

Biological Resources Technical Report

Pacific Gas & Electric Company's Fulton-Fitch 60kV Power Line Reconductor Project

Sonoma County, California

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1. INTRODUCTION

Pacific Gas and Electric Company (PG&E) is proposing the Fulton-Fitch 60kV Powerline Reconductoring Project (project). This project is located in eastern Sonoma County, California, in the foothills between the towns of Healdsburg and Windsor. This project is currently in the planning phase. Activities will include replacement of approximately 77 existing wood poles with light duty steel poles (LDS) or treated wood poles and installation of new conductor (wire) along the length of the alignment.

Under contract to PG&E, Garcia and Associates (GANDA) conducted surveys of biological resources (wildlife, botanical, and wetlands) that have the potential to be affected by project activities. Seasonally-timed floristic surveys were conducted to determine the presence of special status plant species within the powerline right-of-way. In conjunction with this survey, wetland assessment and vegetation mapping were performed. Habitat level wildlife surveys were also conducted. This report provides a brief description of the project location and proposed project, followed by a summary of the survey methodology and results. A discussion of potential project effects and GANDA technical staff recommendations for avoidance and minimization measures are also presented.

2. PROJECT LOCATION

The project is located in eastern Sonoma County, California. The Fulton-Fitch 60kV Powerline (subject line) runs from the southeast side of the Town of Windsor, roughly north through the foothills of the Coastal Range, to the southeast side of the city of Healdsburg (Figure 1). The subject line is located within the U.S. Geological Survey (USGS) *Healdsburg, California 7.5'* topographic quadrangle (quad). The project is approximately 8.5 miles long, and has an elevation range of approximately 110 to 600 feet.

The subject line starts from an existing tubular steel pole along the east side of Faught Road within the south side of Sonoma County's Shiloh Regional Park. From here, the alignment passes through a vineyard and the regional park and crosses Dumps Road. The line runs north through rangeland and woodlands, skirting more vineyards and crosses Pool Creek, Chalk Hill Road, and Wright Creek. The subject line continues north through Sonoma County's Foothill Regional Park and crosses Windsor Creek and Brooks Road. North of Brooks Road, the line roughly parallels a ridgeline north, crossing lands managed within the Sonoma County Open Space District, including those within Windsor Oaks Vineyards. Ultimately, the line traverses open rangeland and terminates on a ridge on the Minaglia Ranch, south of the Russian River and Baillhache Road in Healdsburg. Thirteen poles on the subject line (poles 42 to 55) lie within the urban growth limits of the Santa Rosa Plain Conservation Area (USFWS 2005). The line is not within the Study Area of the Santa Rosa Plain Conservation Area (USFWS 2005).

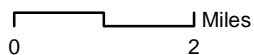


Source: NGS Topo US 2D (2010); GANDA GIS 2011

Figure 1. Fulton Fitch Project Location



Project Location



Sonoma County, CA
September 2011

3. PROJECT DESCRIPTION

The subject line is comprised of approximately 8.5 miles of conductor supported by 69 wooden pole structures; five of these structures consist of multiple poles. The current conductor is 4/0 aluminum. The proposed project will replace this conductor to handle increased load due to growth in the City of Healdsburg. In concert with replacing the existing conductor, all existing wood poles along the alignment will be replaced with LDS or new wood poles.

The project will include the following major components:

- replacing existing wooden poles with approximately 77 new LDS or wood poles;
- setting and removing temporary wood poles for “shoo-flies” and guard structures
- reconductoring the alignment, which entails replacing approximately 8.5 miles of existing conductors on the Fulton-Fitch 70 kV power line with new conductor; and
- Establishing temporary work areas, helicopter landing zones, and equipment staging areas, and improving existing access roads, where necessary.

3.0 Pole Replacement

As part of this project, PG&E will replace approximately 77 existing wood poles with new direct-buried LDS or wood poles. The new structures will be designed to meet California Public Utilities Commission General Order 95 ground clearance requirements for the new conductor. It is estimated that the new LDS poles will be approximately 10 to 20 feet taller than the existing wood poles. The LDS pole design provides superior protection from wild fires, pole rotting, and woodpecker damage when compared to wood poles.

There are three methods proposed for excavation of sites for establishment of the new LDS poles: hand digging, auguring with an excavator, and auguring with a line truck. The designated excavation methods at each pole are anticipated. It is understood that designations may change as construction moves forward. The excavations will be within approximately five to ten feet from the existing poles and will be approximately four feet in diameter and ten feet deep.

Pole sites which are not accessible by vehicles due to the absence of access roads or steep terrain will be excavated by hand. Crews and materials will be set by helicopter in a nearby clearing or will access the pole site on foot from the nearest established access road. Materials will include standard digging tools or portable equipment as well as a compressor and jackhammer. It may be necessary for crews to establish a small pad for the compressor so it is stable. Air hoses will run from the compressor to the excavation site. Crews will use the jackhammer and other portable equipment to excavate a hole of suitable size for the new LDS pole and will stockpile soil adjacent to the hole. Hand digging methods are anticipated to be utilized at remote pole sites in Shiloh Regional Park and for poles on steep terrain north of Pleasant Avenue.

The majority of excavations will be completed using an auger mounted on an excavator. The excavator runs on tracks and is smaller than a line truck, which allows it to access overland

routes on steep terrain and in wooded areas. The excavator will set up adjacent to the existing pole and the new pole site. In locations where there is not level terrain for the excavator to stage, a small pad may be graded by a backhoe attachment on the excavator to establish a safe and level work area. Once the hole for the new LDS pole has been excavated, the vehicle will turn around and depart via the same access route. Generally, an excavator will be utilized at one location within Shiloh Regional Park and in wooded areas north of Pleasant Avenue, north of Chalk Hill Road, and north of Brooks Road.

The final method for excavating the holes for the new LDS poles will be using augers mounted on line trucks. The auger bit is reached to the excavation on a boom from the truck and hydraulics on the boom function to drill the auger bit into the ground. Once the auger has drilled to adequate depth it is lifted from the hole and any remaining loose soils are removed with hand tools. Line trucks are large, rubber-tired vehicles and will be used in areas where new poles are located in or adjacent to pull sites/staging areas, in locations where poles are adjacent to existing access roads or developed property, and where there is relatively level, open terrain to access the pole site, primarily along the north end of the alignment.

