, Township, Range: <u>S.16 T06N-R03W</u>	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>	Local relief (concave, convex, none): <u>none</u>		Slope (%): <u>12</u>
Subregion (LRR): <u>C - Mediterranean California</u>	Lat: <u>38 22.020'N</u>	Long: <u>-122 11.967'W</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>Forward silt loam, 5 to 39 percent slopes</u>		NW1 classification: <u>NA</u>	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)			
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed?		Are "Normal Circumstances" present? Yes ☒ No ☐	
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic?		(If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)																
1. _____																				
2. _____																				
3. _____																				
4. _____																				
Total Cover: <u> </u> %				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u> </u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u> </u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u> </u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u> </u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A) <u>200</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> </u>	x 1 = <u>0</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u> </u>	x 3 = <u>0</u>	FACU species <u> </u>	x 4 = <u>0</u>	UPL species <u> </u>	x 5 = <u>0</u>	Column Totals:	<u>100</u> (A) <u>200</u> (B)	Prevalence Index = B/A = <u>2.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u> </u>	x 1 = <u>0</u>																			
FACW species <u>100</u>	x 2 = <u>200</u>																			
FAC species <u> </u>	x 3 = <u>0</u>																			
FACU species <u> </u>	x 4 = <u>0</u>																			
UPL species <u> </u>	x 5 = <u>0</u>																			
Column Totals:	<u>100</u> (A) <u>200</u> (B)																			
Prevalence Index = B/A = <u>2.00</u>																				
Sapling/Shrub Stratum																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
Total Cover: <u> </u> %																				
Herb Stratum																				
1. <i>Carex praegracilis</i>	100	Yes	FACW																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
Total Cover: <u>100</u> %																				
Woody Vine Stratum																				
1. _____																				
2. _____																				
Total Cover: <u> </u> %																				
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																			
Hydrophytic Vegetation Present? Yes ☒ No ☐																				
Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)																				
¹ Indicators of hydric soil and wetland hydrology must be present.																				
Remarks:																				

US Army Corps of Engineers

Arid West - Version 11-1-2006

SOIL

Sampling Point: WSP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
20	7.5YR/3/2	100				Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ⁴ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 1 cm Muck (A9) (LRR C)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ 2 cm Muck (A10) (LRR B)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)	☐ Reduced Vertic (F18)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Red Parent Material (TF2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)	☐ Other (Explain in Remarks)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)	
☐ Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		Hydric Soil Present? Yes ☐ No ☒
Type: _____	Depth (inches): _____	
Remarks: _____		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Thin Muck Surface (C7)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)	☐ Crayfish Burrows (C8)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes ☐ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes ☐ No ☒
Water Table Present? Yes ☐ No ☒	Depth (inches): _____	
Saturation Present? Yes ☐ No ☒ (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Google Earth Images		
Remarks: _____		

US Army Corps of Engineers

Arid West - Version 11-1-2006

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP2
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 12
 Subregion (LRR): C - Mediterranean California Lat: 38 22.025'N Long: -122 11.973'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 5 to 39 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B) Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>0</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>280</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>150</u></td> </tr> <tr> <td>Column Totals:</td> <td></td> <td><u>100</u> (A) <u>430</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>4.30</u> Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present. Hydrophytic Vegetation Present? Yes ☐ No ☒	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>0</u>	FAC species	x 3 =	<u>0</u>	FACU species	x 4 =	<u>280</u>	UPL species	x 5 =	<u>150</u>	Column Totals:		<u>100</u> (A) <u>430</u> (B)
Total % Cover of:	Multiply by:																								
OBL species	x 1 =	<u>0</u>																							
FACW species	x 2 =	<u>0</u>																							
FAC species	x 3 =	<u>0</u>																							
FACU species	x 4 =	<u>280</u>																							
UPL species	x 5 =	<u>150</u>																							
Column Totals:		<u>100</u> (A) <u>430</u> (B)																							
1. _____																									
2. _____																									
3. _____																									
4. _____																									
Total Cover: <u> </u> %																									
Sapling/Shrub Stratum																									
1. _____																									
2. _____																									
3. _____																									
4. _____																									
5. _____																									
Total Cover: <u> </u> %																									
Herb Stratum																									
1. <i>Phalaris aquatica</i>	60	Yes	FACU																						
2. <i>Rhagadiolus stellatus</i>	20	No	Not Listed																						
3. <i>Vicia Villosa</i>	10	No	Not Listed																						
4. <i>Geranium robertianum</i>	10	No	FACU																						
5. _____																									
6. _____																									
7. _____																									
8. _____																									
Total Cover: <u>100</u> %																									
Woody Vine Stratum																									
1. _____																									
2. _____																									
Total Cover: <u> </u> %																									
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																								
Remarks:																									

