

# **APPENDIX C**

---

## **Special Status Plant Surveys**



---

**SPECIAL-STATUS PLANT SURVEYS**  
**for the**  
**PG&E Lakeville – Sonoma 115 kV Transmission Line**  
**Proposed Route and Alternatives**

**Sonoma County, California**

*Prepared for:*

Pacific Gas and Electric Company  
Technical and Ecological Services  
3400 Crow Canyon Road  
San Ramon, California 94583

*Prepared by:*

GARCIA AND ASSOCIATES (GANDA)  
1 Saunders Avenue  
San Anselmo, California 94960  
Contact: Ann Howald (415) 458-5803

*J-359*

*October 2004*



---

## Executive Summary

---

Pacific Gas and Electric (PG&E) is proposing to add a transmission line between its existing Lakeville and Sonoma substations. The proposed route and the alternative routes are located in southeastern Sonoma County (Figure 1).

Reconnaissance- and protocol-level special-status plant surveys were conducted in August and September, 2002, March, April, May, June and September, 2003, and June 2004. The purpose of the reconnaissance-level surveys was to identify vegetation and land cover types, to identify areas with the potential to support special-status plants, and to locate wetlands within and near the survey corridor. The purpose of the protocol-level surveys was to locate all populations of special-status plants within the project area, to precisely record and map their locations using GPS technology, and to estimate the size, number of individuals, phenology and microhabitat characteristics of each rare plant population. Protocol-level surveys were floristic in nature and were conducted according to the rare plant survey guidelines approved by the California Native Plant Society (CNPS) (Tibor 2001) and the California Department of Fish and Game (CDFG 2000). In addition, existing populations of non-native invasive plants were described for each segment as they were noted during reconnaissance- and protocol-level surveys.

Using the Holland (1986) system of vegetation classification, ten vegetation and cover types were identified within the project area. The upland types include: Coast Live Oak Forest and Woodland, Mixed Evergreen Forest, Non-native Grassland, Oregon Oak Woodland, Upland Redwood Forest, and Vineyards and other Agricultural Lands. The wetland types include: Coastal and Valley Freshwater Marsh, North Coast Riparian Forest, Northern Vernal Pool, and Vernal Marsh.

Three special-status plant species were found within the project area: three populations of Northern California black walnut (*Juglans hindsii*) (CNPS 1B), one population of cotula navarretia (*Navarretia cotulifolia*) (CNPS 4), and one population of Lobb's aquatic buttercup (*Ranunculus lobbii*) (CNPS 4). Figure 1 shows the locations of special-status plant populations observed during surveys conducted for this project. With implementation of the proposed avoidance and minimization measures, all impacts to these species will be less than significant.

---

## TABLE OF CONTENTS

Executive Summary .....	i
1.0 Introduction.....	1
1.1 Proposed Project .....	1
1.2 Project Site Location.....	1
1.3 Overview of Rare Plant Surveys.....	3
2.0 Methods.....	4
2.1 Reconnaissance-level Surveys .....	4
2.2 Protocol-level Surveys .....	4
3.0 Results.....	10
3.1 Vegetation Types .....	10
3.1.1 Upland Vegetation Types .....	10
3.1.2 Wetland and Riparian Vegetation Types .....	14
3.2 Special-status Plant Species.....	17
3.2.1 <i>Juglans hindsii</i> (Northern California black walnut) .....	17
3.2.2 <i>Navarretia cotulifolia</i> (cotula or broad-leaved navarretia).....	18
3.2.3 <i>Ranunculus lobbii</i> (Lobb’s aquatic buttercup).....	19
4.0 Conclusions and Recommendations .....	21
4.1 Special-status Plant Recommendations .....	21
4.1.1 <i>Juglans hindsii</i> (Northern California black walnut) .....	21
4.1.2 <i>Navarretia cotulifolia</i> (cotula or broad-leaved navarretia).....	22
4.1.3 <i>Ranunculus lobbii</i> (Lobb’s aquatic buttercup).....	23
5.0 References and Personal Communications.....	25

## Tables and Figures

Figure 1. Study area and results of special-status plant surveys.....	2
Table 1. List of Sensitive Plant Species Expected to Occur within the PG&E Lakeville – Sonoma 115 kV Transmission Line Route and Alternatives Areas. ....	6

## Appendices

Appendix A. List of Vascular Plants Found within the Study Area

Appendix B. California Natural Diversity Database Field Survey Forms

---

# 1.0 Introduction

---

## 1.1 Proposed Project

Project activities associated with PG&E's Lakeville – Sonoma 115 kV Transmission Line Project include: upgrades to the Lakeville and Sonoma substations, removal and replacement of poles along an existing transmission line, construction of some new temporary and permanent access roads, improvement of some existing access roads for temporary and permanent use, and temporary use of landing zone/staging areas, helicopter landing zones, pull sites, and crane pads during construction. Operations-phase activities will consist of maintenance activities along the transmission line.

## 1.2 Project Site Location

The PG&E Lakeville – Sonoma 115 kV Transmission Line Project and alternative routes considered are located in southern Sonoma County, California. (See Figure 1.) The proposed project area includes the survey corridors for route segments 1, 2 and 17, the area proposed for modification of PG&E's Lakeville substation, and sites for landing zones/staging areas, helicopter landing zones, pull sites, crane pads, and access roads. Four additional alternative routes were considered before selecting the proposed project. The project areas for the alternative routes include the survey corridors for segments 1 through 16 (see Figure 1). The proposed project area and the alternative routes are located within a geographic area that includes: part of the southeastern Petaluma Valley, the southern section of the Sonoma Mountains, and the southwestern part of the Sonoma Valley. The term “study area” will be used below to denote the total area encompassed by the proposed project area and alternative routes.

### 1.2.1 Proposed Project Route

The proposed project route is approximately seven miles long and includes segments 1, 2 and 17. (See Figure 1) From PG&E's Lakeville substation at the northwest corner of Adobe and Frates roads, segment 1 crosses Adobe Road and extends east across the southern part of Sonoma Mountain, terminating at the eastern base of Sonoma Mountain, near the upstream crossing of Felder Creek by Felder Road. Segment 2 continues east, running parallel to and just south of Felder Creek, and terminating at the intersection of Arnold Drive and Leveroni Road. Segment 17 follows Leveroni Road east to the Sonoma substation, near the intersection of Leveroni Road and State Highway 12, in the City of Sonoma. The terrain crossed by the proposed route includes level ground in the valley bottoms, shallow depressions containing seasonal wetlands, gradual to steep slopes on Sonoma Mountain, and several steep-sided, deeply incised stream canyons (Rodgers



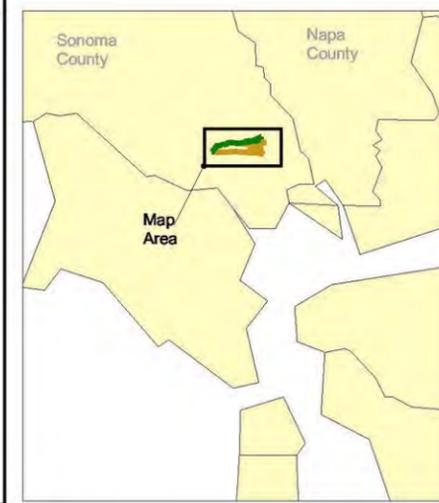
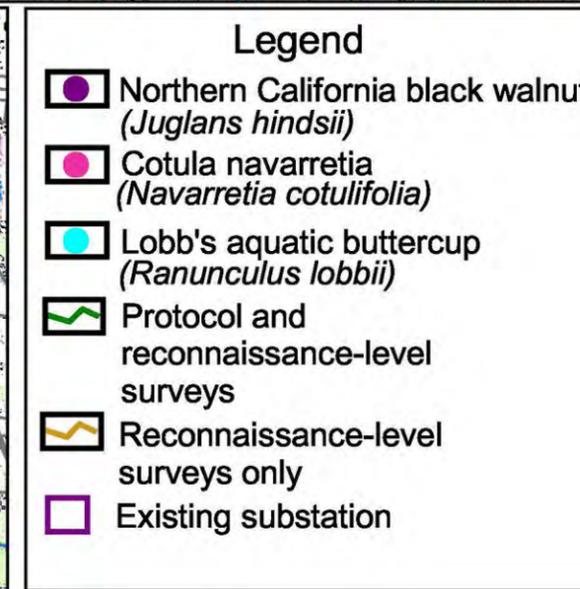
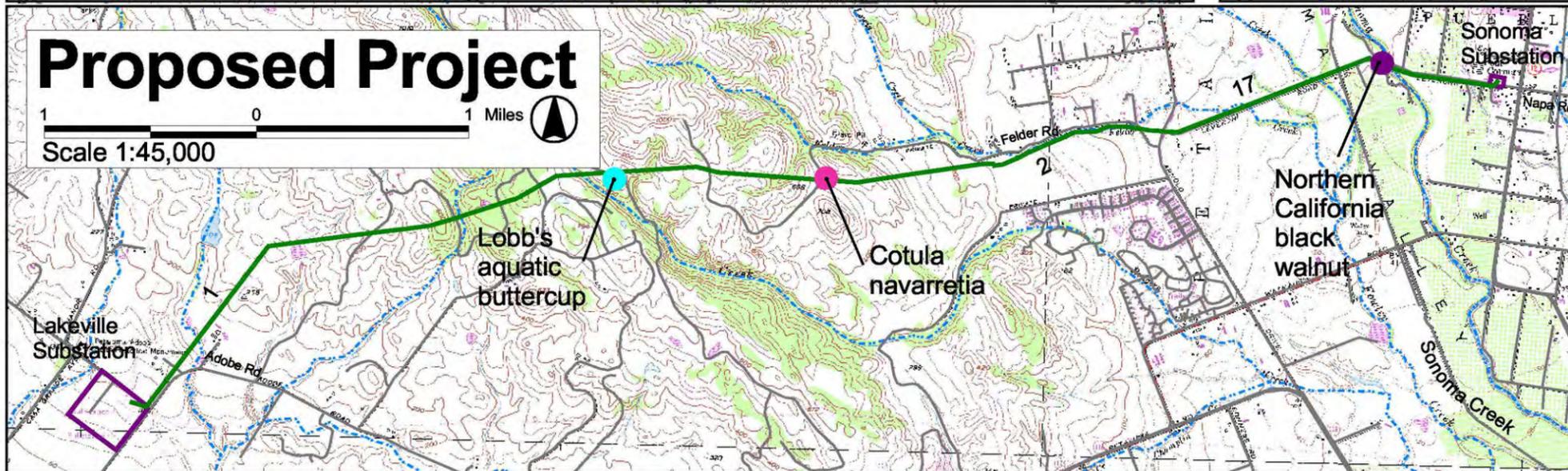
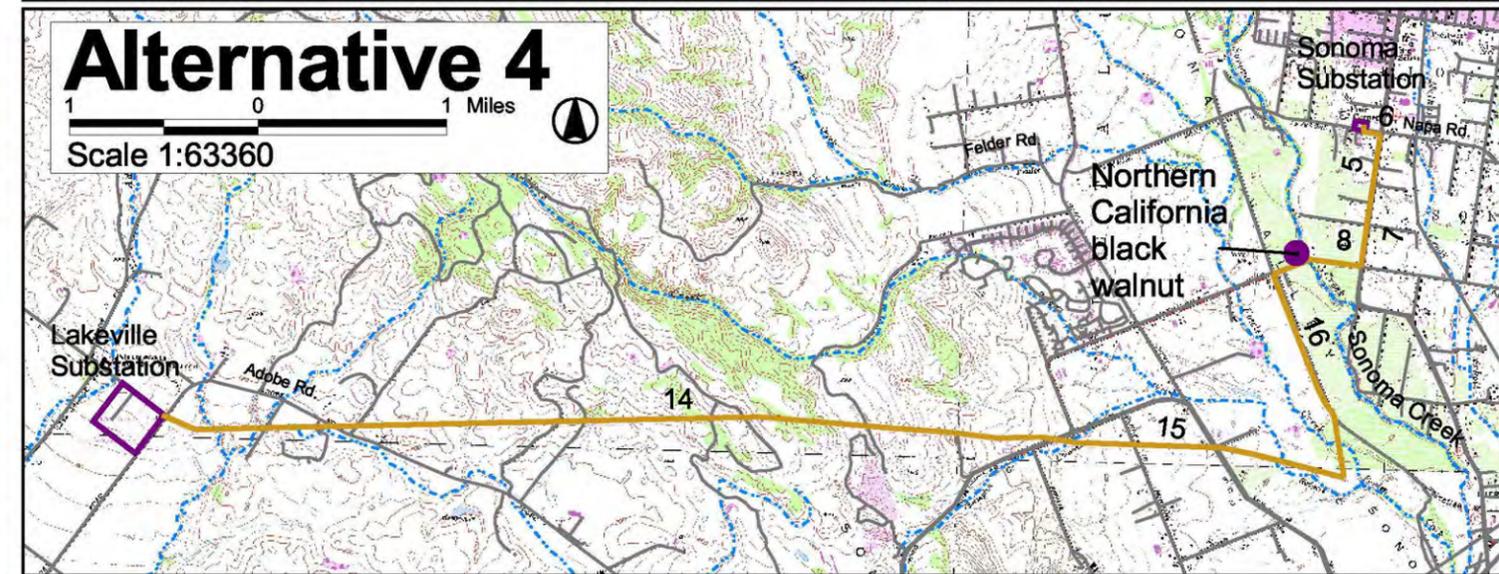
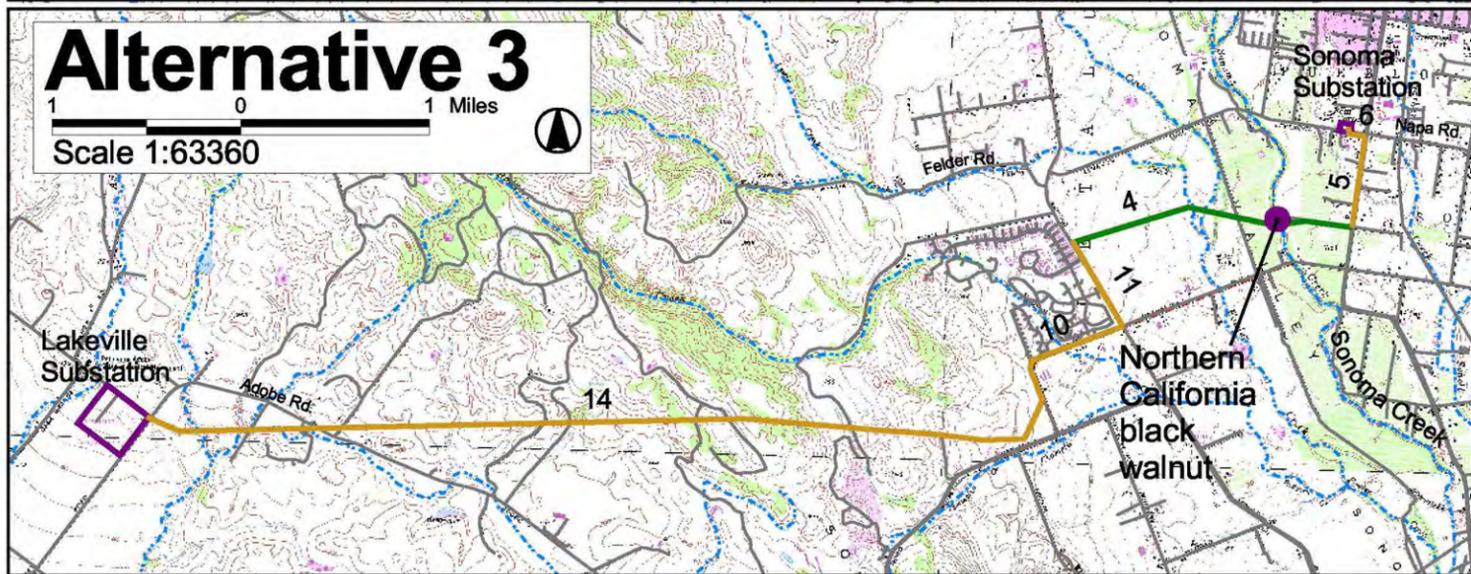
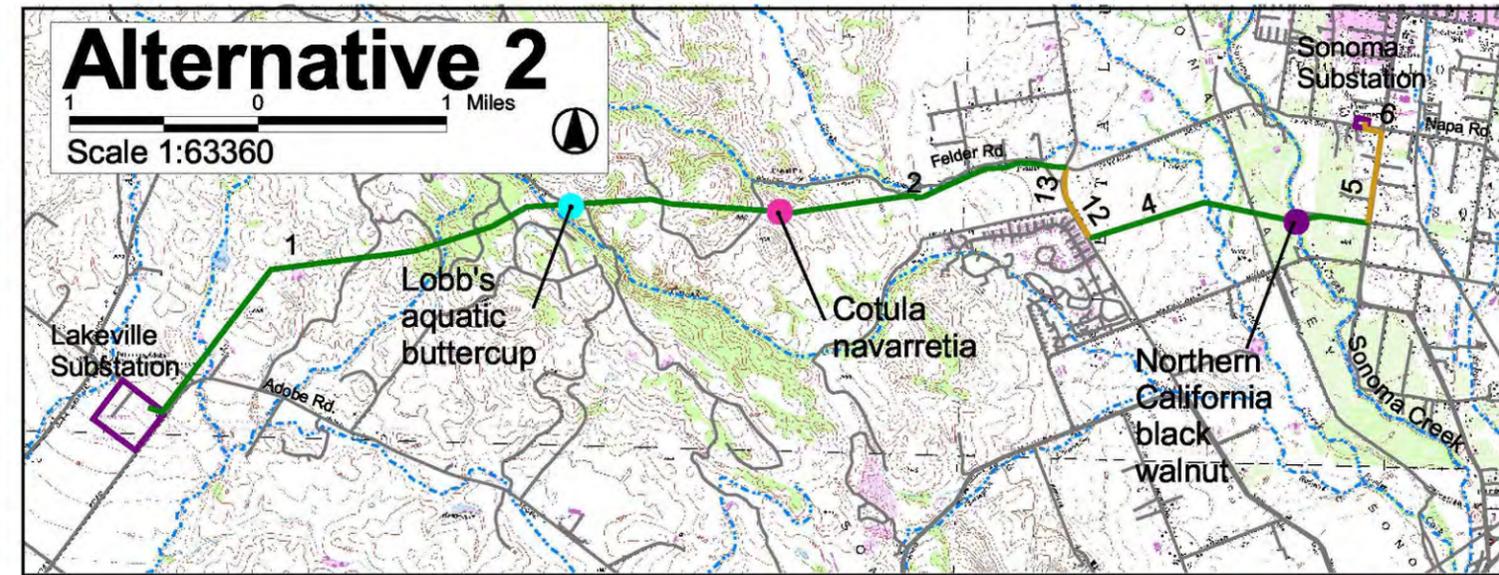
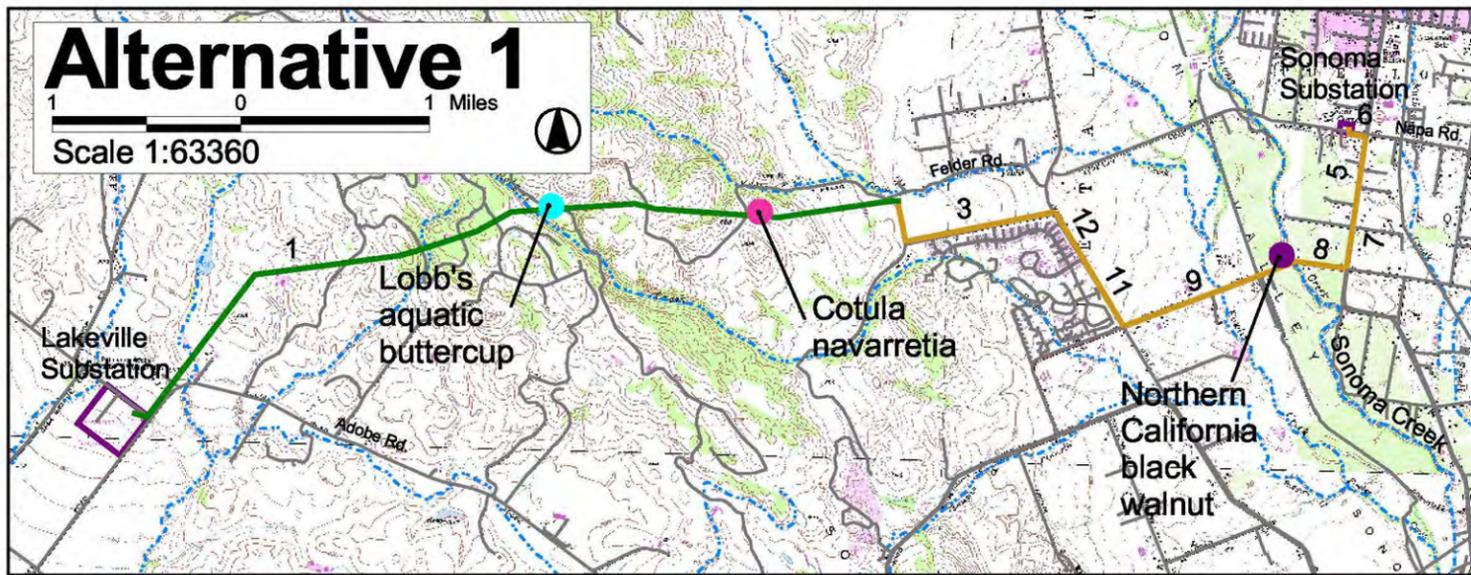