Following completion of the excavations for the new poles, transport of the new poles and removal of the existing poles will be largely accomplished using helicopters. The LDS poles and other materials will be carried to the site from the nearest staging area. The poles will be set directly into the excavation and the stockpile from the excavation will be backfilled surrounding the pole to set it in place. Once crews have completed setting the new pole and installed hardware, the conductor will be transferred from the existing wood pole to the new pole and the pre-existing wood pole will be lifted from the site by a helicopter and returned to the nearest staging area for appropriate disposal. The remaining soils from excavation of the new pole will be used to backfill the hole left by the pole removal and scattered at the site.

It is anticipated that additional support vehicles will be required at the pole replacement sites. Additional vehicles may include, but not be limited to, pick-up trucks, bucket trucks, all-terrain vehicles, backhoes, and graders. Support vehicles are anticipated to stage at the pole replacement sites or on nearby existing access roads as determined by site accessibility.

For the purpose of this report, an approximate 50-foot radius work area is anticipated surrounding each pole replacement site. Additionally, woody vegetation will be pruned and removed from an approximate 25-foot radius surrounding the new LDS poles as required by General Order 95 clearances. Ground disturbance within the work area will be limited to the excavation for the new pole and anchors as well as the site of the pole removal, to the extent feasible. Additionally, for poles which are excavated using the excavator, some ground disturbance will result from the tracks of the vehicle. The majority of activity within the work areas is anticipated to be limited to trampling from crews and rubber-tired vehicles. It is understood that the work areas surrounding different poles will vary due to topography and access.

3.1 Access Routes

Project work areas will be accessed via a combination of existing access roads, pedestrian trails, and overland travel. Access routes are shown on maps in Appendix A from where they extend

from existing paved roads (Access to poles 54 and 55 through Foothill Regional Park and locations within the Windsor Oaks Vineyard extend long distances along well developed dirt access roads and are not depicted from paved surfaces). Because the power line runs through rangeland, vineyards, and parklands, there are existing PG&E right-of-way dirt access roads which run to or near many of the poles. However, improvements will be required along several of the roads to facilitate access for construction vehicles. Road improvements are to include grading the roads, laying rock and vegetation pruning and removal. Grading is generally required to improve and widen existing roads and create turnarounds and work areas. For the purpose of this report, access roads are considered to be 12 feet wide to allow for passage of large reconductoring vehicles. Access road improvements may include laying rock to improve traction and all-weather access. Many of the access roads (existing roads as well as overland routes) within woodland habitats in the project area will require brushing and limbing of surrounding vegetation to improve vertical and horizontal clearance as well as for fire safety.

Pole replacement sites will be accessed by overland travel. Overland travel is defined as access where there is not a pre-existing road or path, or the access is substantially overgrown indicating any pre-existing path is not regularly accessed. Where overland travel is required to access a pole replacement site, the route to the pole which minimizes the distance traveled and impact to surrounding vegetation and terrain will be identified. Use of the excavator on overland travel routes is anticipated to result in some ground disturbance as a result of the tracks on the vehicle. However, it is anticipated that any ground disturbance along overland access routes will be repaired and no new roads will be established for the project.

Within Shiloh Regional Park, there is an existing hiking trail which leads to pole 28 and near pole 27. Although this hiking trail may be utilized by construction crews, it is anticipated that the crews will access the poles by being set by helicopter in a clearing near the poles to be replaced. From this location, the crews will access the poles on foot along the existing path to 28 and overland to pole 27.

3.1.0 Drainage Crossings

There are eleven locations where access roads cross seasonal watercourses or seasonal wetlands. Drainage crossings are shown on the maps in Appendix A (Labelled S1-S11). It is understood that temporary materials such as; fiberglass mats, steel plates, or temporary bridges will be placed across the water features during project access to avoid and minimize travel disturbance. At one location along the access route to pole 66, an existing culvert may require replacement to repair erosion of the road over the top of the culvert and prevent damage to the existing culvert. PG&E is currently in the planning process. More detailed description of the drainage crossings and potential impacts is provided in Section 6.0.

3.2 Pull Site/Staging Areas

The project will include establishment of pull site/staging areas along the power line alignment. The location of proposed pull site/staging areas is shown on the maps in Appendix A. The pull site/staging areas will have variable dimensions depending on the available terrain which is accessible to reconductoring vehicles. Vehicles anticipated for utilization of the pull site/staging areas may include, but not be limited to; pickup trucks, line trucks, bucket trucks, trailers with

conductor, poles and other materials, and small, track-mounted bulldozers. Additionally, each pull site/staging area will be utilized as a helicopter landing zone (LZ) with necessary fueling and support equipment for the helicopter. At each pull site/staging area, a temporary pole will be installed in the site to serve as a shoofly during reconductoring. In addition to reconductoring equipment, the pull site/staging areas will be used for staging LDS poles, removed poles, and other materials and equipment required for pole replacement and reconductoring. Non-woody vegetation will be mowed to reduce fire hazard, and some pruning of woody vegetation may be required along the margins of some sites in order to improve clearances. The majority of pull site/staging areas are proposed for open grassland or ruderal sites. However, proposed pull site/staging area 5 is located along a narrow road in oak woodland and may require pruning of surrounding oak trees as well as clearing of an area at the north end of the site to create a vehicle turnaround. Additionally, proposed pull site/staging area 3 is located on a hillslope along a paved driveway and will require significant earthwork and removal of two trees to establish the work area.

Where appropriate, materials such as fiberglass mats will be laid on the pull site/staging areas to minimize ground disturbance within the work area. The need for matting will be determined in the field based on site conditions at the time of construction.

3.3 Guard Structures

Guard structures will be placed over public roads and other electrical facilities to protect them in the event the conductor were to drop during construction. Within the project area, guard structures will be of two designs and will be placed in approximately four locations within the power line corridor. Guard structures will be established at Dumps Road, Chalk Hill Road, Brooks Road, and at a distribution line which serves a residence on Brooks Road. At Dumps Road, two temporary wood poles will be set on either side of the road with a cross beam attached to the tops of the poles and netting strung over the road. At Chalk Hill Road, boom trucks will be staged on the road with the booms extending over the road to catch the conductor in the event of an accidental drop. At Brooks Road as well as the nearby distribution line, either type of guard structure may be deployed. It is also possible that a temporary shoofly would be installed to protect the distribution line instead of a guard structure. All guard structure locations where temporary poles will be installed are located in disturbed roadsides or developed areas.

3.4 Reconductoring

The following describes steps to replace the existing conductor with new conductor.