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP2

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: <u>Liao Family Vineyard Project</u>		City/County: <u>Napa Co.</u>	Sampling Date: <u>4/2/2020</u>
Applicant/Owner: <u>Doug Hill, Oak Knoll Farming</u>		State: <u>CA</u>	Sampling Point: <u>WSP3</u>
Investigator(s): <u>Steve Zalusky, Leigh Zalusky</u>		Section, Township, Range: <u>S.16 T06N-R03W</u>	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>		Local relief (concave, convex, none): <u>concave</u>	Slope (%): <u>10</u>
Subregion (LRR): <u>C - Mediterranean California</u>	Lat: <u>38 22.053'N</u>	Long: <u>-122 11.970'W</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>Forward silt loam, 3 to 26 percent slopes</u>		NW1 classification: <u>NA</u>	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)			
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed?		Are "Normal Circumstances" present? Yes ☒ No ☐	
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic?		(If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)																
1.																				
2.																				
3.																				
4.																				
Total Cover: <u> </u> %				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 = <u>130</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>70</u> (A) <u>150</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.14</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species	x 1 = <u>0</u>	FACW species	x 2 = <u>130</u>	FAC species	x 3 = <u>0</u>	FACU species	x 4 = <u>20</u>	UPL species	x 5 = <u>0</u>	Column Totals:	<u>70</u> (A) <u>150</u> (B)	Prevalence Index = B/A = <u>2.14</u>	
Total % Cover of:	Multiply by:																			
OBL species	x 1 = <u>0</u>																			
FACW species	x 2 = <u>130</u>																			
FAC species	x 3 = <u>0</u>																			
FACU species	x 4 = <u>20</u>																			
UPL species	x 5 = <u>0</u>																			
Column Totals:	<u>70</u> (A) <u>150</u> (B)																			
Prevalence Index = B/A = <u>2.14</u>																				
Sapling/Shrub Stratum																				
1.																				
2.																				
3.																				
4.																				
5.																				
Total Cover: <u> </u> %																				
Herb Stratum																				
1. <i>Juncus effusus</i> var. <i>pacificus</i>	35	Yes	FACW	Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
2. <i>Carex praegracilis</i>	30	Yes	FACW																	
3. <i>Geranium robertianum</i>	5	No	FACU																	
4.																				
5.																				
6.																				
7.																				
8.																				
Total Cover: <u>70</u> %																				
Woody Vine Stratum																				
1.																				
2.																				
Total Cover: <u> </u> %																				
% Bare Ground in Herb Stratum <u>30</u> %	% Cover of Biotic Crust <u> </u> %																			
Hydrophytic Vegetation Present? Yes ☒ No ☐																				
Remarks:																				

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP3

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: <u>Liao Family Vineyard Project</u>		City/County: <u>Napa Co.</u>	Sampling Date: <u>4/2/2020</u>
Applicant/Owner: <u>Doug Hill, Oak Knoll Farming</u>		State: <u>CA</u>	Sampling Point: <u>WSP4</u>
Investigator(s): <u>Steve Zalusky, Leigh Zalusky</u>		Section, Township, Range: <u>S.16 T06N-R03W</u>	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>		Local relief (concave, convex, none): <u>concave</u>	Slope (%): <u>10</u>
Subregion (LRR): <u>C - Mediterranean California</u>	Lat: <u>38 22.050'N</u>	Long: <u>-122 11.968'W</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>Forward silt loam, 3 to 26 percent slopes</u>		NW1 classification: <u>NA</u>	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)			
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed?		Are "Normal Circumstances" present? Yes ☒ No ☐	
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic?		(If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)																
1.																				
2.																				
3.																				
4.																				
Total Cover: <u> </u> %				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 = <u>55</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A) <u>355</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.55</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species	x 1 = <u>0</u>	FACW species	x 2 = <u>0</u>	FAC species	x 3 = <u>45</u>	FACU species	x 4 = <u>55</u>	UPL species	x 5 = <u>0</u>	Column Totals:	<u>100</u> (A) <u>355</u> (B)	Prevalence Index = B/A = <u>3.55</u>	
Total % Cover of:	Multiply by:																			
OBL species	x 1 = <u>0</u>																			
FACW species	x 2 = <u>0</u>																			
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Sapling/Shrub Stratum																				
1.																				
2.																				
3.																				
4.																				
5.																				
Total Cover: <u> </u> %																				
Herb Stratum				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																
1. <i>Phalaris aquatica</i>	55	Yes	FACU																	
2. <i>Festuca rubra</i>	45	No	FAC																	
3.																				
4.																				
5.																				
6.																				
7.																				
8.																				
Total Cover: <u>100</u> %																				
Woody Vine Stratum																				
1.																				
2.																				
Total Cover: <u> </u> %																				
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																			
Hydrophytic Vegetation Present? Yes ☐ No ☒																				
Remarks:																				