Figure 1.  
Study area and results of special-status plant surveys.  
Lakeville-Sonoma 115kV Transmission Line Project  
October 2004



---

Creek, Felder Creek and Sonoma Creek). Elevations range from approximately 50 to 800 feet. Annual grassland, mixed evergreen forest, oak woodland, riparian woodland, seasonal wetlands, vineyards, rural residential and urban residential are the main cover types crossed by the proposed route.

### **1.2.2 Alternative Segments**

In addition to including segments 1 and 2 of the proposed project, the alternative segments include segments 3 through 16, as shown in Figure 1. The total length of these segments is approximately 13.5 miles. Segments 14 and 15 extend east from the PG&E Lakeville substation, cross the southern slopes of Sonoma Mountain and end in the southwestern Sonoma Valley, west of Sonoma Creek. Segments 10, 9 and 8 follow Watmaugh Road east from near its intersection with Stage Gulch Road (State Highway 116) to its intersection with State Highway 12. Segment 16 extends south from Watmaugh Road to its intersection with the eastern end of Segment 15. Segments 13, 12 and 11 follow Arnold Drive south from its intersection with Leveroni Road to its intersection with Watmaugh Road. Segment 3 extends overland from its intersection with segments 1 and 2 east to Arnold Drive. Segment 4 extends overland from Arnold Drive to Highway 12. Segments 6, 5 and 7 extend south along Highway 12 from Leveroni Road to Watmaugh Road. Elevations along these segments range from approximately 40 to 675 feet. The terrain crossed by the alternative segments includes level ground in the valley bottoms, shallow depressions containing seasonal wetlands, gradual to steep slopes on Sonoma Mountain, and several steep-sided, deeply incised stream canyons (Felder Creek and three crossings of Sonoma Creek). Annual grassland, oak woodland, riparian woodland, seasonal wetlands, vineyards, rural residential, urban residential and urban commercial are the main cover types crossed by the route segments which make up alternatives 1 through 4.

## **1.3 Overview of Rare Plant Surveys**

Surveys for special-status plants were conducted at two levels: reconnaissance-level and protocol-level. Surveys of the proposed project (segments 1, 2 and 17) were conducted at both the reconnaissance and protocol levels. Surveys of the segments that comprise the alternatives (segments 3 through 16) were conducted only at the reconnaissance level, with the exception of segment 4, which was also surveyed at the protocol level. The purpose of the reconnaissance-level surveys was to identify vegetation and land cover types, to identify areas with the potential to support special-status plants, and to locate wetlands within and near the survey corridor. The purpose of the protocol-level surveys was to locate and record all populations of special-status plants. Protocol-level surveys were conducted according to the rare plant survey guidelines approved by the California Native Plant Society (Tibor 2001) and the California Department of Fish and Game (CDFG 2000).

---

## 2.0 Methods

---

Surveys for special-status plants were conducted at two levels: reconnaissance-level and protocol-level. Surveys of the proposed route (segments 1, 2 and 17) and segment 4 were conducted at both the reconnaissance and protocol levels. Surveys of the other segments comprising the alternatives (segments 3 and 5 through 16) were conducted only at the reconnaissance level.

### 2.1 Reconnaissance-level Surveys

The purpose of the reconnaissance-level surveys was to identify vegetation and land cover types, to identify areas with the potential to support special-status plants, and to locate wetlands within and near the survey corridor. In addition, existing populations of non-native invasive plants were described for each segment. Reconnaissance-level surveys were conducted by one or two surveyors who visually observed the survey corridor, either on foot or from a vehicle, using binoculars as needed. For segments containing an existing transmission line (poles or towers), the survey corridor was 200 feet wide and was centered on the existing transmission line. For segments lacking an existing transmission line, a 1000-foot wide corridor was surveyed, centered on the proposed transmission line location. Surveys of segments 1, 2, 3, 4 (part), 5 (part), 6 and 17 were completed in August 2002. Segments 4 (part), 5 (part), and 7 through 16 were completed in September 2003.

Vegetation and land cover types were recorded by labeling color aerial photographs in the field. Noxious weed infestations were recorded by segment in field notes. Weed species noted included those listed by the California Department of Food and Agriculture (CDFA 2003) and those designated as harmful to wildlands by the California Invasive Plant Council<sup>1</sup> (Cal-EPPC 1999).

### 2.2 Protocol-level Surveys

The purpose of the protocol-level surveys was to locate all populations of special-status plants within the project area, to precisely record and map their locations using GPS units with 2-3 meter accuracy, and to estimate the size, number of individuals, phenology and microhabitat characteristics of each rare plant population. Protocol-level surveys were floristic in nature and were conducted according to the rare plant survey guidelines approved by the California Native Plant Society (Tibor 2001) and the California Department of Fish and Game (CDFG 2000).

---

<sup>1</sup> Formerly the California Exotic Pest Plant Council, Cal-EPPC.

---

Preparation for the protocol-level rare plant surveys included compiling a list of special-status plants potentially occurring within the project area. A plant was considered to be of special-status if it met one or more of the following criteria:

- Federally or state-listed, or proposed for listing, as rare, threatened or endangered (USFWS 1996, CDFG 2002a, 2002b, 2003a, 2003b);
- Federal species of concern or candidate for listing (USFWS 2002, 2003);
- Special Plant as defined by the California Natural Diversity Database (CDFG 2002a, 2003a); or
- Listed by the California Native Plant Society in their *Inventory of Rare and Endangered Plants of California* (Tibor 2001).

A species was determined to have potential to occur in the project area if its known or expected geographic range includes the project area or the vicinity of the project area, and if its known or expected habitat is represented within or near the project area.

A list of potentially occurring special-status plants was compiled by searching the CNDDDB RareFind2 database (CDFG 2002b) and the CNPS Inventory (Tibor 2001), and by reviewing unpublished species lists from sites near the project area with habitats similar to that of the project area (Howald 2000, 2002). Table 1 is a tabular summary of information about 24 special-status plants with potential to occur within the project area. Information on flowering time, status, habitat preferences, geographic distribution, elevational range, and known locations in the vicinity of the project area was gathered prior to the initiation of the protocol-level (floristic) field surveys conducted in 2003. This information was compiled from the sources listed above, and other sources, including *The Jepson Manual* (Hickman 1993), *A Flora of Sonoma County* (Best et al. 1996), and the CalFlora database (2003).

The large number of potentially occurring special-status plants, the differences in their flowering times, and the lack of access to local populations on private property made it impractical to observe local populations of all of the potentially occurring special-status plant species prior to or during the field surveys. Local populations of Napa false indigo (*Amorpha californica* ssp. *napensis*), Brewer's milkvetch (*Astragalus breweri*), Baker's blennosperma (*Blennosperma bakeri*), dwarf downingia (*Downingia pusilla*), fragrant fritillary (*Fritillaria liliacea*), broad-lobed linanthus (*Linanthus latisectus*) and Lobb's aquatic buttercup (*Ranunculus lobbii*) were observed prior to and during the survey period to check flowering condition. Drawings, photographs and written descriptions of all potentially occurring special-status plants were reviewed prior to and during the survey period.

Table 1. List of Special-status Plant Species Expected to Occur within the PG&E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Areas.