3.4.0 Grounding

To protect workers, equipment will be grounded to capture induced voltage from nearby active circuits. During construction, ground rods (0.625-inch diameter copper rods) will be driven into the ground near equipment. They will be deep enough to reach firm ground and approximately 1-foot of the rod will protrude. Grounding equipment will be connected to these ground rods during construction and be disconnected when the line is restored to service. Crews will meet or exceed General Order 95 standards and work will be done in accordance with PG&E's Code of Safe Practices.

3.4.1 Unclipping and Traveler Installation

New insulators will be placed on the new LDS poles with travelers (rollers for allowing the conductor to be pulled through the pole) at their end. Once the travelers are in place, the conductor on the existing wood poles will be unclipped from the insulators and a hoist will be used to lift the conductor off the existing poles and lower the conductor onto the travelers

Travelers, insulators, and the tools required to install them will be delivered to the pole sites by helicopter or vehicle depending upon access conditions. PG&E will use all-terrain vehicles or pickup trucks to access the base of the towers or poles; and helicopters, in some cases, to assist with the installation of insulators, travelers, and conductors.

3.4.2 Conductor Replacement

After the travelers have been installed and the conductor has been transferred within a section of the line between two pull site/staging areas, a cable from the puller truck will be attached to the existing conductor at one end of the pull section and a nylon pulling rope will be attached to the existing conductor on the opposite end. As the puller truck removes the old conductor, the pulling rope will be pulled into place. A line truck with a drum puller and empty conductor reel at the pull end will pull the old conductor onto the reel where it will be collected for salvage. Once the pull rope is in place, the new conductor will be attached to the rope at the opposite end of the pull section. Reel stands mounted on a line truck at the tension site will feed new conductor through the travelers at each structure, while also maintaining tension in the line so that it does not sag to the ground. The new conductor will be pulled through each structure under a controlled tension to keep it elevated and away from obstacles, thereby preventing damage to the line and protecting the public. Conductor will be pulled in stages along the power line corridor between the tension and pull sites.

Once the new conductor is pulled into place, it will be removed from the travelers and clipped into the end of the new insulators. The rollers will then be removed and vibration dampers and other accessories will be installed.

Following completion of reconductoring activities, the majority of project work areas will generally be returned to pre-project conditions. Due to the extensive grading required at pull site/staging area 3, this site may remain in its graded condition, however this will be subject to property owner authorization. Additionally, some of the vegetation pruning and road improvements may be maintained to allow for future access and clearance requirements associated with the project facilities.

3.5 Schedule

It is anticipated that pole replacement and reconductoring of the 8.5 mile Fulton-Fitch power line segment will be completed in approximately six months. The project is anticipated to be completed no later than September 2014.

4. METHODS

The following section provides details on the survey area and methods that were used to assess vegetation communities, wetlands and water features, and special status plants and wildlife.

4.0 Background Research/Literature Review

Prior to commencing fieldwork, GANDA biologists performed background research to identify special status species with potential to occur in the survey area. The background research area is a “nine-quad” search, including the US Geological Survey (USGS) 7.5’ quadrangles (quads) in which the subject line is located (*Healdsburg*), and the eight surrounding quads (*Camp Meeker*, *Geyserville*, *Guerneville*, *Jimtown*, *Mark West Springs*, *Mount St. Helena*, *Santa Rosa*, and *Sebastopol*). References used include the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) (CDFG 2011), the U.S. Fish and Wildlife Service (USFWS) Sacramento Office website (USFWS 2011), and the California Native Plant Society (CNPS) online *Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2011). A map of CNDDDB occurrences within five miles of the project is included as Figure 2.

Additionally, the *Santa Rosa Plain Conservation Strategy* (USFWS 2005) was reviewed for information related to the occurrence of California tiger salamander (*Ambystoma californiense*), Burke’s goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*), Sebastapol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*) on the Santa Rosa Plain, adjacent to the project area.

A plant or wildlife species was considered special-status if it met one or more of the following criteria:

- A species listed as or a candidate for listing as endangered or threatened under the federal Endangered Species Act (CDFG 2011a, 2011b, 2011c)
- A species listed as or a candidate for listing as endangered or threatened under the California Endangered Species Act (CDFG 2011a, 2011b, 2011c)
- A species identified by the CDFG as a species of special concern or fully protected species (CDFG 2011a, 2011b, 2011c)
- A species listed as rare under the California Native Plant Protection Act
- A species included on Lists 1 and 2 of the California Rare Plant Rank system (CNPS 2011)

Legend



Fulton Fitch Survey Area



Fulton Fitch Survey Area 5-mile Buffer

CNDDDB

- | | |
|--|--|
| ● American badger | ★ Narrow-anthered California brodiaea |
| ● Baker's navarretia | ★ Navarro roach |
| ● Blennosperma vernal pool andrenid bee | ★ Northern Hardpan Vernal Pool |
| ● Burke's goldfields | ★ Osprey |
| ● California linderiella | ★ Oval-leaved viburnum |
| ● California tiger salamander | ★ Pallid bat |
| ● Coho salmon - central California coast ESU | ★ Pappose tarplant |
| ● Dwarf downingia | ★ Rincon Ridge ceanothus |
| ▲ Foothill yellow-legged frog | ■ Rincon Ridge manzanita |
| ▲ Fragrant fritillary | ■ Robust monardella |
| ▲ Fringed myotis | ■ Russian River tule perch |
| ▲ Great blue heron | ■ Seaside tarplant |
| ▲ Jepson's leptosiphon | ■ Sebastopol meadowfoam |
| ▲ Many-flowered navarretia | ■ Showy rancheria clover |
| ▲ Marsh microseris | ■ Sonoma canescent manzanita |
| ▲ Mt. Saint Helena morning-glory | ■ Sonoma sunshine |
| ★ Napa false indigo | ■ Steelhead - central California coast DPS |
| | ▲ Western pond turtle |
| | ★ White-tailed kite |