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Arid West - Version 11-1-2006

SOIL

Sampling Point: WSP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features				Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ⁴ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 1 cm Muck (A9) (LRR C)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ 2 cm Muck (A10) (LRR B)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)	☐ Reduced Vertic (F18)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Red Parent Material (TF2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)	☐ Other (Explain in Remarks)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)	
☐ Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☐ No ☒
--	---

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Thin Muck Surface (C7)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)	☐ Crayfish Burrows (C8)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
		☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Google Earth Images		
Remarks: _____		

US Army Corps of Engineers

Arid West - Version 11-1-2006

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP5
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 8
 Subregion (LRR): C - Mediterranean California Lat: 38 22.065'N Long: -122 11.974'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)																								
1. _____																												
2. _____																												
3. _____																												
4. _____																												
Total Cover: <u> </u> %				Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>40</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>75</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>140</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>100</u></td> </tr> <tr> <td>Column Totals:</td> <td></td> <td><u>100</u> (A) <u>355</u> (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = <u>3.55</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>40</u>	FAC species	x 3 =	<u>75</u>	FACU species	x 4 =	<u>140</u>	UPL species	x 5 =	<u>100</u>	Column Totals:		<u>100</u> (A) <u>355</u> (B)	Prevalence Index = B/A = <u>3.55</u>		
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Prevalence Index = B/A = <u>3.55</u>																												
Sapling/Shrub Stratum																												
1. _____																												
2. _____																												
3. _____																												
4. _____																												
5. _____																												
Total Cover: <u> </u> %																												
Herb Stratum				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																								
1. <i>Carex barbarae</i>	20	No	FACW																									
2. <i>Phalaris aquatica</i>	35	Yes	FACU																									
3. <i>Vicia Villosa</i>	20	No	Not Listed																									
4. <i>Festuca rubra</i>	25	No	FAC																									
5. _____																												
6. _____																												
7. _____																												
8. _____																												
Total Cover: <u>100</u> %																												
Woody Vine Stratum																												
1. _____																												
2. _____																												
Total Cover: <u> </u> %																												
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																											
Hydrophytic Vegetation Present? Yes ☐ No ☒																												
Remarks:																												

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP5

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: <u>Liao Family Vineyard Project</u>		City/County: <u>Napa Co.</u>	Sampling Date: <u>4/2/2020</u>
Applicant/Owner: <u>Doug Hill, Oak Knoll Farming</u>		State: <u>CA</u>	Sampling Point: <u>WSP6</u>
Investigator(s): <u>Steve Zalusky, Leigh Zalusky</u>		Section, Township, Range: <u>S.16 T06N-R03W</u>	
Landform (hillslope, terrace, etc.): <u>Hillslope</u>		Local relief (concave, convex, none): <u>concave</u>	Slope (%): <u>5</u>
Subregion (LRR): <u>C - Mediterranean California</u>	Lat: <u>38 22.056'N</u>	Long: <u>-122 11.961'W</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>Forward silt loam, 3 to 26 percent slopes</u>		NW1 classification: <u>NA</u>	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)			
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed?		Are "Normal Circumstances" present? Yes ☒ No ☐	
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic?		(If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	
Remarks:			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)
4. _____				
Total Cover: _____ %				
Sapling/Shrub Stratum				Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by:
2. _____				OBL species _____ x 1 = <u>0</u>
3. _____				FACW species <u>100</u> x 2 = <u>200</u>
4. _____				FAC species _____ x 3 = <u>0</u>
5. _____				FACU species _____ x 4 = <u>0</u>
Total Cover: _____ %				UPL species _____ x 5 = <u>0</u>
Herb Stratum				Column Totals: <u>100</u> (A) <u>200</u> (B)
1. <i>Juncus Oxymetris</i>	80	Yes	FACW	Prevalence Index = B/A = <u>2.00</u>
2. <i>Carex barbarae</i>	20	Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>100%</u>				
Woody Vine Stratum				Hydrophytic Vegetation Indicators:
1. _____				☒ Dominance Test is >50%
2. _____				☒ Prevalence Index is ≤3.0 ¹
Total Cover: _____ %				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
% Bare Ground in Herb Stratum _____ %				☐ Problematic Hydrophytic Vegetation ¹ (Explain)
% Cover of Biotic Crust _____ %				
				¹ Indicators of hydric soil and wetland hydrology must be present.
				Hydrophytic Vegetation Present? Yes ☒ No ☐
Remarks:				