Common name Scientific name <sup>1</sup>	Listing Status			Flowering Period	Habitat Preferences	Potential for Occurrence <sup>3</sup>
	Federal	State	CNPS <sup>2</sup>			
Napa false indigo <i>Amorpha californica</i> <i>var. napensis</i>	SLC	-	1B	Apr-Jul	Shaded, moist, mixed evergreen forest and oak woodlands. 150-2000m	Moderate. Known occurrences within 10 miles of project area.
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	SLC	-	1B	Mar-June	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. 3-500m	Low. Few known occurrences are widely scattered; one is within 15 mi of project area.
Brewer's milk-vetch <i>Astragalus breweri</i>	-	-	4	Apr-Jun	Grassland, oak woodland, soil often serpentine-influenced. 90-730m	Moderate. Known occurrences > 10 mi from project area.
Clara Hunt's milk-vetch <i>Astragalus clarianus</i>	FE	CT	1B	Mar-Apr	Dry, open, blue oak woodlands; thin, rocky serpentine or volcanic soil. 75-275m	Low. Only 4 occurrences known, closest is > 10 mi from project area.
Baker's blennosperma <i>Blennosperma bakeri</i>	FE	CE	1B	Mar-Apr	Vernal pools within grassland, clay soil. 10-110m	High. Known occurrences within 1 mile of project area.
Narrow-anthered California brodiaea <i>Brodiaea californica</i> <i>var. leptalea</i>	SLC	-	1B	May-Jul	Broad-leaved upland forest, chaparral, lower montane conifer forest. 110-915m	Medium. One occurrence is approx. 10 mi from project area.
Dwarf downingia <i>Downingia pusilla</i>	-	-	2	Mar-May	Vernal pools within grassland, clay soil. 1-445m	High. Known occurrence within 2 miles of project area.
Marsh horsetail <i>Equisetum palustre</i>	-	-	3	None	Marshes and swamps. 45-1000m	Very low. Nearest occurrence > 10 mi from project area; Napa Co occurrence only second confirmed in CA.
Fragrant fritillary <i>Fritillaria liliacea</i>	SC	-	1B	Feb-Mar	Vernally wet coastal and valley grassland, oak woodland, clay soil. 3-410m	High. Known occurrence within 2 miles of project area.
Hayfield tarplant <i>Hemizonia congesta</i> <i>ssp. leucocephala</i>	-	-	3	Apr-Oct	Annual grassland, coastal scrub. 25-365 m	Moderate. Known from Sonoma County in vicinity of project area.

Common name Scientific name <sup>1</sup>	Listing Status			Flowering Period	Habitat Preferences	Potential for Occurrence <sup>3</sup>
	Federal	State	CNPS <sup>2</sup>			
Northern California black walnut <i>Juglans hindsii</i>	SC	-	1B	Apr-May	Riparian woodland and scrub. 0-440m	High. Natural distribution poorly known; widely planted by Native Americans. Found within project area during project surveys; these plants likely not native.
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE	-	1B	Mar-Jun	Cismontane woodland, alkaline playas, grasslands, vernal pools, 0-470 m.	Low. New location found in 2003 within 2 miles of project area (CDFG 2004). Vernal pools of the type suitable for this species not observed within project area.
Legenere <i>Legenere limosa</i>	SC	-	1B	Apr-Jun	Vernal pools. 1-880m	High. Occurs on east side of Sonoma Mtn, about 5 mi from project area.
Woolly-headed lessingia <i>Lessingia hololeuca</i>	-	-	3	Jun-Oct	Broad-leaved forest, coastal scrub, lower montane conifer forest, serpentinite clay soil. 15-305m	Low. Collections from Petaluma area are old.
Redwood lily <i>Lilium rubescens</i>	-	-	4	Jun-Aug	Redwood and mixed evergreen forest, shaded, sometimes on serpentine. 30-1715m	Low. Nearest known location > 10 mi from project area. Increasingly rare in southern part of range.
Bristly linanthus <i>Linanthus acicularis</i>	-	-	4	Apr-Jul	Chaparral openings, grassland and oak woodland. 55-1500m	Low. Nearest location > 10 mi from project area.
Broad-lobed linanthus <i>Linanthus latisectus</i>	-	-	4	Apr-Jun	Mixed evergreen forest, oak woodlands. 170-1500m	Moderate. Nearest locations 5-10 mi from project area.
Mt. Diablo cottonweed <i>Micropus amphibolus</i>	-	-	3	Mar-May	Mixed evergreen forest, oak woodland, chaparral, grassland. 45-825m	Moderate. Nearest location in Mayacamas Mtns, < 10 mi from project area.
Cotula navarretia <i>Navarretia cotulifolia</i>	-	-	4	Apr-Jun	Grassland, chaparral and woodland, adobe soil. 4-1830m	Low. Known occurrences > 10 mi from project area. Found during protocol surveys for this project.
Baker's navarretia <i>Navarretia leucocephala</i> <i>ssp. bakeri</i>	SC	-	1B	May-Jul	Locally in vernal pools of Santa Rosa Plain and adjacent hills. 15-1740m	Moderate. Nearest occurrence in Annadel State Park, > 10 mi from project area.

Common name Scientific name <sup>1</sup>	Listing Status			Flowering Period	Habitat Preferences	Potential for Occurrence <sup>3</sup>
	Federal	State	CNPS <sup>2</sup>			
Gairdner's yampah <i>Perideridia gairdneri</i> <i>ssp. gairdneri</i>	SC	-	4	Jun-Oct	Mixed evergreen forest, chaparral, moist grassland, adobe flats. 0-365m	Moderate. Known from within 10 mi of project area.
Lobb's aquatic buttercup <i>Ranunculus lobbii</i>	-	-	4	Feb-May	Vernal pools, seasonal wetlands within grasslands and woodlands. 14-470m	High. Nearest known location about 2 mi from project area. Found during protocol surveys for this project.
Victor's gooseberry <i>Ribes victoris</i>	-	-	4	Mar-Apr	Mixed evergreen forest, chaparral. 100-750m	High. Nearest location about 2 mi from project area.
Showy indian clover <i>Trifolium amoenum</i>	FE	-	1B	Apr-Jun	Coastal bluff scrub, grassland, sometimes serpentinite. 5-415m Presumed extinct in Alameda, Mendocino, Napa, Santa Clara and Solano counties.	Very low. Presumed extinct throughout range until recently rediscovered in Sonoma & Marin counties.
Dark-mouthed triteleia <i>Triteleia lugens</i>	-	-	4	Apr-Jun	Mixed evergreen forest, chaparral, lower montane conifer forest. 100-1000m	Low. Nearest location > 10 mi from project area.

1. Scientific names, common names, and habitat notes from Hickman (1993) and Tibor (2001).

2. Plant status definitions are as follows:

U.S. Fish and Wildlife Service designations:

- FE Endangered: Any species that is in danger of extinction throughout all or a significant portion of its range.
- FT Threatened: Any species likely to become endangered within the foreseeable future.
- SC Species of concern: Other species of concern to the Service.
- SLC Species of local concern: Species of local or regional concern or conservation significance.

California Department of Fish and Game designations:

- CE Endangered: Any species that is in danger of extinction throughout all or a significant portion of its range.
- CT Threatened: Any species likely to become endangered within the foreseeable future.

California Native Plant Society designations:

- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2 Plants rare, threatened or endangered in California, but more common elsewhere.
- 3 Plants for which more information is needed – a review list.
- 4 Plants of limited distribution – a watch list.

3. Project area contains potential habitat for all species included in table. Potential for occurrence derived from evaluation of information from California Natural Diversity Database (2002a and b, 2003a), the California Native Plant Society's Inventory of Rare and Endangered Plants in California (Tibor 2001), A Flora of Sonoma County (Best et al. 1996), the CalFlora database (2003), and other sources.

---

Protocol-level field surveys were conducted by one or two surveyors walking meandering transects and visually observing a 200-foot wide survey corridor centered on the existing transmission pole alignment in segments 1, 2 and 17. All habitat suitable for rare plants was surveyed within these segments. Features with a high potential for supporting rare plants, such as rock outcrops and seasonal wetlands, were carefully examined, including those within and adjacent to the survey corridor. Rare plant populations found during protocol-level surveys were mapped in the field using a Trimble GeoExplorerIII, which provides 2-3 meter accuracy after post-processing of field-collected data. Population size, flowering condition, and habitat characteristics were recorded in the field. Population size was determined by visual estimates, using standard estimation techniques (Elzinga et al. n.d.).

Protocol-level surveys were conducted on March 19, 21 and 28, April 2, May 15 and June 24, 2003. This range of survey dates was selected to encompass the blooming times of all of the special-status plants potentially occurring within the project area. All areas identified as potential habitat for rare plants during reconnaissance-level surveys were visited two or three times during the blooming season. On June 10 and 11, 2004, focused surveys for *cotula navarretia* were conducted in the vicinity of poles 58, 59 and 60 (see Section 3.2.2).

Nearly all plant species found in the project area during protocol-level surveys were identified to species; all were identified to the level needed to determine whether they qualify as special-status plants. A list of all vascular plant taxa encountered within the project area was recorded in the field. Collections were made of specimens that could not be readily identified in the field. Final determinations were made by keying specimens using standard references such as *The Jepson Manual* (Hickman 1993), *A California Flora* (Munz and Keck 1968), and *A Flora of Sonoma County* (Best et al. 1996). Voucher specimens were made or photographs were taken to document the presence of the special-status plants found during the surveys. Voucher specimens will be donated to the Jepson Herbarium, Valley Life Sciences Building, University of California, Berkeley. A list of vascular plant taxa found within the proposed project and alternatives area is included in Appendix A.

---

## 3.0 Results

---

Vegetation and other cover types found in the study area are described below, followed by a discussion of special-status plant species found during the protocol-level surveys. Common and scientific names of plant species mentioned in the text and others observed in the study area are listed in Appendix A.

### 3.1 Vegetation Types

Ten vegetation types are represented within the study area, including six upland types and four wetland and riparian types. Nine of the ten are natural vegetation types. Vineyards and other agricultural lands constitute the tenth type. The natural vegetation types are named and characterized below based primarily on Holland (1986). Sawyer and Keeler-Wolf (1995) equivalents are given, when possible. The ten vegetation types found within the study area include:

#### Upland Types

- Coast Live Oak Forest and Woodland
- Mixed Evergreen Forest
- Non-native Grassland
- Oregon Oak Woodland
- Upland Redwood Forest
- Vineyards and other Agricultural Lands

#### Wetland and Riparian Types

- Coastal and Valley Freshwater Marsh
- North Coast Riparian Forest
- Northern Vernal Pool
- Vernal Marsh

#### 3.1.1 Upland Vegetation Types

##### Coast Live Oak Forest and Woodland

Coast Live Oak Forest is an upland (non-riparian) vegetation type consisting of dense stands of coast live oak (*Quercus agrifolia*) that often form a closed canopy (Holland 1986). Oak woodland is similar, but the trees are more widely spaced and the canopy is open. This type is found on slopes and in valley bottoms of the Coast Ranges, from

---

Sonoma County to Santa Barbara County. The understory typically consists of a sparse to dense growth of shrubs, often including blue elderberry (*Sambucus mexicana*), toyon (*Heteromeles arbutifolia*) and poison oak (*Toxicodendron diversilobum*), as well as many species of annual and perennial forbs and grasses. Holland (1986) describes Coast Live Oak Forest and Coast Live Oak Woodland as separate, but intergrading, types. The Coast Live Oak series of Sawyer and Keeler-Wolf (1995) encompasses both Holland types.

Coast Live Oak Forest and Woodland is widespread within the study area, where it is found mainly on ridges and slopes with a northern or eastern exposure, and on the upper slopes of some steep-walled canyons with ephemeral drainages. California bay (*Umbellularia californica*) is a frequent associate. The understory can be open in heavily shaded sites, or it can be dominated by introduced weedy annual grasses, or weedy annual forbs such as Italian thistle (*Carduus pycnocephalus*) and milk thistle (*Silybum marianum*). The weedy understory type is observed primarily in areas currently used for livestock grazing. Cattle are observed to use the understory of these forests and woodlands for bedding down and resting during the hotter periods of the day. Coast Live Oak Woodland is found in segments 1 and 14.

No special-status plants were found within Coast Live Oak Forest and Woodland.

### **Mixed Evergreen Forest**

As described by Holland (1986), Mixed Evergreen Forest is dominated by broad-leaved trees up to 100 feet in height that form a closed canopy. Oaks, madrone (*Arbutus menziesii*) and Douglas fir (*Pseudotsuga menziesii*) are characteristic species. Mixed Evergreen Forest occurs on slopes with moist, well-drained, coarse soils, within the zone of summer fog. Holland notes that Mixed Evergreen Forest is a transition type, both geographically and biologically, between dense coastal conifer forests (especially redwood forest) and open interior oak woodlands. It extends more or less continuously from Santa Cruz County to the Oregon border, in the outer Coast Ranges. It occurs sporadically from Santa Cruz County south to Santa Barbara County. There is no equivalent type in the series-based system of Sawyer and Keeler-Wolf (1995).

Within the study area, Mixed Evergreen Forest is found on the upper west-facing slopes of Sonoma Mountain, in segment 1. This area is frequently fog-enshrouded in summer due to the seasonal weather pattern that draws moisture from the coast into the interior on a daily basis. The dominant trees include California black oak (*Quercus kelloggii*), coast live oak, madrone, Douglas fir and Oregon oak (*Quercus garryana*). The understory contains a diverse array of native shrubs, forbs and grasses. Mixed Evergreen Forest within the study area is not currently grazed by livestock and retains a predominance of native plant species.

A non-flowering gooseberry similar in vegetative characters to the special-status plant Victor's gooseberry (*Ribes victoris*) was found during early season protocol-level

---

surveys. During a later survey, flowers were found, confirming the identity as canyon gooseberry (*Ribes menziesii*), a common species. No special-status plants were found in Mixed Evergreen Forest.

### **Non-native Grassland**

Holland (1986) describes Non-native Grassland as consisting of a dense to sparse cover of introduced annual grasses, mainly less than three feet in height, often including a diverse assemblage of native annual forbs (wildflowers). The comparable type in Sawyer and Keeler-Wolf (1995) is the California Annual Grassland series. Both authors note that the species composition of annual grasses and forbs varies considerably among stands.

Within the study area, Non-native Grassland is characterized by dense stands of introduced annual and native perennial grasses, and a large variety of native and introduced annual and perennial forbs and geophytes (bulb plants). Considerable variation in species composition, vegetation height, soil moisture conditions, and disturbance levels related to land use exists within grasslands of the project area. Non-native Grassland is widespread within segments 1, 4, 14 and 15, and small patches are found within other segments.

Most non-native grasslands in the study area have a long history of livestock grazing, although many areas were not actively grazed during the field surveys conducted for this project. These currently ungrazed grasslands are dominated by introduced annual grasses such as slender wild oat (*Avena barbata*), brome grasses (*Bromus hordeaceus*, *B. diandrus* and others), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) and other barleys (*Hordeum* spp.), Italian ryegrass (*Lolium multiflorum*), introduced weedy forbs such as Italian thistle, milk thistle and yellow and purple starthistles (*Centaurea solstitialis* and *C. calcitrapa*), and native forbs such as tarweeds (*Hemizonia congesta*, *H. fitchii*) and summer lupine (*Lupinus formosus*). Coyote brush (*Baccharis pilularis*) is sometimes present in these sites. Small stands of native perennial grasses, especially purple needlegrass (*Nassella pulchra*) are occasionally found in this type of grassland. Native forbs are present in low diversity and numbers.