Source: ESRI Imagery (2010); GANDA GIS 2011

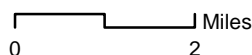
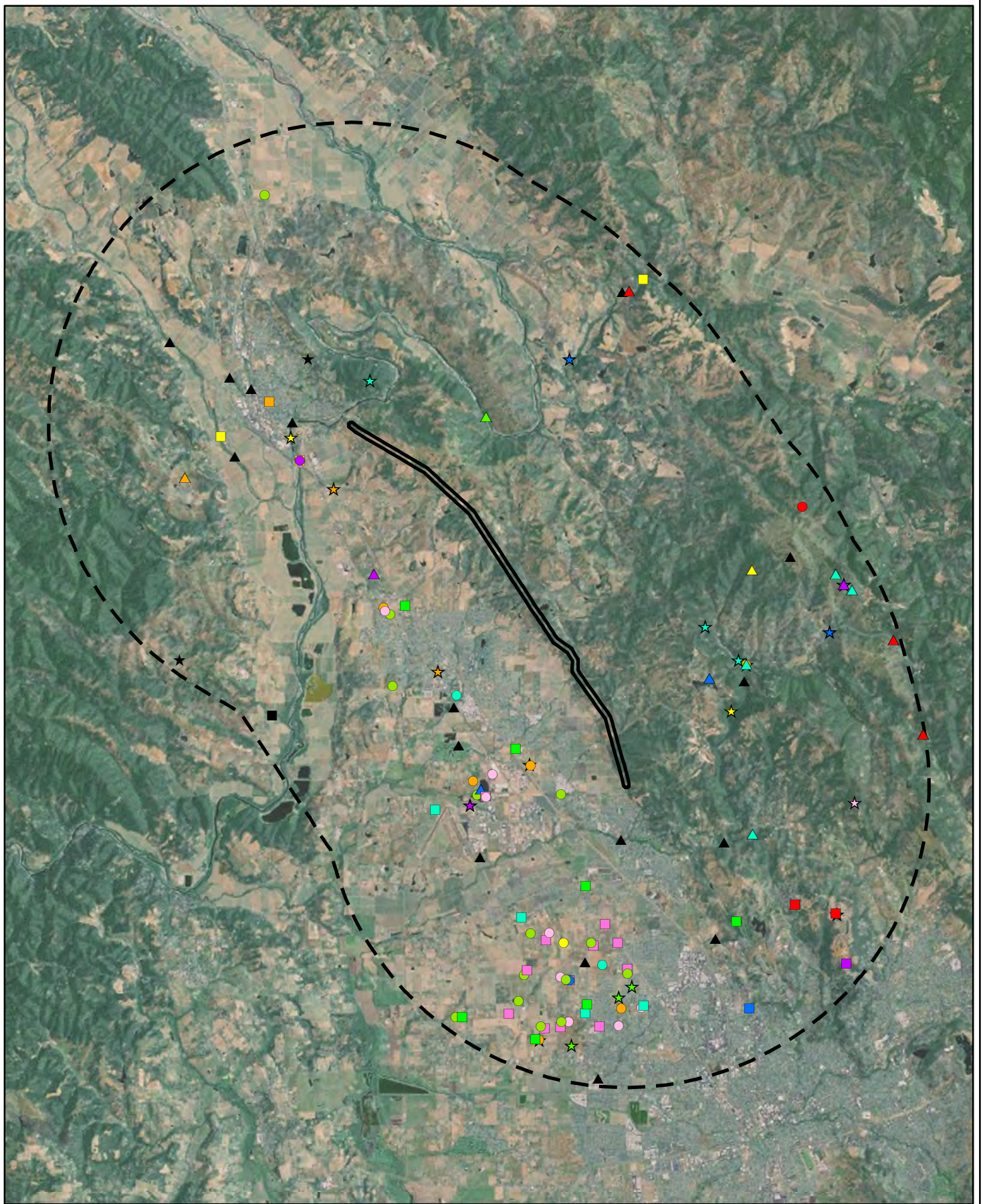


Figure 2. CNDDDB Occurrences Within 5-mile Buffer of Survey Area

Sonoma County, CA
August 2011



Project Location

Source: ESRI Imagery (2010); GANDA GIS 2011

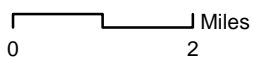


Figure 2. CNDDDB Occurrences Within 5-mile Buffer of Survey Area

Sonoma County, CA
August 2011

GANDA botanists developed a list of special status plant species having potential to occur in the survey area from the database review. The resulting list of special status plants is included as Appendix B. GANDA botanists reviewed available information on flowering time, conservation status, habitat preferences, phenology, geographic distribution, elevation, and known locations in the vicinity of the survey area. Specimens of many of the species were reviewed at the California State University, Chico and University of California, Davis herbaria. Additionally, drawings, photographs, and species descriptions were reviewed prior to and during the survey period. This information was compiled from the databases discussed above, as well as *The Jepson Manual of Higher Plants of California* (Hickman 1993), “*The Jepson Manual, Second Edition: Vascular Plants of California*” treatments for public viewing (U.C. Berkeley 2011a), *A Flora of Sonoma County* (Best et al 1996), the CalPhotos database (U.C. Berkeley 2011b), and various other references.

Similarly, a list of special status wildlife species having potential to occur in the project area, based on the presence of historic records within five miles or observed suitable habitat within the survey area, was developed using the information collected during background research of the survey area. The list of special status wildlife listed as having potential to occur is provided in Appendix C.

4.1 Field Surveys

For the purpose of the biological surveys, unless otherwise stated (see Section 4.1.2), the “survey area” is defined as a 500-foot wide corridor extending 250-feet on either side of the project alignment. This survey area is approximately 477.5 acres. In addition to this corridor, the survey area includes access routes and landing zones (LZ)/staging areas which fall outside of the 500-foot corridor around the alignment. The survey area was surveyed on foot, except for steep canyons where access is too difficult and unsafe, and other areas where the height from the conductor to the ground is too great for equipment access. In all of these areas, the distance between the power line and the ground is much greater than other spans due to conductor crossings of the ravines and valleys, and no project facilities are located on the ground within these areas. It is anticipated that no project disturbance will occur within these sections of the power line due to the steep terrain and absence of facilities. Spans that were not surveyed on foot are listed in Table 4-1; the survey area within these spans is approximately 106 acres.

Table 4-1. Spans Surveyed Remotely

Span	Reason for Remote Survey/Not Accessed on Foot
28-29	Steep ravine, no construction access expected
29-30	Steep ravine, no construction access expected
30-31	Steep wooded slope with no project facilities south of Dumps Road, no construction access expected
34-35	Deep canyon with no project facilities between the poles, no construction access expected
41-42	Long span over Chalk Hill Road, Pool Creek, Wright Creek, no construction access expected off of the paved surfaces of Chalk Hill Road
50-51	Long span with deep, wooded ravine and no project facilities, no construction access expected

Span	Reason for Remote Survey/Not Accessed on Foot
60-61	Poles on ridgetops with conductor spanning deep, wooded ravines; no construction access expected
67-68	Long span over steep ravine with no project facilities, no construction access expected
71-72	Steep, wooded ravine with creek within vineyard property; access roads present through vineyard and therefore no construction access is expected in wooded area
79-80	Steep, wooded ravine with no project facilities, no access expected

4.1.0 Vegetation Communities

Within the survey area, vegetation communities were mapped concurrently with the special status plant surveys. Vegetation was assessed through a combination of walking on foot through the survey area, and visual assessment of aerial photography. Aerial imagery of the survey area was prepared prior to field surveys and taken to the field. The community types were associated with signatures on the aerial photos, and then later digitized to create vegetation maps. Vegetation within inaccessible locations were mapped based on visual assessment of the feature from the nearest accessible location and comparison with visible signatures on aerial imagery. Vegetation communities in the survey area were classified according to the system established by Holland (Holland 1986).