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP6

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP7
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): C - Mediterranean California Lat: 38 22.053'N Long: -122 11.946'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)																					
1. _____																									
2. _____																									
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Total Cover: _____ %				Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>0</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>360</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>50</u></td> </tr> <tr> <td>Column Totals:</td> <td></td> <td><u>410</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>4.10</u>	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>0</u>	FAC species	x 3 =	<u>0</u>	FACU species	x 4 =	<u>360</u>	UPL species	x 5 =	<u>50</u>	Column Totals:		<u>410</u> (B)
Total % Cover of:	Multiply by:																								
OBL species	x 1 =	<u>0</u>																							
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Herb Stratum				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																					
1. <i>Phalaris aquatica</i>	70	Yes	FACU																						
2. <i>Geranium robertianum</i>	20	Yes	FACU																						
3. <i>Vicia Villosa</i>	10	No	Not Listed																						
4. _____																									
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Total Cover: <u>100</u> %																									
Woody Vine Stratum																									
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Total Cover: _____ %																									
% Bare Ground in Herb Stratum _____ %	% Cover of Biotic Crust _____ %																								
Hydrophytic Vegetation Present? Yes ☐ No ☒																									
Remarks:																									

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP7

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP8
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 5
 Subregion (LRR): C - Mediterranean California Lat: 38 22.095'N Long: -122 11.937'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B) Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>200</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>2.00</u>	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>200</u>	FAC species	x 3 =	<u>0</u>	FACU species	x 4 =	<u>0</u>	UPL species	x 5 =	<u>0</u>	Column Totals:	<u>100</u> (A)	<u>200</u> (B)
Total % Cover of:	Multiply by:																								
OBL species	x 1 =	<u>0</u>																							
FACW species	x 2 =	<u>200</u>																							
FAC species	x 3 =	<u>0</u>																							
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UPL species	x 5 =	<u>0</u>																							
Column Totals:	<u>100</u> (A)	<u>200</u> (B)																							
1. _____																									
2. _____																									
3. _____																									
4. _____																									
Total Cover: <u> </u> %																									
Sapling/Shrub Stratum																									
1. _____																									
2. _____																									
3. _____																									
4. _____																									
5. _____																									
Total Cover: <u> </u> %																									
Herb Stratum																									
1. <i>Juncus effusus</i> var. <i>pacificus</i>	60	Yes	FACW																						
2. <i>Juncus balticus</i>	20	No	FACW																						
3. <i>Juncus Oxymetris</i>	20	No	FACW																						
4. _____																									
5. _____																									
6. _____																									
7. _____																									
8. _____																									
Total Cover: <u>100%</u>																									
Woody Vine Stratum																									
1. _____																									
2. _____																									
Total Cover: <u> </u> %																									
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																								
Hydrophytic Vegetation Present? Yes ☒ No ☐																									
Remarks:																									

US Army Corps of Engineers

Arid West - Version 11-1-2006

SOIL

Sampling Point: WSP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
18	G1/3/N	100					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ⁴ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 1 cm Muck (A9) (LRR C)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ 2 cm Muck (A10) (LRR B)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)	☐ Reduced Vertic (F18)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Red Parent Material (TF2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)	☐ Other (Explain in Remarks)
☐ 1 cm Muck (A9) (LRR D)	☒ Redox Dark Surface (F6)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)	
☒ Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		Hydric Soil Present? Yes ☒ No ☐
Type: _____		
Depth (inches): _____		
Remarks: _____		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
☒ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☒ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Thin Muck Surface (C7)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)	☐ Crayfish Burrows (C8)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes ☒ No ☐	Depth (inches): 2	Wetland Hydrology Present? Yes ☒ No ☐
Water Table Present? Yes ☒ No ☐	Depth (inches): 0	
Saturation Present? (includes capillary fringe) Yes ☒ No ☐	Depth (inches): 0	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Google Earth Images		
Remarks: _____		