Sites that appear to have had lower levels of historic grazing and sites that are currently grazed at moderate levels support, in addition to non-native grasses and weedy forbs, native perennial grasses such as purple needlegrass, meadow barley (*Hordeum brachyantherum*), blue wildrye (*Elymus glaucus*), melic grasses (*Melica* spp.), and occasionally, California oat grass (*Danthonia californica*), as well as the introduced annual grasses noted above. These sites, especially areas with higher soil moisture levels, can support a great diversity of native annual and perennial forbs (e.g., *Layia chrysanthemoides*, *Lupinus* spp., *Linanthus* spp., *Navarretia* spp., *Sanicula* spp. and many others) and geophytes (*Calochortus* spp., *Brodiaea* spp., *Triteleia* spp.). Examples include grasslands on the upper west- and east-facing slopes of Sonoma Mountain in segments 1 and 14.

---

Non-native Grassland within segment 4 and some of segment 15 appears to be regularly plowed and over-planted with ryegrass and other non-native grasses. This grassland is mowed for hay annually.

Moist swales, vernal pools, vernal marshes and other seasonal wetlands are found within a grassland matrix within the study area. These wetlands are found in segments 1, 4, 10, 15 and 16, and are discussed below as separate vegetation types.

One population of the special-status plant *cotula navarretia* (*Navarretia cotulifolia*) was found in a site with moist adobe soil in Non-native Grassland within and adjacent to the survey corridor for segment 1. This species is discussed further in Section 3.2.2.

### **Oregon Oak Woodland**

Holland (1986) describes Oregon Oak Woodland as varying from forests composed of pure stands with closed canopies, to mixed stands with other broad-leaved trees and conifers, to open savannah consisting of widely spaced individual trees. The equivalent type in Sawyer and Keeler-Wolf (1995) is the Oregon oak series. This type generally occurs in sites beyond the reach of summer fog. Oregon oak is shade-intolerant (Sawyer and Keeler-Wolf 1995) and may be replaced over time by conifers and hardwood trees on drained sites with moist soils. Oregon Oak Woodland is found within the Coast Ranges from Santa Cruz County north into Oregon.

Within the study area Oregon Oak Woodland consists of open woodlands of pure Oregon oak and mixed woodlands dominated by Oregon oak but also including blue oak (*Quercus douglasii*) and coast live oak. The understory is composed of non-native annual grasses, usually grazed. Oregon oak woodland occurs in segments 1 and 14.

No special-status plants were found within Oregon Oak Woodland.

### **Upland Redwood Forest**

The Holland type (1986) called Redwood Forest is dominated by coast redwood (*Sequoia sempervirens*) and occurs more or less continuously along the coast from the Oregon border south to the southern end of Monterey County, according to Holland (1986). Redwood Forest can occur on all aspects, from alluvial stream terraces to steep slopes subject to erosion (Sawyer and Keeler-Wolf 1995). The Redwood series is the equivalent type in Sawyer and Keeler-Wolf (1995).

Redwood Forest within the study area corresponds to the Holland subtype called upland redwood forest, which is usually found on shallow, well-drained soils, often on slopes subject to erosion. Other tree species are often present and may be co-dominant. In the

---

study area, upland redwood forest occurs near the inland range limit for the species, and includes Douglas fir and madrone as associates. The understory is heavily shaded, with a sparse growth of sword fern (*Polystichum munitum*) and shade-tolerant native annual and perennial forbs. Upland redwood forest is found immediately adjacent to the survey corridor for segment 1, and elsewhere in the area. Small native groves of redwoods are found south of the proposed project route, near the vernal marsh that is west of the Rodgers Creek crossing on the upper west side of Sonoma Mountain, and on the nearby east-facing slopes of the Rodgers Creek drainage.

No special-status plants were found within Redwood Forest.

### **Vineyards and other Agricultural Lands**

Vineyards and other agricultural lands are not natural vegetation, so they are not included in the systems of Holland (1986) or Sawyer and Keeler-Wolf (1995). Vineyards of wine grapes are common within the study area, occurring within or adjacent to all segments. Native plants sometimes persist within vineyards. In the flatlands of the Santa Rosa Plain in Sonoma County, special-status plants have occasionally been found within vineyards that contain seasonal wetlands and are not extensively tilled. The vineyards within the project area occur mainly on slopes, although some are on flatlands. During reconnaissance and protocol surveys, vineyards were evaluated for their likelihood of supporting special-status plants. None of the vineyards examined was considered likely to support special-status plants.

Segment 9 crosses a large strawberry field at the corner of Watmaugh Road and Arnold Drive. No habitat for special-status plants exists within this field.

### **3.1.2 Wetland and Riparian Vegetation Types**

#### **Coastal and Valley Freshwater Marsh**

As described by Holland (1986), this wetland type occurs in areas that are permanently flooded with slow-moving or quiet fresh water (not brackish, alkaline or saline). Dominant plants include tall, rooted aquatic monocots, such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), rushes (*Juncus* spp.), and aquatic grasses. Floating and emergent unrooted aquatic plants (e.g., *Polygonum* spp., *Potamogeton* spp.) are common associates. Coastal and Valley Freshwater Marsh has no single equivalent in the system of Sawyer and Keeler-Wolf (1995); this vegetation type would encompass several series, including: bulrush-cattail, cattail, duckweed, mosquito fern, pondweeds with floating leaves, and others.

Within the study area, Coastal and Valley Freshwater Marsh vegetation was found in artificial ponds and small reservoirs used mainly for vineyard irrigation. Several

---

reservoirs are located in segment 1. Two reservoirs are located in the vicinity of segment 16. The vegetation within these features varies from almost none to moderately developed. No special-status plants are expected to occur, nor were found, in freshwater marsh vegetation of these reservoirs during surveys conducted for this project.

### **North Coast Riparian Forest**

Riparian forest is a streambank habitat consisting of dense stands of tall deciduous and evergreen trees that form a closed canopy, usually with 100 percent cover. This forest typically has a structurally complex understory of smaller trees, shrubs, vines, and annual and perennial forbs and grasses. Riparian forest within the study area fits within Holland's (1986) general type, North Coast Riparian Forest, but does not correspond to any of the described subtypes. The series-based system used by Sawyer and Keeler-Wolf (1995), which relies on one or two dominant species to characterize and name a type, does not accommodate vegetation composed of a mixture of co-dominant species, like that found in most of the riparian forest throughout the study area.

Riparian forest within the study area consists mainly of two subtypes, Mixed Riparian Forest and Oak-Bay Riparian Forest. The Mixed Riparian Forest subtype occurs along lower gradient, usually perennial streams, and consists of a mixture of deciduous and evergreen tree species, none of which dominates by area. Typical species include: coast live oak, valley oak (*Quercus lobata*), California buckeye (*Aesculus californicus*), Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), California bay, white alder (*Alnus rhombifolia*), red willow (*Salix laevigata*) and walnuts (*Juglans hindsii* and others). The native understory often includes California wild grape (*Vitis californica*) and poison oak. This subtype occurs along perennial and intermittent streams with well-developed beds and banks. Examples of this subtype are found at the Rodgers Creek crossing in segment 1 and the Sonoma Creek crossings in segments 4, 9 and 17. This subtype occurs in a less robust form, with fewer species, smaller trees and a less complete canopy, along several intermittent streams within the study area, for example, the Felder and Carriger creek crossings in segments 4 and 17, and the Fowler Creek crossing in segment 16.

The Oak-Bay Riparian Forest subtype has a closed to broken canopy dominated by coast live oak and California bay, with a fairly open understory that includes poison oak. This subtype is found along smaller perennial streams and intermittent streams, for example, at the Felder Creek crossing in segment 2.

The special-status plant, Northern California black walnut (*Juglans hindsii*) was found in riparian forest, as discussed in more detail in Section 3.2.1.

---

## Northern Vernal Pool

Vernal pools within the study area are a northern California type that do not fit within any of the subcategories of Northern Vernal Pools described by Holland (1986) or Sawyer and Keeler-Wolf (1995). As with all vernal pools, they occupy shallow depressions that hold water during the rainy season due to a clay or hardpan substrate that impedes water percolation.

Vernal pools in the study area are found in sites with a volcanic bedrock overlain by clay soil. Many of the characteristic plants are endemic annual forbs that germinate under water, then grow to maturity, flower and set seed as the pool dries. Examples include: goldfields (*Lasthenia* spp.), downingias (*Downingia* spp.), popcorn flowers (*Plagiobothrys* spp.), meadowfoams (*Limnanthes* spp.) and button-celeries (*Eryngium* spp.). Vernal pools were found within segments 1 and 16. Potential habitat for vernal pools exists within segment 10. The large vernal pool in segment 1, just east of the Rodgers Creek crossing, contains a population of the special-status plant Lobb's aquatic buttercup (*Ranunculus lobbii*), discussed further in Section 3.3.3. Vernal pools within segment 16 were observed only during a reconnaissance survey in September 2003, when vernal pool plants are dormant and cannot be identified, so their species composition is unknown.

## Vernal Marsh

Vernal marshes are described by Holland (1986) as wetlands somewhat similar to vernal pools in species composition. They differ in hydrology, with vernal marshes retaining some standing water well into the summer, and often throughout the year. Often, the central area, with deeper water, supports plants characteristic of freshwater marshes, while the gradually sloping shoreline, which dries completely during the summer, supports vernal pool species. Vernal marshes are not included in the Sawyer and Keeler-Wolf (1995) system.

One vernal marsh was found adjacent to the segment 1 survey corridor, on the upper west-facing slope of Sonoma Mountain, just west of the Rodgers Creek crossing site. This wetland appears to have been formed from a natural vernal pool whose size was enhanced by the construction of a low berm along the eastern edge of the wetland. The well-developed appearance of the vegetation suggests that this enhancement occurred many years ago, probably at a time when the area was used for livestock grazing. This area was not grazed during surveys in 2002 and 2003. Common species identified on the shores of this vernal marsh during field surveys include: Jepson's button-celery (*Eryngium aristulatum*), flowering quillwort, (*Lilaea scilloides*), bracted popcorn flower (*Plagiobothrys bracteatus*) and pygmy-weed (*Crassula aquatica*). Common tule (*Scirpus acutus*), lance-leaved water plantain (*Alisma lanceolatum*) and floating pondweed (*Potamogeton* sp.) were common in the permanent standing water of this vernal marsh. No special-status plants were found in this vernal marsh.

---

## 3.2 Special-status Plant Species

Special-status plants found within the project area are discussed below. Field survey forms submitted to the California Natural Diversity Database are found in Appendix B.

### 3.2.1 *Juglans hindsii* (Northern California black walnut)

*Juglans hindsii* is a tall, deciduous tree in the Walnut Family (Juglandaceae) with the male flowers in greenish-yellow catkins and the small green female flowers borne singly or in small clusters near the ends of the new twigs. Its habitat is riparian woodland. According to Tibor (2001), only two native stands are still extant, one of which occurs in southeastern Napa County. Northern California black walnut trees were found at the Sonoma Creek crossings within segments 4, 8, and 17 (see Figure 1). At the segment 4 crossing, large trees of Northern California black walnut are a dominant feature of the North Coast Riparian Forest. At the segment 8 crossing, medium-sized trees occur with oaks and California bay in a mixed assemblage. At the segment 17 crossing, one large tree is found within the survey corridor near the stream crossing site, and several small to medium-sized trees and saplings are found within the riparian zone, in the vicinity of poles 107 and 108. Northern California black walnut is designated 1B, rare and endangered in California and elsewhere, in the California Native Plant Society's inventory (Tibor 2001).

*Juglans hindsii* can be distinguished readily from two introduced walnuts found occasionally within Sonoma County. Black walnut (*Juglans nigra*) leaves are more pubescent on their lower surfaces and the nuts are irregularly ridged, whereas those of *Juglans hindsii* are almost smooth. The English walnut (*Juglans regia*) has fewer (7-9), larger, leaflets, which are smooth along the margins (entire); Northern California black walnut has more leaflets (11-19), which are toothed along the margins (serrate).

Northern California black walnut is a fairly common tree within the riparian vegetation of the middle reaches of Sonoma Creek. It is not possible to determine with certainty whether any of these trees, including those found within the study area, are naturally occurring trees. Best and others (1996) note that it is debatable whether this species is native to Sonoma County, although they note that extensive stands of large trees are found along the Russian River in the vicinity of Guerneville. The edible nuts were widely traded by Native Americans, and, therefore, large trees appearing to be native and growing in natural habitat may be the result of early trade in nuts between local tribes and those of Napa, eastern Contra Costa or Sacramento counties, where the species is known to be native. However, walnuts are also transported by birds and other wildlife, leaving open the possibility that trees within the study area could have resulted from natural dispersal from native groves in eastern Napa County. In the absence of studies beyond

---

the scope of this project, it cannot be determined with certainty whether the trees within the study area are naturally occurring or the result of human activities.

Potential impacts to Northern California black walnut are discussed in Section 4.1.1.

### **3.2.2 *Navarretia cotulifolia* (cotula or broad-leaved navarretia)**

*Cotula navarretia* is an annual forb with cream-colored flowers in the Polemoniaceae (Phlox Family) that is found in chaparral, cismontane woodlands, and especially in moist grasslands, sometimes with serpentine influence, from San Benito County to Mendocino, Colusa and Butte counties (Tibor 2001). One population was found within the proposed project area, in segment 1, on the lower east-facing slope of Sonoma Mountain, in grazed Non-native Grassland with adobe soil (see Figure 1), between and in the vicinity of poles 58, 59 and 60. The California Native Plant Society's Inventory (Tibor 2001) places *cotula navarretia* on List 4, a "watch" list of plants that may become endangered if additional habitat is lost. The project area population was estimated to consist of about 30,000 individuals during a focused survey conducted in June 2004. The population within the project area is significant because it is the only known location for this species in the Sonoma Valley area and in all of southern Sonoma County. In Sonoma County, only one other location for this species is currently known (Best et al. 1996).

*Navarretia cotulifolia* is one of 13 or possibly 14 taxa of *navarretias* that occur in Sonoma County, including three with special-status (Best et al. 1996). *Navarretia cotulifolia* is the only *navarretia* with the combination of four cream-colored corolla lobes, two stigma lobes and large leaves with lobes broader than 1 mm.

The CalFlora database (2003) lists 87 citations for *Navarretia cotulifolia*, statewide, including several specimen-based records from Sonoma County. *A Flora of Sonoma County* (Best et al. 1996) lists several locations in the Santa Rosa and Laguna de Santa Rosa areas, although most of these are 25 or more years old and are from areas that have since been developed. The Jepson Herbarium has one relatively recent specimen from Sonoma County, collected in 1986 at the California Department of Fish and Game's Todd Road Ecological Reserve, near the Laguna de Santa Rosa. No locations in the Sonoma Valley (Sonoma Creek watershed) or anywhere in southern Sonoma County are noted by any of these sources. The CNDDDB does not include information on specific locations for plants ranked as CNPS 4.