Soil types within the survey area were identified in order to assist with evaluation of the suitability of the substrates to support special status plant species. Information on soil types within the survey area was investigated using the National Resource Conservation Service (NRCS) online Web Soil Survey (NRCS 2011).

4.1.1 Wetland and Water Features

Mapping of wetland and water features within the survey area was conducted concurrently with the special status plant surveys. Wetlands were mapped through visual assessment of the survey area and identification of topography, hydrology, and vegetation typically associated with these habitats. Aerial imagery of the survey area was prepared and reviewed to identify potential wetland markers on the aerial imagery. Watercourses within inaccessible locations were mapped and digitized based on visual assessment of the feature from the nearest accessible location, and comparison with visible signatures on aerial imagery and topographic maps. More detailed data collection at the inaccessible wetland and water features will be required in the event it is determined that safe project access is required.

Wetland and water features within the survey area were mapped in the field to identify all areas potentially subject to regulation under state and/or federal law. Surveys focused on identification of topographic variations where suitable conditions are present for development of hydrology, soils and vegetation typically associated with wetland and water features. Assessment and mapping of these sites was based on observations of potentially suitable wetland hydrology and variations in vegetation indicating the potential presence of wetland soils. Identification of vegetation associated with wetland and water features in the survey area follows the nomenclature in *The Jepson Manual, Second Edition: Treatments for Public Viewing* (U.C. Berkeley 2011a). Water features were mapped along watercourses observed to have a defined bed, bank, and channel. GPS points were taken within these watercourses during

the field visit, along with average widths, and they were then digitized into GIS format with the help of topographic maps. For unvegetated watercourses and those supporting herbaceous vegetation communities, the water features average widths were recorded to account for the observed top of bank. Watercourses with associated riparian or woodland communities were mapped along the outer margin of vegetation along the water feature having potential to affect fish and wildlife resources associated with the watercourse. This wetland mapping is prepared for planning purposes and does not represent a formal jurisdictional delineation.

4.1.2 Special Status Species

Special Status Plants

Surveys for special status plant species were conducted in accordance with commonly accepted plant survey guidelines (CNPS 2001). The *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain* (USFWS 2005) were followed for portions of the plant survey area which are within the urban growth limits of the Santa Rosa Plain Conservation Strategy. The surveys focused on identification and mapping of federal- and state-listed and CRPR List 1 and 2 species. However, surveys were carried out by botanists familiar with plant survey techniques, and were floristic in nature therefore observations of CRPR List 3 and 4 species were also noted. All plants located were identified to the level necessary to determine status. Plants that were not identified in the field were collected, pressed, and identified at later times (identification assistance provided by Kim Steiner, GANDA botanist). Surveys occurred at multiple dates during the season in order to identify plants with different blooming periods (Table 4-2); while not all plant species would have been in a condition to be identified during these surveys, the surveys were conducted at suitable times to identify special status plant species with potential to occur in the survey area. In one portion of the line (north of pole 87), survey access was only granted by the private landowner on a single date (May 10, 2011). Mapping was performed with a Trimble Geo-XT GPS unit, capable of sub-meter accuracy.

The “plant survey area” consisted of the subject line and power poles, and a 100-foot buffer (200 foot corridor) on either side of the power line alignment as well as access routes and LZ/staging areas which are outside of the 200-foot corridor. This area was surveyed by walking on foot. Typically a pair of surveyors would parallel each other with meandering transects, moving parallel to the line. Some portions of this corridor could not be safely accessed, or were otherwise far below the line; these areas were only surveyed for habitat type, and are not expected to be impacted by project activities (see Table 4-1).

Table 4-2. Special Status Plant Field Survey Dates

Personnel	April 19-22, 2011	May 10-12, 2011	June 6-9, 2011	June 24, 2011	April 18-19, 2012	June 14-15 and 20, 2012
Samantha Hillaire, Botanist	x	x	x	x		
Susan Infalt, Ecologist	x					
Molly Graber, Ecologist		x	x			x

Personnel	April 19-22, 2011	May 10-12, 2011	June 6-9, 2011	June 24, 2011	April 18-19, 2012	June 14-15 and 20, 2012
Rob Witthaus, Biologist				x		
Mark Bibbo, Botanist					x	

Prior to and during field surveys, GANDA survey personnel visited known reference sites of special status plants in order to determine blooming condition. An effort was made during each survey replicate to visit/revisit known populations of species in the Santa Rosa Plain Conservation Area (USFWS 2011a)¹, and visits were made three times throughout the survey season. A list of reference visits is presented in Table 4-3. During field surveys, special attention was given to the identification of seasonal wetland and/or vernal pool habitats having potential to be suitable for occurrence of listed plant species identified in the Santa Rosa Plain Conservation Strategy (USFWS 2005) as occurring on the Santa Rosa Plain. Suitable habitat for these species is not present in the portions of the plant survey area within the urban growth boundaries of the Santa Rosa Plain Conservation Strategy.

Table 4-3. Special Status Plant Reference Site Summary

Species	Occurrence ID	Date(s)	Results
Sebastopol meadowfoam <i>Limnanthes vinculans</i>	CNDDDB #33 “Todd Road Preserve”	April 18, 2011	Species in early bloom/late bud in shallow vernal pools with no standing water (still muddy).
Sonoma sunshine <i>Blennosperma bakeri</i>	CNDDDB #8 “Todd Road Preserve”	April 18, 2011	No plants observed in shallow vernal pools (still muddy).
Sebastopol meadowfoam <i>Limnanthes vinculans</i>	CNDDDB #1 “near Todd Road and Llano Road”	April 18, 2011	Species in early bloom/late bud in large vernal pools with deeper standing water.
Sonoma sunshine <i>Blennosperma bakeri</i>	CNDDDB #30/31 “near Todd Road and Llano Road”	April 18, 2011	No plants observed near large vernal pools with deeper standing water.
Sebastopol meadowfoam <i>Limnanthes vinculans</i>	CNDDDB #46 Sonoma County Airport Wildflower Preserve	April 18, 2011	No plants observed in marshy areas, or shallow dry vernal pools.
Sonoma sunshine <i>Blennosperma bakeri</i>	CNDDDB #32 Sonoma County Airport Wildflower Preserve	April 18, 2011	No plants observed in marshy areas, or shallow dry vernal pools.