US Army Corps of Engineers

Arid West - Version 11-1-2006

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP9
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): C - Mediterranean California Lat: 38 22.048'N Long: -122 11.933'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)																								
1. _____																												
2. _____																												
3. _____																												
4. _____																												
Total Cover: <u> </u> %				Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>0</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>240</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>200</u></td> </tr> <tr> <td>Column Totals:</td> <td></td> <td><u>100</u> (A) <u>440</u> (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = <u>4.40</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>0</u>	FAC species	x 3 =	<u>0</u>	FACU species	x 4 =	<u>240</u>	UPL species	x 5 =	<u>200</u>	Column Totals:		<u>100</u> (A) <u>440</u> (B)	Prevalence Index = B/A = <u>4.40</u>		
Total % Cover of:	Multiply by:																											
OBL species	x 1 =	<u>0</u>																										
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Sapling/Shrub Stratum																												
1. _____																												
2. _____																												
3. _____																												
4. _____																												
5. _____																												
Total Cover: <u> </u> %																												
Herb Stratum				Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																								
1. <i>Phalaris aquatica</i>	50	Yes	FACU																									
2. <i>Medicago polymorpha</i> L	20	No	Not Listed																									
3. <i>Geranium dissectum</i>	20	No	Not Listed																									
4. <i>Hypochaeris radicata</i>	10	No	FACU																									
5. _____																												
6. _____																												
7. _____																												
8. _____																												
Total Cover: <u>100</u> %																												
Woody Vine Stratum																												
1. _____																												
2. _____																												
Total Cover: <u> </u> %																												
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %			Hydrophytic Vegetation Present? Yes ☐ No ☒																								
Remarks:																												

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP9

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP10
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 4
 Subregion (LRR): C - Mediterranean California Lat: 38 22.054'N Long: -122 11.892'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B) Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 = <u>180</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A) <u>220</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>2.20</u>	Total % Cover of:	Multiply by:	OBL species	x 1 = <u>0</u>	FACW species	x 2 = <u>180</u>	FAC species	x 3 = <u>0</u>	FACU species	x 4 = <u>40</u>	UPL species	x 5 = <u>0</u>	Column Totals:	<u>100</u> (A) <u>220</u> (B)
Total % Cover of:	Multiply by:																	
OBL species	x 1 = <u>0</u>																	
FACW species	x 2 = <u>180</u>																	
FAC species	x 3 = <u>0</u>																	
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Column Totals:	<u>100</u> (A) <u>220</u> (B)																	
1. _____																		
2. _____																		
3. _____																		
4. _____																		
Total Cover: <u> </u> %																		
Sapling/Shrub Stratum																		
1. _____																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
Total Cover: <u> </u> %																		
Herb Stratum																		
1. <i>Juncus Oxymetris</i>	80	Yes	FACW															
2. <i>Phalaris aquatica</i>	10	No	FACU															
3. <i>Carex barbarae</i>	10	No	FACW															
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
Total Cover: <u>100</u> %																		
Woody Vine Stratum																		
1. _____																		
2. _____																		
Total Cover: <u> </u> %																		
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																	
Hydrophytic Vegetation Present? Yes ☒ No ☐																		
Remarks:																		

US Army Corps of Engineers

Arid West - Version 11-1-2006

Sampling Point: WSP10

HYDROLOGY

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP11
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 8
 Subregion (LRR): C - Mediterranean California Lat: 38 22.049'N Long: -122 11.893'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)																								
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Total % Cover of:	Multiply by:																											
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Sapling/Shrub Stratum																												
1. _____																												
2. _____																												
3. _____																												
4. _____																												
5. _____																												
Total Cover: <u> </u> %																												
Herb Stratum																												
1. <i>Phalaris aquatica</i>	70	Yes	FACU																									
2. <i>Helminthotheca echoides</i>	10	No	Not Listed																									
3. <i>Medicago polymorpha</i> L	10	No	Not Listed																									
4. <i>Juncus Oxymetris</i>	10	No	FACW																									
5. _____																												
6. _____																												
7. _____																												
8. _____																												
Total Cover: <u>100</u> %																												
Woody Vine Stratum																												
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Hydrophytic Vegetation Indicators: ☒ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.																												
Remarks:																												