The population of *Navarretia cotulifolia* in the project area is located in non-native annual grassland that was grazed by cattle in 2002 to 2004, during surveys conducted for this project. In June 2004 the population consisted of approximately 30,000 plants, in dense, interconnected colonies. A voucher specimen was collected. The area where the plants are found has dark gray "shrink-swell" clay soil and is dominated by annual grasses and forbs indicative of good habitat quality, including California oatgrass, blue

---

larkspur (*Delphinium variegatum*), short-leaved hesperevax (*Hesperrevax sparsiflora*) and goldfields (*Lasthenia californica*).

Potential impacts and mitigations for cotula navarretia are discussed in Section 4.1.2.

### **3.2.3 *Ranunculus lobbii* (Lobb's aquatic buttercup)**

Lobb's aquatic buttercup is an aquatic annual herb in the Buttercup Family (Ranunculaceae) with floating and submerged leaves, and small white flowers that float on the water surface when in bloom. Lobb's aquatic buttercup is endemic to vernal pools and other seasonal wetlands in coastal areas from Santa Clara County to Mendocino County and in Oregon. It is included on List 4, a "watch" list, in the CNPS Inventory (Tibor 2001). One population of *Ranunculus lobbii* was found within the proposed project area, in a large vernal pool in segment 1, about 0.1 mile east of the Rodgers Creek crossing.

Lobb's aquatic buttercup can be distinguished from a very similar white-flowered species, *Ranunculus aquatilis* var. *capillaceus*, which also occurs in the project area, by several features. *R. lobbii* is an annual, whereas *R. aquatilis* is a perennial. *R. lobbii* has floating, 3-lobed leaves with truncate lobes, whereas most of the leaves of *R. aquatilis* are finely divided and submerged, and the floating leaves have more pointed lobes. In the flower at anthesis (when stamens are releasing pollen), the stigmas of *R. lobbii* are significantly longer and thinner than those of *R. aquatilis*. In the fruit, *R. lobbii* produces 2-6 follicles per flower and *R. aquatilis* produces 15 or more. In addition, the stems of *R. aquatilis* are thicker and coarser, while those of *R. lobbii* are thinner and more delicate. In the field, the shape of the floating leaves and the length and thickness of the stigmas are the most reliable features for separating these two. In addition to morphological features, Lobb's aquatic buttercup is found only in vernal pools and other seasonal wetlands, whereas the more common aquatic buttercup (*R. aquatilis*) can be found in seasonal wetlands, but is more common in shallow ponds and slowly moving freshwater streams. Lobb's aquatic buttercup flowers earlier in the season, February to April, than the common aquatic buttercup, which flowers April to June.

Several additional locations for Lobb's aquatic buttercup are known in Sonoma County, where it is a fairly common component of the vernal pools of the Santa Rosa Plain. *A Flora of Sonoma County* (Best et al. 1996) lists 17 locations for this species, including the Todd Road Ecological Reserve, the Laguna de Santa Rosa, Fairfield Osborn Preserve (approximately 2 miles from the project area), and Sonoma County Regional Park. The species has not been seen at the Sonoma County Regional Park in the last five years, however, and many other populations on the Santa Rosa Plain have been extirpated by development within the last 15 years. The CalFlora database (2003) lists 10 specimen-based records for Lobb's aquatic buttercup in Sonoma County. The Jepson Herbarium has 11 specimens from Sonoma County.

---

The population of Lobb's aquatic buttercup in segment 1 was found in a large vernal pool in grazed annual grassland just east of the Rodgers Creek crossing. The growth form of this species makes it difficult to estimate numbers of individuals. The plants covered a crescent-shaped portion of the vernal pool approximately 80 feet by 20 feet in size, about one-fourth of the total area covered by the vernal pool. The pool showed substantial trampling impacts by cattle that were grazing in the area at the time of the protocol-level surveys.

Potential impacts and mitigations for Lobb's aquatic buttercup are discussed in Section 4.1.3.

---

## 4.0 Conclusions and Recommendations

---

### 4.1 Special-status Plant Recommendations

Three occurrences of special-status plants could be adversely affected by construction of the proposed project, including: one occurrence each of Northern California black walnut, *cotula navarretia* and Lobb's aquatic buttercup. Discussion of potential impacts of the proposed project and recommendations for reducing potential impacts to a level of insignificance are given below. With implementation of the recommended avoidance and minimization measures, all impacts would be less than significant.

All of the alternative routes (1 through 4) include a crossing of Sonoma Creek in an area where Northern California black walnut trees are located. Potential impacts to these trees are possible from construction and maintenance activities, however, these impacts would be minimal and would not be considered significant in any event because the native status of the trees has not been confirmed.

Alternatives 1 and 2 also utilize segment 1, so potential impacts to *cotula navarretia* and Lobb's aquatic buttercup in segment 1 would likely be identical to those discussed below. Alternatives 3 and 4 do not utilize segment 1, so these alternatives would not affect the *cotula navarretia* and Lobb's aquatic buttercup populations found in that segment. Protocol-level surveys have not been completed for some of the segments utilized in Alternatives 1 and 2, or for any of the segments utilized in Alternatives 3 and 4, with the exception of segment 4. Since some of these unsurveyed segments contain potential habitat for special-status plants, further surveys would need to be completed to provide a comprehensive description of the potential impacts to special-status plants from use of the alternatives.

The following discussion covers potential impacts and proposed mitigations for the proposed project only.

#### 4.1.1 *Juglans hindsii* (Northern California black walnut)

Northern California black walnut is found in North Coast Riparian Forest where segment 17 crosses Sonoma Creek. This population would not be significantly affected by the proposed project. A few small saplings of Northern California black walnut on the banks of Sonoma Creek will likely be removed during activities associated with the replacement of pole 107, such as construction of an access road. Loss of these trees is considered to be a less-than-significant impact because their native status is unconfirmed and, at most, only a few saplings would be removed. Tree trimming of large walnut trees outside the riparian zone during construction or maintenance would not be a significant impact

---

because tree loss would be unlikely, Northern California black walnut trees are a dominant species within the riparian forest along Sonoma Creek, their native status is unconfirmed, and local ordinances permit such trimming.

#### **4.1.2 *Navarretia cotulifolia* (cotula or broad-leaved navarretia)**

One large population of cotula navarretia is found in grazed Non-native Grassland between and in the vicinity of poles 58, 59 and 60 in segment 1. This population was found within the 200-foot-wide survey corridor in June 2003. Construction details at that time indicated all potential impacts to the population would be avoided. Subsequent changes in construction details, especially the proposed location of a new access road, necessitated additional surveys in 2004 to determine the total extent of the population, beyond the originally authorized 200-foot-wide survey corridor. Expanded focused surveys in June 2004 found that this population of cotula navarretia extends beyond the 200-foot-wide corridor that was surveyed during protocol-level surveys in 2003. A new route for the proposed new permanent access road was located that minimizes the possibility of direct impacts to the entire population.

Direct and indirect impacts from the proposed project to cotula navarretia and its habitat are unlikely but possible from activities associated with the removal of poles 58 and 59, and construction of a new permanent access road in the vicinity of poles 58, 59 and 60. Surveys in June 2003 and June 2004 located a large population of cotula navarretia in the small valley in which poles 58 and 59 are located. All of the plants are north of an ephemeral drainage that flows through the bottom of the valley. Construction of the proposed temporary access road to pole 59 will likely not directly affect any of the plants, but erosion on the steep hillside on which the temporary access road will be constructed could cause erosion in the plant's habitat downslope. The proposed route of the new permanent access road from the vicinity of pole 60 to the vicinity of pole 57 has been rerouted to the ridgetop north of the small valley to avoid direct impacts to cotula navarretia. At the west end of the ridge, a cut will be required on the steep slope below the ridge to connect the new road segment to the existing ranch road. Erosion from the cut could affect potential habitat for cotula navarretia on the lower slope, although this is unlikely. No direct impacts from road construction are expected based on the plant's distribution in June 2004.

To reduce impacts to cotula navarretia from the proposed project to a level of insignificance, the following mitigation measures are recommended:

- Develop and utilize access routes to poles 58, 59 and 60 that, to the extent feasible, avoid direct impacts to special-status plants and their habitats.
- Habitat occupied by cotula navarretia will be protected by establishing an exclusion zone around the perimeter of the habitat where feasible. The

---

exclusion zone will be staked and flagged in the field prior to construction by a trained professional botanist. All new poles and temporary use areas (i.e., staging areas, cable pulls, access roads, etc.) will be located outside of this exclusion zone.

- During all phases of construction, the outer edge of the exclusion zone will be marked in the field with temporary fencing.
- Restrict construction personnel and equipment from entering the fenced protected area (exclusion zone and plant habitat) for any purpose.
- Restrict construction activities to the dry season (June to October), or, if this is not feasible, use appropriate erosion control measures.
- Monitor the protected areas, using a trained professional botanist, during construction and for one year following construction to assess the effectiveness of protection measures.
- Mitigate any direct or indirect impacts (e.g., weed invasion, erosion impacts) through appropriate weed control and erosion control measures.

#### **4.1.3 *Ranunculus lobbii* (Lobb's aquatic buttercup)**

The vernal pool in segment 1 containing Lobb's aquatic buttercup is located within the 200-foot-wide survey corridor of the proposed project route. The vernal pool is located within a shallow depression surrounded by low hills that is approximately 0.1 mile north of the segment 1 Rodgers Creek crossing site. Existing pole 43 would be replaced 130 feet to the east by a new pole and existing pole 44 would be removed if the proposed route is utilized. The proposed access roads to these poles include existing ranch roads and short sections of newly constructed temporary roads. All of these roads avoid direct impacts to the vernal pool. Potential impacts to Lobb's aquatic buttercup plants and their vernal pool habitat could result from construction-related activities that cause disturbances to topography, soils, hydrology or vegetation within or adjacent to vernal pool habitat occupied by the plants. Impacts to the vernal pool and Lobb's aquatic buttercup can be minimized or avoided if the following mitigations are implemented:

- Develop and utilize access routes to poles 43 and 44 that, to the extent feasible, avoid direct impacts to special-status plants and their habitats.
- Habitat occupied by Lobb's aquatic buttercup will be protected by establishing an exclusion zone around the perimeter of the habitat where feasible. The exclusion zone will be staked and flagged in the field prior to construction by a trained professional botanist. All new poles and temporary

---

use areas (i.e., staging areas, cable pulls, access roads, etc.) will be located outside of this exclusion zone.

- During all phases of construction, the outer edge of the exclusion zone will be marked in the field with temporary fencing.
- Restrict construction personnel and equipment from entering the fenced protected area (exclusion zone and plant habitat) for any purpose.
- Restrict construction activities to the dry season (June to October), or, if this is not feasible, use appropriate erosion control measures.
- Monitor the protected areas, using a trained professional botanist, during construction and for one year following construction to assess the effectiveness of protection measures.
- Mitigate any direct or indirect impacts (e.g., weed invasion, erosion impacts) through appropriate weed control and erosion control measures.

---

## 5.0 References and Personal Communications

---

Best, C., J. T. Howell, W. Knight, I. Knight and M. Wells. 1996. *A flora of Sonoma County*. California Native Plant Society, Sacramento, California.

California Exotic Pest Plant Council<sup>2</sup>. 1999. Exotic pest plants of greatest ecological concern in California. Unpublished list.

CalFlora: Information on California plants for education, research, conservation. 2003. Berkeley, California. The CalFlora Database: <http://www.calflora.org/>

California Department of Fish and Game (CDFG)

2000 Guidelines for assessing the effects of proposed projects on rare, threatened, and endangered plants and natural communities. May 8, 2000.

2002a Special Plants List. California Natural Diversity Database. January.

2002b Natural Diversity Database (RareFind 2; CNDDDB). Electronic database. Sacramento, California. Database search for the following 7.5-minute USGS quadrangles: Santa Rosa, Kenwood, Rutherford, Cotati, Glen Ellen, Sonoma, Petaluma, Petaluma River, Sears Point.

2003a Special Plants List. California Natural Diversity Database. January.

2003b State and federally listed endangered, threatened and rare plants of California.

CDFG. 2004. Natural Diversity Database (RareFind 3; CNDDDB). Electronic database. Sacramento, California. August.

California Department of Food and Agriculture. 2003. List of noxious weeds.

Elzinga, C.L., D.W. Salzer and J.W. Willoughby, no date. *Measuring and monitoring plant populations*. Bureau of Land Management Technical Reference 1730-1. BLM/RS/ST-98/005+1730.

Hickman, J. 1993. *The Jepson Manual*. University of California Press, Berkeley.

---

<sup>2</sup> Organization name changed to California Invasive Plant Council (Cal-IPC) in 2003.

---

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game. Unpublished report.

Howald, A.M. 2000. Vascular plant list for Bartholomew Park, Sonoma, Sonoma County. Unpublished list.

Howald, A.M. 2002. Vascular plant list for the Van Hoosear Wildflower Preserve, Sonoma, Sonoma County. Unpublished list.

Munz, P. A. and D. D. Keck. 1968. *A California Flora*. University of California Press, Berkeley.

Sawyer, J. and T. Keeler-Wolf. 1995. *A manual of California vegetation*. California Native Plant Society, Sacramento.

Tibor, D. 2001. *Inventory of rare and endangered plants of California*. California Native Plant Society. Special Publication #1, Sixth Edition.

#### U.S. Fish and Wildlife Service

1996 Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants. USFWS, September 23, 1996.