¹ Surveyors were not able to find a publically accessible population of many-flowered Navarettia in proximity to the survey area. Other personnel (Ann Howald personal communication, Jim Sherar personal communication) indicated that populations of this species are not generally accessible and/or may no longer be extant in the area.

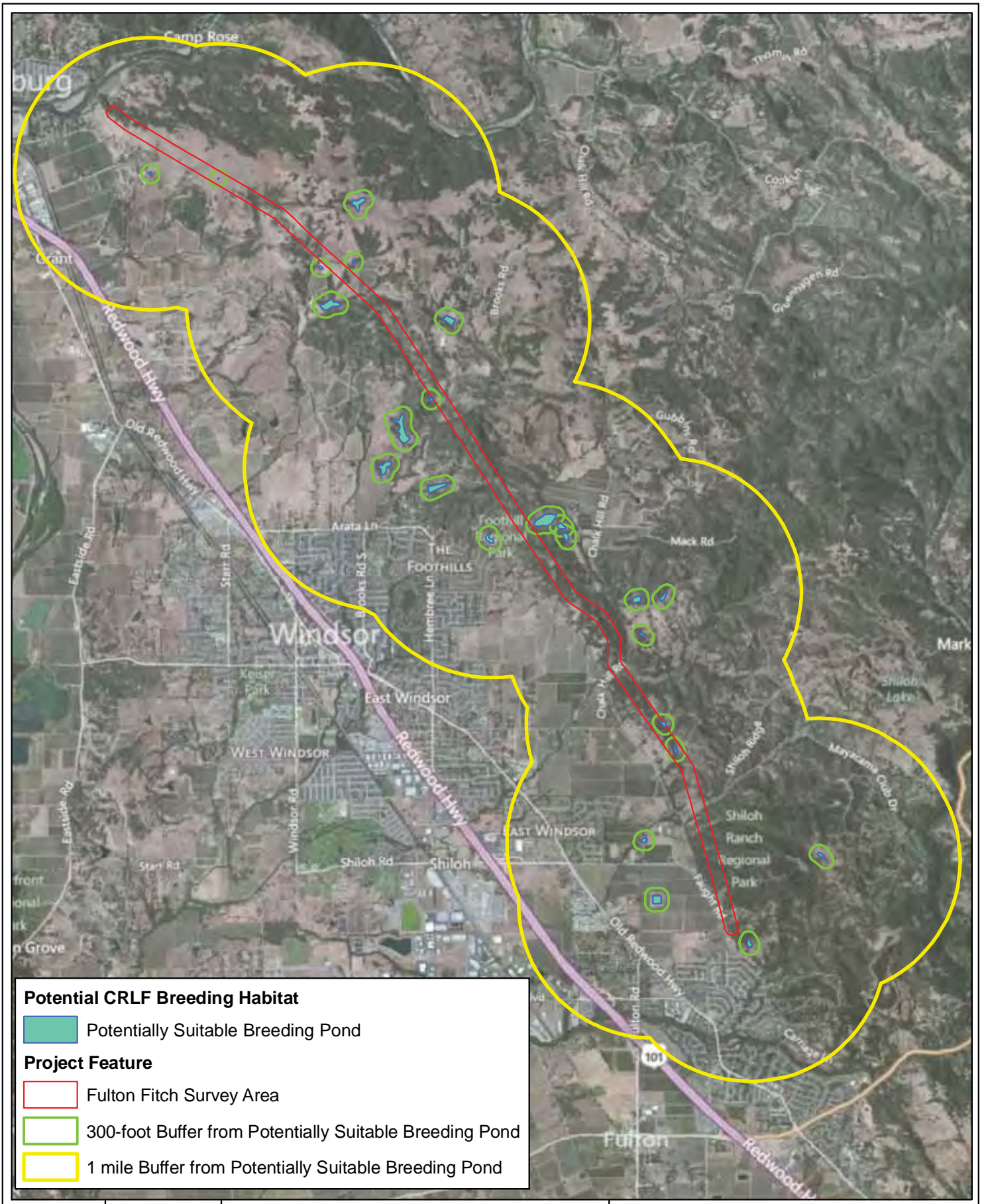
Species	Occurrence ID	Date(s)	Results
Sebastopol meadowfoam <i>Limnanthes vinculans</i>	CNDDDB #21 Alton Road	April 22, 2011	Plants in flower in drying, mid-sized vernal pools. Small amounts of water present.
		May 10, 2011	Plants in mid- to late-flower in drying mid-sized vernal pools.
		June 9, 2011	Plants in late bloom to fruit. Mid-sized vernal pools are dry. Harder to find, almost finished.
		April 6, 2012	Pools holding significant water and plants not visible
		June 8, 2012	Plants gone to fruit.
Sonoma sunshine <i>Blennosperma bakeri</i>	CNDDDB #27 Alton Road	April 22, 2011	Plants in flower in drying, mid-sized vernal pools. Small amounts of water present.
		May 10, 2011	Plants in later flower/fruit in drying mid-sized vernal pools.
		June 9, 2011	Mid-sized vernal pools are dry, some plants in late fruit. Other plants apparently in a "second bloom" in centers of drying pools. Few plants but blooming well.
		April 6, 2012	Pools holding significant water, but plants in bloom around the drying margins. Approximately 25% of plants in bloom
Dwarf downingia <i>pusilla</i>	CNDDDB #80 Alton Road	April 22, 2011	Plants in flower in drying parts of shallower vernal pools. Only slightly muddy.
		May 10, 2011	Plants in fruit, hard to find in shallow dry parts of vernal pools. End of season.
		April 6, 2012	Pools holding significant water and plants not visible
Burke's goldfields <i>Lasthenia burkei</i>	CNDDDB #25 Alton Road	May 10, 2011	Plants in dry, mid- to large-sized vernal pools; few plants but in full flower.
		June 9, 2011	Late flower to fruit in dry mid-sized pools.
		April 6, 2012	Pools holding significant water and plants not visible
		June 8, 2012	Late flower to fruit in dry mid-sized pools.
Sonoma canescent manzanita <i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i>	New occurrence, confirmed by T. Parker	April 26, 2011	Plants in bloom north of Laytonville in Mendocino County.
Burke's goldfields <i>Lasthenia burkei</i>	CNDDDB #22 Railroad tracks	May 10, 2011	Possibly plants seen in drying vernal pool over fence, but grasses so deep hard to confirm.
Showy rancheria clover <i>Trifolium amoenum</i>	Dillon Beach, Sonoma County	May 13, 2011	Blooming plants observed.
North Coast semaphore grass <i>Pleuropogon hooverianus</i>	San Geronimo, Marin County	May 13, 2011	Blooming plants observed.
Sonoma alopecurus <i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Abbott's Lagoon, Marin County	May 13, 2011	Blooming plants observed.