US Army Corps of Engineers

Arid West - Version 11-1-2006

SOIL

Sampling Point: WSP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.
³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ⁴ :
☐ Histosol (A1)	☐ Sandy Redox (S5)	☐ 1 cm Muck (A9) (LRR C)
☐ Histic Epipedon (A2)	☐ Stripped Matrix (S6)	☐ 2 cm Muck (A10) (LRR B)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1)	☐ Reduced Vertic (F18)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Red Parent Material (TF2)
☐ Stratified Layers (A5) (LRR C)	☐ Depleted Matrix (F3)	☐ Other (Explain in Remarks)
☐ 1 cm Muck (A9) (LRR D)	☐ Redox Dark Surface (F6)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)	☐ Vernal Pools (F9)	
☐ Sandy Gleyed Matrix (S4)		

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☐ No ☒
Remarks: _____	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) (Riverine)
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) (Riverine)
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) (Riverine)
☐ Water Marks (B1) (Nonriverine)	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) (Nonriverine)	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) (Nonriverine)	☐ Presence of Reduced Iron (C4)	☐ Thin Muck Surface (C7)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Plowed Soils (C6)	☐ Crayfish Burrows (C8)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present?	Yes ☐ No ☒	Wetland Hydrology Present? Yes ☐ No ☒
Water Table Present?	Yes ☐ No ☒	
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Google Earth Images		
Remarks: _____		

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WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Liao Family Vineyard Project City/County: Napa Co. Sampling Date: 4/2/2020
 Applicant/Owner: Doug Hill, Oak Knoll Farming State: CA Sampling Point: WSP12
 Investigator(s): Steve Zalusky, Leigh Zalusky Section, Township, Range: S.16 T06N-R03W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 2
 Subregion (LRR): C - Mediterranean California Lat: 38 22.041'N Long: -122 11.883'W Datum: WGS84
 Soil Map Unit Name: Forward silt loam, 3 to 26 percent slopes NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Remarks:		

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B) Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> <th></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td>x 2 =</td> <td><u>140</u></td> </tr> <tr> <td>FAC species</td> <td>x 3 =</td> <td><u>90</u></td> </tr> <tr> <td>FACU species</td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td></td> <td><u>100</u> (A) <u>230</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>2.30</u>	Total % Cover of:	Multiply by:		OBL species	x 1 =	<u>0</u>	FACW species	x 2 =	<u>140</u>	FAC species	x 3 =	<u>90</u>	FACU species	x 4 =	<u>0</u>	UPL species	x 5 =	<u>0</u>	Column Totals:		<u>100</u> (A) <u>230</u> (B)
Total % Cover of:	Multiply by:																								
OBL species	x 1 =	<u>0</u>																							
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UPL species	x 5 =	<u>0</u>																							
Column Totals:		<u>100</u> (A) <u>230</u> (B)																							
1. _____																									
2. _____																									
3. _____																									
4. _____																									
Total Cover: <u> </u> %																									
Sapling/Shrub Stratum																									
1. _____																									
2. _____																									
3. _____																									
4. _____																									
5. _____																									
Total Cover: <u> </u> %																									
Herb Stratum																									
1. <i>Juncus Oxymetris</i>	<u>70</u>	Yes	FACW																						
2. <i>Juncus Confusus</i>	<u>15</u>	No	FAC																						
3. <i>Lotus corniculatus</i>	<u>15</u>	No	FAC																						
4. _____																									
5. _____																									
6. _____																									
7. _____																									
8. _____																									
Total Cover: <u>100</u> %																									
Woody Vine Stratum																									
1. _____																									
2. _____																									
Total Cover: <u> </u> %																									
% Bare Ground in Herb Stratum <u> </u> %	% Cover of Biotic Crust <u> </u> %																								
Hydrophytic Vegetation Present? Yes ☒ No ☐																									
Remarks:																									

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Sampling Point: WSP12

HYDROLOGY

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APPENDIX E

Potential Impact of Vineyard Development on Grasslands used as Raptor Hunting Habitat