2002 List of federal candidates for listing, available at:  
<http://ecos.fws.gov/servlet/TESSSpeciesReport/generate>

2003 List of Federal Species of Concern, Sacramento Office.

---

## **Appendix A**

### **List of Vascular Plants Found within the Study Area**

**PG&E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives  
Areas**



<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<b>FERNS AND FERN ALLIES</b>	
AZOLLACEAE	
<i>Azolla filiculoides</i>	mosquito fern
DENNSTAEDTIACEAE	
<i>Pteridium aquilinum</i>	bracken fern
DRYOPTERIDACEAE	
<i>Dryopteris arguta</i>	coastal wood fern
<i>Polystichum munitum</i>	sword fern
EQUISETACEAE	
<i>Equisetum telmateia ssp. braunii</i>	giant horsetail
POLYPODIACEAE	
<i>Polypodium californicum</i>	California polypody
PTERIDACEAE	
<i>Adiantum jordanii</i>	California maiden hair fern
<i>Pentagramma triangularis</i>	goldenback fern
SELAGINELLACEAE	
<i>Selaginella bigelovii</i>	Bigelow's spike-moss
<b>CONIFERS</b>	
PINACEAE	
<i>Pseudotsuga menziesii</i>	Douglas fir
TAXODIACEAE	
<i>Sequoia sempervirens</i>	coast redwood
<b>FLOWERING PLANTS - DICOTS</b>	
ACERACEAE	
<i>Acer macrophyllum</i>	big-leaf maple

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<b>ANACARDIACEAE</b>	
<i>Toxicodendron diversilobum</i>	poison oak
<b>APIACEAE</b>	
<i>Conium maculatum</i> *	poison hemlock
<i>Eryngium aristulatum</i>	Jepson's button-celery
<i>Foeniculum vulgare</i> *NW	fennel
<i>Lomatium utriculatum</i>	bladder parsnip
<i>Osmorhiza chilensis</i>	sweet cicely
<i>Sanicula bipinnatifida</i>	purple sanicle
<i>Sanicula crassicaulis</i>	gamble weed
<i>Scandix pecten-veneris</i> *	Venus's needle
<i>Torilis arvensis</i> *	hedge-parsley
<i>Torilis nodosus</i> *	hedge-parsley
<b>APOCYNACEAE</b>	
<i>Vinca major</i> *NW	periwinkle
<b>ARISTOLOCHIACEAE</b>	
<i>Aristolochia californica</i>	California pipevine
<b>ASCLEPIADACEAE</b>	
<i>Asclepias fascicularis</i>	narrow-leaf milkweed
<b>ASTERACEAE</b>	
<i>Achillea millefolium</i>	white yarrow
<i>Achyrachaena mollis</i>	blow-wives
<i>Agoseris grandiflora</i>	mountain dandelion
<i>Agoseris heterophylla</i> var. <i>heterophylla</i>	annual mountain dandelion
<i>Artemisia douglasiana</i>	mugwort
<i>Aster radulinus</i>	broad-leaved aster
<i>Baccharis pilularis</i>	coyote brush
<i>Blennosperma nanum</i>	common blennosperma
<i>Carduus pycnocephalus</i> *NW	Italian thistle
<i>Centaurea calcitrapa</i> *	purple starthistle
<i>Centaurea solstitialis</i> *	yellow starthistle
<i>Chamomilla suaveolens</i> *	pineapple weed
<i>Cichorium intybus</i> *	chicory
<i>Cirsium vulgare</i> *NW	bull thistle
<i>Conyza canadensis</i> *	horseweed
<i>Cotula coronopifolia</i> *	brass buttons

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<i>Filago californica</i>	California fluffweed
<i>Helianthella californica</i>	California helianthella
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	hayfield tarplant
<i>Hemizonia congesta</i> ssp. <i>luzulifolia</i>	hayfield tarplant
<i>Hemizonia fitchii</i>	Fitch's spikeweed
<i>Hesperevax sparsiflora</i> var. <i>sparsiflora</i>	short-leaved evax
<i>Hypochaeris glabra</i> *	smooth cat's ear
<i>Hypochaeris radicata</i> *	hairy cat's ear
<i>Lactuca serriola</i> *	prickly lettuce
<i>Lasthenia californica</i>	California goldfields
<i>Lasthenia glaberrima</i>	vernal pool goldfields
<i>Layia chrysanthemoides</i> ssp. <i>chrysanthemoides</i>	smooth tidy-tips
<i>Gnaphalium palustre</i>	lowland cudweed
<i>Madia sativa</i>	coast tarweed
<i>Micropus californicus</i>	California cottonweed
<i>Microseris douglasii</i>	douglas' microseris
<i>Picris echioides</i> *	bristly ox-tongue
<i>Psilocarphus oregonus</i>	Oregon woolly marbles
<i>Rhagadiolus stellatus</i> *	rhagadiolus
<i>Senecio vulgaris</i> *	common groundsel
<i>Silybum marianum</i> *	milk thistle
<i>Soliva sessilis</i> *	soliva
<i>Sonchus asper</i> *	prickly sow thistle
<i>Tragopogon porrifolius</i> *	salsify
<i>Wyethia angustifolia</i>	narrow-leaved mule ears
<i>Xanthium strumarium</i>	cocklebur
<b>BETULACEAE</b>	
<i>Alnus rhombifolia</i>	white alder
<i>Corylus cornuta</i> var. <i>californica</i>	California hazelnut
<b>BORAGINACEAE</b>	
<i>Amsinckia eastwoodiae</i>	Eastwood's fiddleneck
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	common fiddleneck
<i>Amsinckia menziesii</i> var. <i>menziesii</i>	Menzies's fiddleneck
<i>Plagiobothrys bracteatus</i>	bracted popcorn flower
<i>Plagiobothrys fulvus</i>	fulvous popcorn flower
<i>Plagiobothrys nothofulvus</i>	rusty popcorn flower

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<b>BRASSICACEAE</b>	
<i>Barbarea orthoceras</i>	American wintercress
<i>Brassica nigra</i> *	black mustard
<i>Brassica rapa</i> *	field mustard
<i>Capsella bursa-pastoris</i> *	shepherd's purse
<i>Cardamine californica</i>	milk maids
<i>Cardamine oligosperma</i>	bittercress
<i>Hirshfeldia incana</i> *	summer mustard
<i>Lepidium nitidum</i>	shining peppergrass
<i>Lepidium strictum</i> *	wayside peppergrass
<i>Rorippa nasturtium-aquaticum</i> *	watercress
<i>Raphanus raphanistrum</i> *	jointed charlock
<i>Raphanus sativus</i> *	wild radish
<b>CALLITRICHACEAE</b>	
<i>Callitriche heterophylla</i> var. <i>bolanderi</i>	Bolander's water-starwort
<b>CAMPANULACEAE</b>	
<i>Downingia concolor</i>	common downingia
<b>CAPRIFOLIACEAE</b>	
<i>Lonicera hispidula</i> var. <i>vacillans</i>	honeysuckle
<i>Sambucus mexicana</i>	blue elderberry
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	snowberry
<i>Symphoricarpos mollis</i>	creeping snowberry
<b>CARYOPHYLLACEAE</b>	
<i>Cerastium glomeratum</i> *	mouse-ear chickweed
<i>Spergula arvensis</i> *	starwort
<i>Spergularia rubra</i>	purple sand spurry
<i>Stellaria media</i> *	common chickweed
<b>CHENOPODIACEAE</b>	
<i>Atriplex triangularis</i>	spearscale
<b>CONVOLVULACEAE</b>	
<i>Convolvulus arvensis</i> *	bindweed
<b>CRASSULACEAE</b>	
<i>Crassula aquatica</i>	pygmy-weed
<i>Crassula connata</i>	sand pygmy-weed

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<i>Crassula tillaea</i>	Mediterranean pygmy-weed
<i>Dudleya cymosa</i>	rock lettuce
ERICACEAE	
<i>Arctostaphylos manzanita</i> ssp. <i>manzanita</i>	common manzanita
<i>Arbutus menziesii</i>	Pacific madrone
EUPHORBIACEAE	
<i>Chamaesyce serpyllifolia</i> ssp. <i>hirtula</i>	
<i>Euphoria oblongata</i> *NW	oblong spurge
FABACEAE	
<i>Lathyrus vestitus</i>	hillside pea
<i>Lotus corniculatus</i> *	bird's foot trefoil
<i>Lotus humistratus</i>	colchita
<i>Lotus micranthus</i>	hill lotus
<i>Lotus purshianus</i>	Spanish clover
<i>Lotus wrangelianus</i>	California lotus
<i>Lupinus bicolor</i>	miniature lupine
<i>Lupinus formosus</i> var. <i>robustus</i>	summer lupine
<i>Lupinus nanus</i>	valley sky lupine
<i>Medicago polymorpha</i> *	California burclover
<i>Melilotus indicus</i> *	yellow sweet clover
<i>Trifolium bifidum</i>	Pinole clover
<i>Trifolium campestre</i> *	hop clover
<i>Trifolium depauperatum</i>	sac clover
<i>Trifolium dubium</i> *	shamrock clover
<i>Trifolium fragiferum</i> *	strawberry clover
<i>Trifolium glomeratum</i>	clustered clover
<i>Trifolium gracilentum</i>	pinpoint clover
<i>Trifolium hirtum</i> *	rose clover
<i>Trifolium incarnatum</i> *	crimson clover
<i>Trifolium microdon</i>	cupcake clover
<i>Trifolium oliganthum</i>	few-flowered clover
<i>Trifolium striatum</i> *	striped clover
<i>Trifolium subterraneum</i> *	subterranean clover
<i>Trifolium variegatum</i>	white tip clover
<i>Trifolium willdenovii</i>	tomcat clover
<i>Vicia sativa</i> var. <i>nigra</i> *	spring vetch
<i>Vicia sativa</i> var. <i>sativa</i> *	spring vetch
<i>Vicia villosa</i> var. <i>varia</i> *	winter vetch

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
FAGACEAE	
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	coast live oak
<i>Quercus douglasii</i>	blue oak
<i>Quercus garryana</i> var. <i>garryana</i>	Oregon oak
<i>Quercus lobata</i>	valley oak
<i>Quercus kelloggii</i>	California black oak
GERANIACEAE	
<i>Erodium botrys</i> *	broadleaf filaree
<i>Erodium cicutarium</i> *	red-stemmed filaree
<i>Geranium dissectum</i> *	cranesbill
<i>Geranium molle</i> *	woodland geranium
<i>Geranium robertianum</i> *	red robin, herb Robert
GROSSULARIACEAE	
<i>Ribes menziesii</i>	canyon gooseberry
HIPPOCASTANACEAE	
<i>Aesculus californica</i>	California buckeye
HYDROPHYLLACEAE	
<i>Nemophila heterophylla</i>	canyon nemophila
<i>Nemophila menziesii</i> ssp. <i>menziesii</i>	baby blue-eyes
<i>Phacelia distans</i>	wild-heliotrope
JUGLANDACEAE	
<i>Juglans hindsii</i>	Northern California black walnut
LAMIACEAE	
<i>Marrubium vulgare</i> *	horehound
<i>Mentha pulegium</i> *NW	pennyroyal
<i>Stachys ajugoides</i>	hedge-nettle
LAURACEAE	
<i>Umbellularia californica</i>	California bay
LIMNANTHACEAE	
<i>Limnanthes douglasii</i> ssp. <i>douglasii</i>	common meadowfoam

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
LINACEAE	
<i>Linum bienne</i> *	blue flax
LYTHRACEAE	
<i>Lythrum hyssopifolium</i> *	loosetrife
MALVACEAE	
<i>Malva nicaeensis</i> *	bull mallow
<i>Malvella leprosa</i>	alkali mallow
MORACEAE	
<i>Maclura pomifera</i> *	osage orange
MYRTACEAE	
<i>Eucalyptus camaldulensis</i> *	red gum
OLEACEAE	
<i>Fraxinus latifolia</i>	Oregon ash
<i>Olea europea</i> *	olive
ONAGRACEAE	
<i>Camissonia ovata</i>	sun cup
<i>Clarkia sp.</i>	farewell-to-spring
<i>Epilobium brachycarpum</i>	annual fireweed
<i>Epilobium ciliatum</i>	common willow-herb
<i>Ludwigia peploides</i> ssp. <i>peploides</i>	water primrose
OXALIDACEAE	
<i>Oxalis pes-caprae</i> *	bermuda buttercup
PAPAVERACEAE	
<i>Eschscholzia californica</i>	California poppy
PLANTAGINACEAE	
<i>Plantago erecta</i>	California plantain
<i>Plantago lanceolata</i> *	English plantain
<i>Plantago major</i> *	common plantain
POLEMONIACEAE	
<i>Gilia tricolor</i>	bird's eye gilia
<i>Linanthus androsaceus</i>	shower gilia

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<i>Navarretia cotulifolia</i>	cotula navarretia
<i>Navarretia intertexta</i>	needle-leaved navarretia
<i>Phlox gracilis</i>	slender phlox
POLYGONACEAE	
<i>Polygonum lapathifolium</i>	willow weed
<i>Polygonum punctatum</i>	water smartweed
<i>Rumex acetosella</i> *	sheep sorrel
<i>Rumex conglomeratus</i> *	clustered dock
<i>Rumex crispus</i> *	curly dock
<i>Rumex pulcher</i> *	fiddle dock
PORTULACACEAE	
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Lewisia rediviva</i>	bitterroot
<i>Montia fontana</i>	water chickweed
PRIMULACEAE	
<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Dodecatheon hendersonii</i>	Henderson's shooting star
<i>Trientalis latifolia</i>	starflower
RANUNCULACEAE	
<i>Delphinium variegatum</i>	blue larkspur
<i>Ranunculus aquatilis</i>	water buttercup
<i>Ranunculus californicus</i>	California buttercup
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup
<i>Ranunculus muricatus</i> *	prickle-fruited buttercup
<i>Ranunculus orthorhynchus</i> var. <i>bloomeri</i>	bloomer's buttercup
RHAMNACEAE	
<i>Rhamnus californica</i>	California coffeeberry
ROSACEAE	
<i>Adenostoma fasciculatum</i>	chamise
<i>Aphanes occidentalis</i>	western ladies' mantle
<i>Fragaria vesca</i>	wood strawberry
<i>Heteromeles arbutifolia</i>	toyon
<i>Holodiscus discolor</i>	oceanspray
<i>Potentilla glandulosa</i>	sticky cinquefoil
<i>Prunus</i> sp.	