Additional special status plant surveys were conducted in 2012 to provide a second year of survey data for sites within the urban growth boundaries of the Santa Rosa Plain Conservation Area and to provide adequate special status plant survey data for access routes and LZ/staging areas outside of the 200-foot corridor surrounding the powerline alignment which were identified after the 2011 survey season. The additional surveys were conducted on April 18-19 2012 by botanist Mr. Mark Bibbo and June 14-15 and 20 2012 by ecologist Molly Graber.

Special Status Wildlife Species

A field reconnaissance survey for suitable habitat for special-status wildlife species was conducted within the survey area on August 15-16, 2011 by GANDA biologists Ms. Saana Deichsel and Ms. Carolyn Chainey-Davis. The survey to assess habitat suitability for special status animals was conducted on foot by walking the survey area. . The purpose of the survey was to 1) identify and describe the onsite habitat conditions, and 2) assess habitat suitability for the potential occurrence of special status wildlife species. Surveys of the project area for special status wildlife species were limited to habitat analysis and did not include protocol-level surveys.

As a result of observation during the reconnaissance survey of suitable breeding sites for California tiger salamander and California red-legged frog (*Rana draytonii*) near the survey area, a focused review of the project area for habitat for special status amphibians was conducted on February 14, 2012 by GANDA biologists Ms. Karla Marlow and Mr. Rob Witthaus. Additionally, a review of aerial imagery was conducted to identify suitable breeding sites outside of the survey area, but which may be within the potential dispersal range for special status amphibians (Jennings and Hayes 1994). The focused review was conducted to analyze the suitability of habitats within the survey area for utilization as breeding or dispersal habitat by special status amphibians. The review included analysis of the location of suitable aquatic habitat identified during field surveys and review of aerial imagery, local topography, and the plant communities present in upland habitats within the project area. Suitable ponds for special status amphibians outside of the survey area, identified as a result of field surveys and review of aerial imagery are shown in Figure 3. The extent of special status amphibian upland habitat utilization and dispersal range from identified aquatic habitats is also displayed in Figure 3. Seasonal and perennial watercourses having potential to serve as aquatic dispersal habitat within the survey area are shown in Appendix A.



Potential CRLF Breeding Habitat

- Potentially Suitable Breeding Pond
- Fulton Fitch Survey Area
- 300-foot Buffer from Potentially Suitable Breeding Pond
- 1 mile Buffer from Potentially Suitable Breeding Pond



Source: ESRI Bing Maps (2010); GANDA GIS 2012

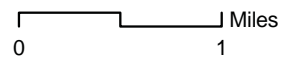


Figure 3. Potential CRLF Breeding Ponds

Sonoma County, CA
May 2012

5. EXISTING CONDITIONS

The following is a summary of existing vegetation, soils, wetlands, and special status plants and wildlife observed in the survey area.

5.0 Vegetation Community and Soil Types

The survey area covers approximately 477.5 acres. Of this acreage, approximately 2.62 acres are paved roadways. The vegetation communities and soil types in the remaining acreage are described below. Much of the survey area is vegetated with various woodland, grassland, and forest communities; these communities intergrade with each other. The community boundaries, depicted on maps in Appendix A, should be considered general trends rather than sharp lines. Photographs of the survey area are included in Appendix D.

5.0.0 Vegetation Communities

Coast Live Oak Woodland and Coast Live Oak Forest

The most common vegetation communities in the survey area are coast live oak woodland and coast live oak forest (totaling 168.9 acres). These are the dominant community types on the foothills above the valley floor. In both types, the canopy is dominated by coast live oak (*Quercus agrifolia*). Other tree species such as madrone (*Arbutus menziesii*), blue oak (*Q. douglasii*), Oregon oak (*Q. garryana* ssp. *garryana*), and California bay (*Umbellularia californica*), are also common. Occasional California buckeye (*Aesculus californicus*) are also present. Poison oak (*Toxicodendron diversilobum*), and hairy honeysuckle (*Lonicera hispidula* var. *vacillans*) are common woody plants in the understory.

The coast live oak woodland has an intermittent canopy with a grassy, open understory. A variety of grasses and herbs grow in the openings between trees and at the woodland edge. Common species are slender wild oat (*Avena barbata*), rattlesnake grass (*Briza maxima*), wavy-leaf soaproot (*Chlorogalum pomeridianum*), hedgehog dogtail (*Cynosurus echinatus*), blue wildrye (*Elymus glaucus*), and purple needlegrass (*Stipa pulchra*), and common hedge parsley (*Torilis arvensis*).

The coast live oak forest has similar species composition, but a more closed canopy, and fewer openings that support herbaceous species. These two communities intergrade between each other, Oregon oak woodland, and mixed north slope cismontane woodland.

Grasslands

Grasslands are the second most common community type in the survey area (115.3 acres). These grasslands consist of areas dominated by low-growing grasses and herbs, with few trees and/or shrubs. Common species in the grasslands are Spanish lotus (*Acmispon americanus*), barbed goatgrass (*Aegilops triuncialis*), slender wild oat, purple false brome (*Brachypodium distachyon*), rattlesnake grass, ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), sterile brome (*B. sterilis*), hedgehog dogtail, medusahead (*Elymus caput-medusae*), blue wildrye, stork's-bills (*Erodium botrys*), six weeks rattail fescue (*Festuca myuros*), rye grass (*F. perennis*), Harding grass (*Phalaris aquatica*), purple needlegrass, little hop clover (*Trifolium*

dubium), and rose clover (*T. hirtum*). Some areas support non-dominant native wildflowers such as clarkias (*Clarkia* sp.), lupines (*Lupinus* sp.), and leptosiphon (*Leptosiphon* sp.).