**Response to Napa County Review Comments for the “----- Vineyard” Project
(2018)**

- i. *A discussion of the quality and value of potentially suitable foraging habitat for special status bird species (particularly special-status raptors) the site’s grasslands provide, and an analysis of the potential impacts associated with the loss of foraging habitat due to the conversion of grassland to vineyard. As proposed, and in conjunction with existing vineyard development, a majority of the grasslands within the parcel would be converted to vineyard.*

Response: This is an interesting question that is typically not addressed in the regulatory review of agricultural conversions of grassland. Regulatory agencies focus on birds in their “sensitive nesting state”, which is interpreted during the review process to focus on the preservation of active nests. This avoids the problem of determining that a site needs to be protected because it has been visited by a bird with sensitive regulatory status (i.e. a parcel does not become sensitive habitat because a bald eagle has visited it). On the other hand, this approach avoids addressing the issue of possible cumulative habitat loss of foraging areas.

Little directly-pertinent research has been conducted to address the effects of grassland conversion to vineyards in this region. A number of related studies assessing conversion to vineyard habitat have been conducted in the California Central Valley over the past 20 years². However, these focus primarily on winter habitat of specific raptors of interest (northern harrier, Swainson’s hawk, and American kestrel). Other, more generalized studies that have been conducted in the U.S. mid-west and east³ address comparisons of cropland vs. rangeland. Most “knowledge” of this issue is anecdotal and based on intuitive assumptions regarding the value of natural vs. manmade habitats.

Based on a review of research available to us, the impact of converting grasslands to vineyard may vary depending on a number of factors. These would include species addressed, season (winter vs. nesting habitats), and availability and diversity of surrounding habitats (raptors in particular have very large home ranges and foraging habitats are not necessarily correlated to

² Swolgaard et al, “Foraging by Swainson’s Hawks in a Vineyard-Dominated Landscape”, Journal of Raptor Research 2008, 42(3):188-196.

³ Massey et al, “Habitat Use by Foraging Harriers on Nantucket Island, Massachusetts” 2009 The Wilson Journal of Ornithology 121(4): 765-769;

Williams et al, “A comparison of Raptor Densities and Habitat use in Kansas Cropland and Rangeland Ecosystems” Journal of Raptor Research 2000, 34:203-209.

nest proximity⁴). As an example, osprey commonly use nest platforms miles away from the lakes where these fish-eating birds hunt.

Based on our experience within the region over the past 25+ years, all of the raptors found in natural habitats in this region are commonly present around vineyards and are common within the Napa Valley (which has undergone very dense conversion to vineyard habitat and has little grassland habitat remaining). We do not know if these birds have maintained historic nesting habitat but incorporate broader home ranges to include remaining grasslands, or if they have modified their diets to focus on small mammals and birds inhabiting vineyards. It seems likely that both of these behaviors may occur. It is clear that vineyard operators encourage the presence of raptors (particularly owls) through the placement of nest boxes. Apparently, the vine height and placement does not discourage the use of vineyards as foraging sites.

The best response to this lack of knowledge is a quantitative, long-term, institutional study within the Napa Valley and or northern wine country in general⁵. The study should focus on the change in prey species available between grassland and vineyard (perhaps a simple comparison of regional native grassland species vs. a listing of vineyard “pests”), and a comparison of raptor use of vineyard vs. grassland (for the full spectrum of raptor species in the region). Such a study would qualify as basic research that would be beyond the time, effort, and financial resources fundable by individual vineyard applicants.

With all of the above as a caveat, the grasslands available at the western end of the ----- property support the introduced annual grasses and forbs common to grasslands throughout this region and are the same as those available to hunting raptors elsewhere in the Napa Valley. Without trapping studies, it is assumed that the same cross-section of raptor prey species is available here as in other local grasslands.

The question of whether the conversion of this grassland to vineyard will significantly adversely impact local raptors may depend on species, the unique character of the surrounding habitats, the availability of prime nesting sites, and whether the affected raptors in this region of intense vineyard development have become accustomed to prey available in vineyard habitat.

⁴ ibid footnote 2

⁵ Such studies should be “region specific” due to the significant differences in the amount of agricultural development, the cross-section of raptor species, and types of habitat available. For example, the California Central Valley maintains extensive tracts of grassland and cropland (a habitat commonly hunted by raptors). The Napa Valley has little grassland left and now consists primarily of vineyard and residential development.