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<i>Rosa</i> sp.	wild rose
<i>Rubus discolor</i> *NW	Himalayan blackberry
<i>Rubus ursinus</i>	California blackberry
RUBIACEAE	
<i>Galium aparine</i>	goose-grass
<i>Galium parisiense</i> *	wall bedstraw
<i>Galium porrigens</i>	climbing bedstraw
<i>Sherardia arvensis</i> *	field madder
SALICACEAE	
<i>Populus fremontii</i>	Fremont cottonwood
<i>Salix exigua</i>	sandbar willow
<i>Salix laevigata</i>	red willow
<i>Salix lucida</i> ssp. <i>lasiandra</i>	shining willow
SAXIFRAGACEAE	
<i>Lithofragma affine</i>	woodland star
SCROPHULARIACEAE	
<i>Bellardia trixago</i> *	Mediterranean linseed
<i>Castilleja attenuata</i>	valley tassels
<i>Castilleja densiflora</i>	owl's clover
<i>Collinsia heterophylla</i>	Chinese houses
<i>Collinsia sparsiflora</i> var. <i>arvensis</i>	giant blue-eyed Mary
<i>Kickxia spuria</i> *	
<i>Mimulus aurantiacus</i>	bush monkeyflower
<i>Mimulus guttatus</i>	common monkeyflower
<i>Parentucellia viscosa</i> *	yellow glandweed
<i>Pedicularis densiflora</i>	Indian warrior
<i>Scrophularia californica</i>	California figwort
<i>Triphysaria eriantha</i> ssp. <i>eriantha</i>	butter-and-eggs
<i>Triphysaria pusilla</i>	dwarf owl's clover
<i>Triphysaria versicolor</i> ssp. <i>faucibarbata</i>	yellow owl's clover
<i>Triphysaria versicolor</i> ssp. <i>versicolor</i>	yellow owl's clover
<i>Veronica anagallis-aquatica</i> *	water speedwell
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	purslane speedwell
SIMAROUBACEAE	
<i>Ailanthus altissimus</i> *NW	tree of heaven

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
SOLANCEAE	
<i>Solanum</i> sp.	nightshade
TRAPAEOLACEAE	
<i>Tropaeolum majus</i> *	garden nasturtium
URTICACEAE	
<i>Urtica dioica</i>	nettle
VALERIANACEAE	
<i>Plectritis macrocera</i>	long-spurred plectritis
VIOLACEAE	
<i>Viola pedunculata</i>	johnny-jump-up
VISCACEAE	
<i>Phoradendron villosum</i>	oak mistletoe
ZYGOPHYLLACEAE	
<i>Tribulus terrestris</i> *NW	puncture vine
<b>FLOWERING PLANTS – MONOCOTS</b>	
ALISMATACEAE	
<i>Alisma lanceolatum</i> *	lance-leaved water-plantain
CYPERACEAE	
<i>Carex nudata</i>	torrent sedge
<i>Carex</i> sp.	sedge
<i>Cyperus eragrostis</i>	umbrella sedge
<i>Eleocharis acicularis</i>	small spikerush
<i>Eleocharis macrostachya</i>	pale spikerush
<i>Scirpus acutus</i> var. <i>occidentalis</i>	common tule
IRIDACEAE	
<i>Iris macrosiphon</i>	ground iris
<i>Romulea rosea</i> var. <i>australis</i> *	satin flower
<i>Sisyrinchium bellum</i>	blue-eyed grass

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<b>JUNCACEAE</b>	
<i>Juncus bufonius</i>	toad rush
<i>Juncus effusus</i>	Pacific bog rush
<i>Junus occidentalis</i>	western rush
<i>Juncus tenuis</i>	slender rush
<i>Juncus xiphioides</i>	iris-leaved rush
<i>Luzula comosa</i>	coastal wood rush
<b>JUNCAGINACEAE</b>	
<i>Lilaea scillioides</i>	flowering quillwort
<b>LEMNACEAE</b>	
<i>Lemna sp.</i>	duckweed
<b>LILIACEAE</b>	
<i>Brodiaea elegans</i>	elegant brodiaea
<i>Calochortus luteus</i>	yellow mariposa
<i>Chlorogalum pomeridianum</i>	soap plant
<i>Dichelostemma capitatum ssp. capitatum</i>	blue dicks
<i>Dichelostemma congestum</i>	ookow
<i>Fritillaria affinis</i>	checker lily
<i>Smilacina racemosa</i>	false Solomon's seal
<i>Trillium sp.</i>	wake robin
<i>Triteleia hyacinthina</i>	white brodiaea
<i>Triteleia laxa</i>	lthuriel's spear
<i>Zigadenus fremontii</i>	star lily
<b>POACEAE</b>	
<i>Aira caryophyllea*</i>	shiver grass
<i>Alopecurus saccatus</i>	saccate foxtail
<i>Avena barbata*</i>	slender wild oat
<i>Brachypodium distachyon*</i>	false brome
<i>Briza maxima*</i>	quaking grass
<i>Briza minor*</i>	little quaking grass
<i>Bromus carinatus</i>	California brome
<i>Bromus diandrus*</i>	rippgut brome
<i>Bromus hordeaceus*</i>	soft chess
<i>Bromus laevipes</i>	chinook brome
<i>Bromus madritensis ssp. rubens*</i>	foxtail chess
<i>Cynodon dactylon*</i>	bermuda grass
<i>Cynosurus echinatus*</i>	hedgehog dogtail

<b>PG&amp;E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives Area</b>	
<b>Scientific Name<sup>1</sup></b>	<b>Common Name</b>
<i>Dactylis glomerata</i> *	orchard grass
<i>Danthonia californica</i> var. <i>californica</i>	California oatgrass
<i>Elymus glaucus</i> ssp. <i>glaucus</i>	blue wildrye
<i>Festuca californica</i>	California fescue
<i>Glyceria occidentalis</i>	western mannagrass
<i>Hordeum brachyantherum</i> ssp. <i>brachyantherum</i>	meadow barley
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i> *	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail barley
<i>Hordeum vulgare</i> *	barley
<i>Lamarckia aurea</i> *	goldentop
<i>Leersia oryzoides</i> *	rice cutgrass
<i>Lolium multiflorum</i> *	italian ryegrass
<i>Lolium perrine</i> *	perennial ryegrass
<i>Melica californica</i>	california melic
<i>Nassella pulchra</i>	purple needlegrass
<i>Paspalum dilatatum</i> *	dallis grass
<i>Phalaris aquatica</i> *	Harding grass
<i>Phleum pratense</i> *	cultivated timothy
<i>Pleuropogon californicus</i>	semaphore grass
<i>Poa annua</i> *	annual bluegrass
<i>Polypogon monspeliensis</i> *	rabbitfoot grass
<i>Taeniatherum caput-medusae</i> *	medusahead
<i>Vulpia myuros</i>	fescue
<i>Vulpia octoflora</i> *	six-weeks fescue
<b>POTAMOGETONACEAE</b>	
<i>Potamogeton</i> sp.	floating pondweed
<b>TYPHACEAE</b>	
<i>Typha</i> sp.	cat-tail

Notes:

1. Scientific names mainly from Hickman 1993.

\* = not native to California

NW = noxious weed listed by California Invasive Plant Council and/or California Dept. of Food and Agriculture.

---

## **Appendix B**

### **California Natural Diversity Database Field Survey Forms**

**PG&E Lakeville – Sonoma 115 kV Transmission Line Project and Alternatives  
Areas**



# California Native Species Field Survey Form

Mail to:  
 Natural Diversity Database  
 California Department of Fish and Game  
 1807 13<sup>th</sup> Street, Suite 202  
 Sacramento, CA 95814

*For Office Use Only*

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

**Date of Field Work:** 9 / 12 / 2003  
month (mm) date (dd) year (yyyy)

**Scientific Name:** *Juglans hindsii* — |  
**Common Name:** Northern California black walnut

**Species Found?**   \_\_\_\_\_  
yes no If not, why?

Total No. Individuals 10 Subsequent Visit?  yes  no

**Is this an existing NDDDB occurrence?** \_\_\_\_\_  no  unk.  
Yes, Occ. #

Collection? If yes: \_\_\_\_\_  
Number Museum / Herbarium

**Reporter:** Ann Howald  
**Address:** 210 Chestnut Avenue  
 Sonoma, CA 95476  
**Email Address:** annhowald@vom.com  
**Phone:** (707) 939-0775

**Plant Information**

Phenology: \_\_\_\_\_  
% vegetative % flowering % fruiting

100.00  
% fruiting

**Animal Information**

Age Structure: \_\_\_\_\_  
# adults # juveniles # unknown

breeding  wintering  burrow site  rookery  nesting  other

**Location (please also attach or draw map on back)**  
 Sonoma Creek, at the intersection of Watmaugh Road, in the City of Sonoma.

County: Sonoma Landowner / Mgr.: private

Quad Name: Sonoma Elevation: 45 ft

T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_

UTM: Zone: \_\_\_\_\_ (10, 11) Datum: \_\_\_\_\_ (NAD83, NAD27, WG584, other)

Source: \_\_\_\_\_ (GPS, map & type, etc.) Point Accuracy: \_\_\_\_\_ Meters

UTM Coordinates \_\_\_\_\_

**Habitat Description** (plant communities, dominants, associates, substrates/soils, aspects/slope)  
 Mixed riparian woodland, no one species dominates: Quercus agrifolia, Q. lobata, Umbellularia californica, Salix lasiolepis, S. exigua, S. lasiandra, Vitis californica, Toxicodendron diversilobum, Arundo donax.

Other rare species? No

**Site Information** Overall site quality:  Excellent  Good  Fair  Poor

Current / surrounding land use: Vineyards and rural residential on adjacent land.

Visible disturbances / possible threats: Invasive plants.

Comments: Unlikely that these trees have resulted from natural dispersal but cannot determine with certainty.

**Determination:** (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Manual, Flora of Sonoma Co.

Compared with specimen housed at: \_\_\_\_\_

Compared with photo / drawing in: \_\_\_\_\_

By another person (name): \_\_\_\_\_

Other: \_\_\_\_\_

**Photographs:** (check one or more)

	Slide	Print
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense?  yes  no

# California Native Species Field Survey Form

Mail to:  
 Natural Diversity Database  
 California Department of Fish and Game  
 1807 13<sup>th</sup> Street, Suite 202  
 Sacramento, CA 95814

For Office Use Only

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

**Date of Field Work:** 9 - 12 - 2003  
month (mm) date (dd) year (yyyy)

**Scientific Name:** Juglans hindsii - 2  
**Common Name:** Northern California black walnut

**Species Found?**   \_\_\_\_\_  
yes no If not, why?

Total No. Individuals 8 Subsequent Visit?  yes  no

**Is this an existing NDDDB occurrence?**  no  unk.  
Yes, Occ. #

Collection? If yes: \_\_\_\_\_  
Number Museum / Herbarium

**Reporter:** Ann Howald  
**Address:** 210 Chestnut Avenue  
Sonoma, CA 95476  
**Email Address:** annhowald@vom.com  
**Phone:** (707) 939-0775

**Plant Information**

Phenology: \_\_\_\_\_  
% vegetative % flowering % fruiting

100.00  
% fruiting

**Animal Information**

Age Structure: \_\_\_\_\_  
# adults # juveniles # unknown

breeding  wintering  burrow site  rookery  nesting  other

**Location (please also attach or draw map on back)**

Sonoma Creek, at the intersection of unnamed road that is the eastern extension of Specht Road. Specht Road intersects Highway 12 between Leveroni and Watmaugh Roads, in the City of Sonoma.

County: Sonoma Landowner / Mgr.: private

Quad Name: Sonoma Elevation: 45 ft

T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_

UTM: Zone: \_\_\_\_\_ (10, 11) Datum: \_\_\_\_\_ (NA D83, NAD 27, WG5 84, other)

Source: \_\_\_\_\_ (GPS, map & type, etc.) Point Accuracy: \_\_\_\_\_ Meters

UTM Coordinates \_\_\_\_\_

**Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope)**

Mixed riparian woodland, no one species dominates: Quercus agrifolia, Q. lobata, Umbellularia californica, Aesculus californica, Alnus rhombifolia, Salix lasiolepis, S. exigua, S. lasiandra, Vitis californica, Toxicodendron diversilobum, Arundo donax.

Other rare species? No

**Site Information** Overall site quality:  Excellent  Good  Fair  Poor

Current / surrounding land use: Vineyards and rural residential on adjacent land.

Visible disturbances / possible threats: Invasive plants.

Comments: Large trees. Unlikely that these trees have resulted from natural dispersal but cannot determine with certainty.

**Determination: (check one or more, and fill in blanks)**

- Keyed (cite reference) Jepson Manual, Flora of Sonoma Co.
- Compared with specimen housed at: \_\_\_\_\_
- Compared with photo / drawing in: \_\_\_\_\_
- By another person (name): \_\_\_\_\_
- Other: \_\_\_\_\_

**Photographs: (check one or more)**

	Slide	Print
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense?  yes  no

# California Native Species Field Survey Form

Mail to:  
 Natural Diversity Database  
 California Department of Fish and Game  
 1807 13<sup>th</sup> Street, Suite 202  
 Sacramento, CA 95814

For Office Use Only

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

**Date of Field Work:** 9 - 15 - 2003  
month (mm) date (dd) year (yyyy)

**Scientific Name:** *Juglans hindsii* - 3  
**Common Name:** Northern California black walnut

**Species Found?**  yes  no If not, why?  
 Total No. Individuals 5 Subsequent Visit?  yes  no  
**Is this an existing NDDB occurrence?**  no  unk.  
 Yes, Occ. # \_\_\_\_\_  
 Collection? If yes: \_\_\_\_\_  
 Number \_\_\_\_\_ Museum / Herbarium \_\_\_\_\_

**Reporter:** Ann Howald  
**Address:** 210 Chestnut Avenue  
 Sonoma, CA 95476  
**Email Address:** annhowald@vom.com  
**Phone:** (707) 939-0775

**Plant Information**

Phenology: \_\_\_\_\_  
 % vegetative \_\_\_\_\_ % flowering \_\_\_\_\_ % fruiting 100.00

**Animal Information**

Age Structure: \_\_\_\_\_  
 # adults \_\_\_\_\_ # juveniles \_\_\_\_\_ # unknown \_\_\_\_\_  
 breeding  wintering  burrow site  rookery  nesting  other

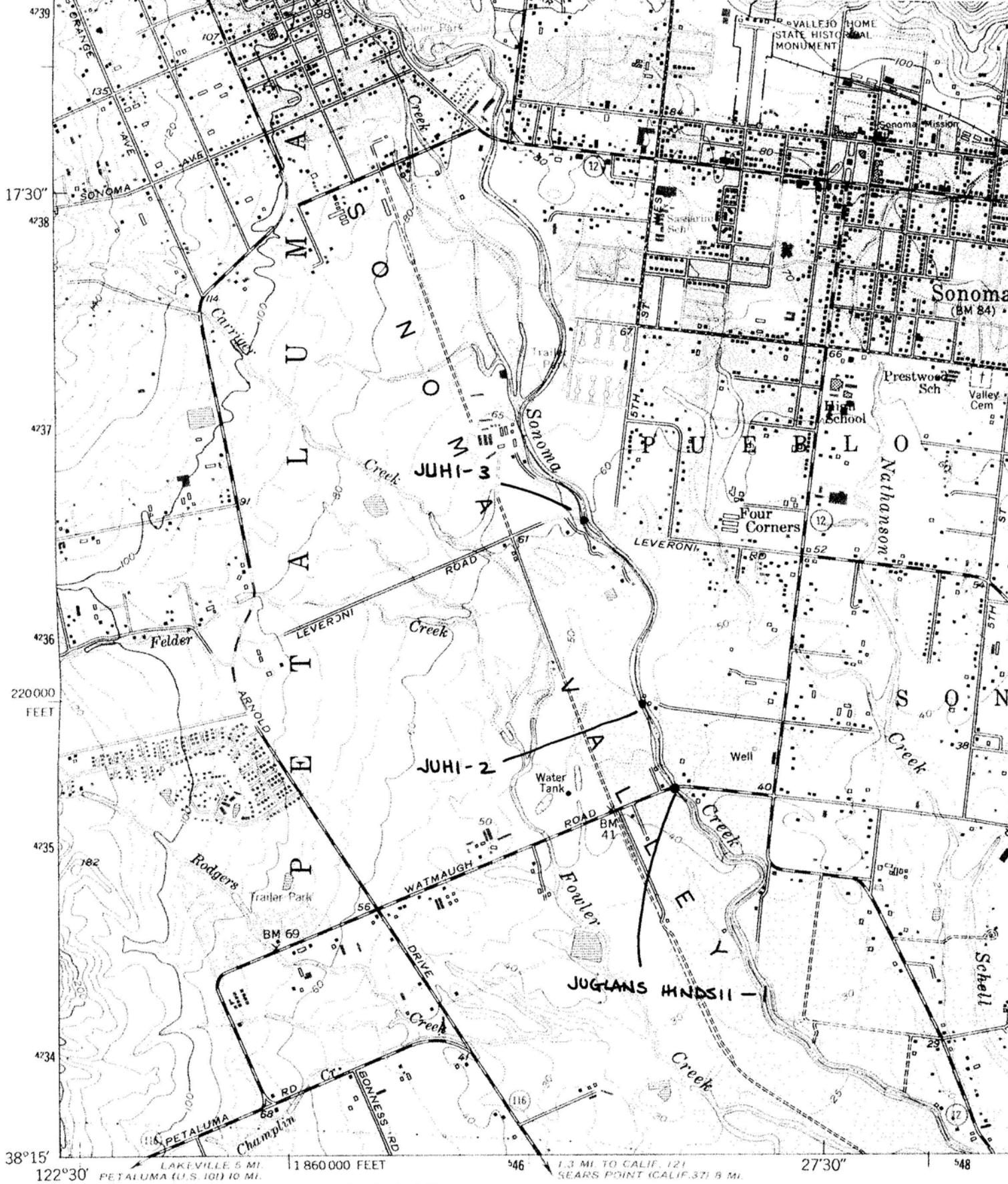
**Location (please also attach or draw map on back)**  
 Sonoma Creek, at the intersection of Leveroni Road, in the City of Sonoma.  
 County: Sonoma Landowner / Mgr.: private  
 Quad Name: Sonoma Elevation: 60 ft  
 T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_  
 UTM: Zone: \_\_\_\_\_ (10, 11) Datum: \_\_\_\_\_ (NAD83, NAD27, WG584, other)  
 Source: \_\_\_\_\_ (GPS, map & type, etc.) Point Accuracy: \_\_\_\_\_ Meters  
 UTM Coordinates \_\_\_\_\_

**Habitat Description** (plant communities, dominants, associates, substrates/soils, aspects/slope)  
 Mixed riparian woodland, no one species dominates: *Quercus agrifolia*, *Q. lobata*, *Umbellularia californica*, *Alnus rhombifolia*, *Populus fremontii*, *Salix lasiolepis*, *S. exigua*, *S. lasiandra*, *Vitis californica*, *Toxicodendron diversilobum*, *Arundo donax*.  
 Other rare species? No

**Site Information** Overall site quality:  Excellent  Good  Fair  Poor  
 Current / surrounding land use: Vineyards and rural residential on adjacent land.  
 Visible disturbances / possible threats: Invasive plants.  
 Comments: Unlikely that these trees have resulted from natural dispersal but cannot determine with certainty.

**Determination:** (check one or more, and fill in blanks)  
 Keyed (cite reference): Jepson Manual, Flora of Sonoma Co.  
 Compared with specimen housed at: \_\_\_\_\_  
 Compared with photo / drawing in: \_\_\_\_\_  
 By another person (name): \_\_\_\_\_  
 Other: \_\_\_\_\_

**Photographs:** (check one or more) Slide Print  
 Plant / animal    
 Habitat    
 Diagnostic feature    
 May we obtain duplicates at our expense?  yes  no



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

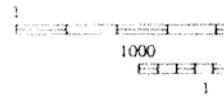
Topography from aerial photographs by multiplex methods and by plane-table surveys 1951. Aerial photographs taken 1948

Polyconic projection

10,000-foot grid based on California coordinate system, zone 2

SONOMA 7 1/2' QUAD

UMA RIVER  
1460 II NE



# California Native Species Field Survey Form

Mail to:  
 Natural Diversity Database  
 California Department of Fish and Game  
 1807 13<sup>th</sup> Street, Suite 202  
 Sacramento, CA 95814

For Office Use Only

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

**Date of Field Work:**    5    -    15    -    2003  
month (mm)    date (dd)    year (yyyy)

**Scientific Name:** *Navarretia cotulifolia*

**Common Name:** cotula navarretia

**Species Found?**         \_\_\_\_\_  
yes    no    If not, why?

Total No. Individuals 20,000    Subsequent Visit?     yes     no

**Is this an existing NDDB occurrence?**    \_\_\_\_\_     no     unk.  
Yes, Occ. #

Collection? If yes:    2,334.00    Jepson Herbarium  
Number    Museum / Herbarium

**Reporter:** Ann Howald \_\_\_\_\_  
**Address:** 210 Chestnut Avenue \_\_\_\_\_  
 Sonoma, CA 95476 \_\_\_\_\_

**Email Address:** annhowald@vom.com \_\_\_\_\_  
**Phone:** (707) 939-0775 \_\_\_\_\_

**Plant Information**

Phenology:    \_\_\_\_\_    100.00    \_\_\_\_\_  
% vegetative    % flowering    % fruiting

**Animal Information**

Age Structure:    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
# adults    # juveniles    # unknown

breeding     wintering     burrow site     rookery     nesting     other

**Location (please also attach or draw map on back)**  
 Eastern base of Sonoma Mountain, approx. 0.2 mile southwest of west end of Felder Creek Road.

County: Sonoma    Landowner / Mgr.: private

Quad Name: Glen Ellen    Elevation: 135 m

T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_    T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_

UTM: Zone: 10 (10, 11)    Datum: NAD 83 (NAD83, NAD27, WG584, other)

Source: GPS (GPS, map & type, etc.)    Point Accuracy: 3 Meters

UTM Coordinates 0542034,4235700

**Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope)**  
 Annual grassland, moist clay hollow, with *Lasthenia californica*, *Delphinium variegatum*, *Achyrachaena mollis*, *Microseris douglasii*, *Trifolium faucibarbata*, *Sisyrinchium bellum*.

Other rare species? No

**Site Information** Overall site quality:     Excellent     Good     Fair     Poor

Current / surrounding land use: cattle grazing

Visible disturbances / possible threats: \_\_\_\_\_

Comments: Grazing keeps non-native grasses in check, although natives affected by trampling. Water trough nearby. Only known pop in Sonoma Valley (Sonoma Creek watershed). Few locations for county.

**Determination:** (check one or more, and fill in blanks)

Keyed (cite reference): Jepson Manual, Flora of Sonoma Co.

Compared with specimen housed at: \_\_\_\_\_

Compared with photo / drawing in: \_\_\_\_\_

By another person (name): \_\_\_\_\_

Other: \_\_\_\_\_

**Photographs:** (check one or more)

Plant / animal	<input type="checkbox"/>	Slide	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	Print	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>		<input type="checkbox"/>

May we obtain duplicates at our expense?     yes     no

# California Native Species Field Survey Form

Mail to:  
 Natural Diversity Database  
 California Department of Fish and Game  
 1807 13<sup>th</sup> Street, Suite 202  
 Sacramento, CA 95814

For Office Use Only

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

**Date of Field Work:** 3 - 28 - 2003  
month (mm) date (dd) year (yyyy)

**Scientific Name:** *Ranunculus lobbii*  
**Common Name:** Lobb's aquatic buttercup

**Species Found?**   \_\_\_\_\_  
yes no If not, why?  
 Total No. Individuals \_\_\_\_\_ Subsequent Visit?  yes  no  
**Is this an existing NDDB occurrence?** \_\_\_\_\_  no  unk.  
Yes, Occ. #  
 Collection? If yes: \_\_\_\_\_  
Number Museum / Herbarium

**Reporter:** Ann Howald  
**Address:** 210 Chestnut Avenue  
 Sonoma, CA 95476  
**Email Address:** annhowald@vom.com  
**Phone:** (707) 939-0775

**Plant Information**

Phenology: 100.00  
% vegetative % flowering % fruiting

**Animal Information**

Age Structure: \_\_\_\_\_  
# adults # juveniles # unknown  
 breeding  wintering  burrow site  rookery  nestling  other

**Location (please also attach or draw map on back)**  
 Sonoma Mountain, approx. 0.1 mile northeast of intersection of electric transmission line and Rodgers Creek.  
 County: Sonoma Landowner / Mgr.: private  
 Quad Name: Glen Ellen Elevation: 550 ft  
 T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of Section \_\_\_\_\_  
 UTM: Zone: \_\_\_\_\_ (10, 11) Datum: \_\_\_\_\_ (NAD83, NAD27, WG584, other)  
 Source: \_\_\_\_\_ (GPS, map & type, etc.) Point Accuracy: \_\_\_\_\_ Meters  
 UTM Coordinates \_\_\_\_\_

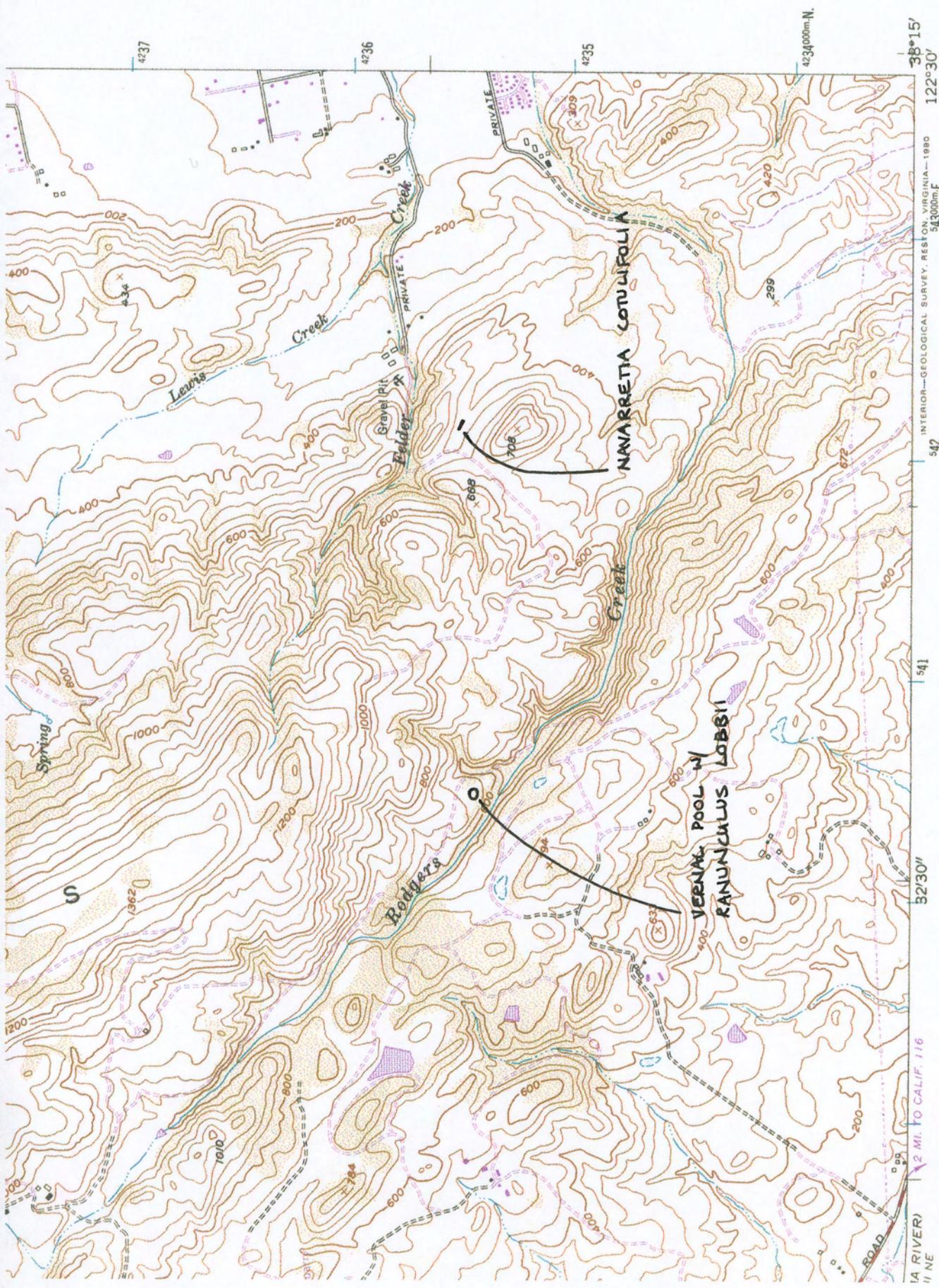
**Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope)**  
 Natural vernal pool in annual grassland, with *Lilaea scilloides*, *Plagiobothrys bracteatus*, *Montia fontana*, *Eryngium aristulatum*, *Callitriche heterophylla* ssp. *bolanderi*.  
 Vernal pool large for area (20m in diameter), round, shallow, isolated. Coast live oak woodland on slopes nearby.  
 Other rare species? No

**Site Information** Overall site quality:  Excellent  Good  Fair  Poor  
 Current / surrounding land use: cattle grazing  
 Visible disturbances / possible threats: Pool heavily trampled by cattle.  
 Comments: The flora of these isolated vernal pools on Sonoma Mountain has not been well-studied. These pools do not fit any of the categories in Holland or Sawyer & Keeler-Wolf. Not possible to estimate numbers of plants. Plants covered approx. 40 square meters.

**Determination:** (check one or more, and fill in blanks)  
 Keyed (cite reference): Jepson Manual, Flora of Sonoma Co.  
 Compared with specimen housed at: \_\_\_\_\_  
 Compared with photo / drawing in: \_\_\_\_\_  
 By another person (name): \_\_\_\_\_  
 Other: \_\_\_\_\_

**Photographs:** (check one or more) Slide Print  
 Plant / animal    
 Habitat    
 Diagnostic feature    
 May we obtain duplicates at our expense?  yes  no

(SEARS POINT)  
1560 III NW

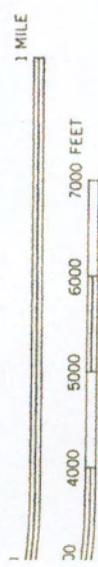


ROAD CLASSIFICATION

- Medium-duty
- Light-duty
- Unimproved dirt
- State Route



GLEN ELLEN 7 1/2' QUAD



RIVAL 40 FEET  
EENT 10 FOOT CONTOURS