Much of the grasslands are completely dominated by annual non-natives, and are classified as non-native grassland (55.0 acres). Other portions of the survey area had non-native grassland, with patches having a high percentage of valley needlegrass (greater than five percent cover). These areas mixed areas area mapped as non-native grassland/valley needlegrass grassland (60.3 acres).

Mixed North Slope Cismontane Woodland

Mixed north slope cismontane woodland was also a common community in the study area (92.8 acres). The same tree species are present in the overstory of this woodland as in coast live oak woodland: California buckeye, madrone, coast live oak, blue oak, garry oak, and California bay. California black oak (*Quercus kelloggii*), and grey pine (*Pinus sabiniana*) are also present. In the mixed north slope cismontane woodland, no single species regularly dominates the overstory. Canopy openings are common, and shrubs are common in the understory. These include common manzanita (*Arctostaphylos manzanita*), coyote brush (*Baccharis pilularis*), hoary honeysuckle (*Lonicera hispidula*), snowberry (*Symphoricarpos mollis*), and poison oak (*Toxicodendron diversilobum*). The herbaceous layer in this mixed woodland is similar to that of the coast live oak woodland.

Oregon Oak Woodland

Approximately 32.4 acres of the survey area are covered with woodland that is dominated by well-spaced medium-sized Oregon oak trees. Other trees such as California buckeye, madrone, coast live oak, and blue oak are also scattered throughout the overstory. Poison oak, hairy honeysuckle, and snowberry are common woody plants in the understory. The herbaceous layer contains grasses and herbs also common in the north slope cismontane woodland and grasslands.

This community type intergrades with coast live oak woodland and mixed north slope cismontane woodland.

Vineyard

Approximately 31.5 acres of the survey area are vegetated with cultivated grape (*Vitis vinifera*) vineyards. This vegetation community does not correspond to a Holland type (Holland 1986). The vineyards are managed with even-aged grape vines and a mowed ruderal understory. Common understory species are wild oat, soft chess, ripgut brome, rough cat's-ear, various types of filaree, black medic (*Medicago lupulina*), English plantain (*Plantago lanceolata*), little hop clover (*Trifolium dubium*), rose clover (*Trifolium hirtum*), and subterranean clover (*T. subterraneum*). Approximately 9.6 acres of the vineyard habitat is currently fallow, and is dominated by a thick, weedy coverage of wild oat, field mustard (*Brassica rapa*), common mallow (*Malva neglecta*), Harding grass, blessed milk thistle (*Silybum marianum*), scarlet clover (*Trifolium incarnatum*), and winter vetch (*Vicia villosa*).

Central Coast Live Oak Riparian Forest²

Approximately 21.7 acres Central Coast live oak riparian forest occurs in the corridors around larger perennial streams. Coast live oak is a dominant tree in the dense overstory of these corridors. Unlike the coast live oak woodlands and forests in the drier settings described above, these riparian forests have a more evenly-mixed canopy containing broad-leaved and riparian trees such as big-leaf maple (*Acer macrophyllum*), California buckeye, Valley oak (*Quercus lobata*), interior live oak (*Q. wislizenii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*). In these settings, the canopy is dense, multi-storied, and tall, often to 50 feet. Blackberry (*R. armeniacus*, *Rubus ursinus*), snowberry, and poison oak are common in the understory. The streams have contain a mix of hydrophytic herbs such as tall nutsedge (*Cyperus eragrostis*), dense willow-herb (*Epilobium densiflorum*), penny royal (*Mentha pulegium*), seep-spring monkeyflower (*Mimulus guttatus*), rabbit's foot grass (*Polypogon monspeliensis*) and the moss *Scleropodium* (on rocks below ordinary high water).

Developed Areas

A small portion of the survey area (6.2 acres) is developed as residential homes with driveways, yards, gardens, barns, tennis courts, small orchards, and similar non-natural environments. This designation does not correspond to a Holland type (Holland 1986).

California Bay Forest

While California bay can be found scattered throughout wooded vegetation communities in the survey area, this species dominates the overstory of the forest which is approximately 20 feet east of the power line alignment at poles 78 and 79. Coast live oak and madrone are present in the understory. A small patch of California-tea (*Rupertia physodes*) occurs at the edge of this forest type; while this species isn't listed as "rare," this is an unusual occurrence of a plant species that was found nowhere else in the survey area.

A small stand consisting of a few very large California bay trees occurs approximately 75 feet southwest of the power line at poles 80 to 81; almost no herbaceous understory is present in this stand. California bay forest covers a total of approximately 2.0 acres in the survey area.

Blue Oak Woodland

While blue oak is commonly scattered throughout other woodland types in the survey area, a small patch (1.8 acres), of woodland dominated by well-spaced medium-sized blue oak trees occurs near pole 31. The understory consists of grasses and herbs common in the non-native grassland (see Grasslands section above).

Douglas'-fir Forest

A small stand (1.56 acres) of forest with a Douglas'-fir (*Pseudotsuga menziesii*) overstory was observed between pole 68 and the Lazy P Ranch; California bay and madrone occur in the sub-canopy. No poles were located in this vegetation type, which occurs both along the drainage and up the adjacent slope.

² The Central Coast live oak riparian forest overlaps considerably with the "riparian woodland" type described in the Section 5.1.3.

Red Gum Stand

A small stand (0.72 acre) dominated by tall red gum trees (*Eucalyptus camaldulensis*) was observed, growing on a ridge approximately 40 feet east of pole 58. This vegetation community does not correspond to a Holland type (Holland 1986).

Background research indicates that soils in the survey area are derived from a number of volcanic and sedimentary sources; no serpentine, serpentinite, or gabbro soils are present in the survey area (Table 5-1). Field observations concur with this assessment.

Table 5-1. Soil Types within the Survey Area

Soil Type(s)	General Description (NRCS 2011)
Dibble Clay Loam, 2 to 9 percent slopes Dibble Clay Loam, 9 to 15 percent slopes Dibble Clay Loam, 15 to 30 percent slopes Dibble Clay Loam, 15 to 30 percent slopes, eroded Dibble Clay Loam, 30 to 50 percent slopes Dibble Clay Loam, 30 to 50 percent slopes, eroded	Moderately deep, well drained soils that formed in material weathered from shale and sandstone (sedimentary origin).
Felta Very Gravelly Loam, 5 to 15 percent slopes Felta Very Gravelly Loam, 15 to 30 percent slopes Felta Very Gravelly Loam, 30 to 50 percent slopes	Well-drained soils formed in mixed gravelly alluvium from mixed igneous rocks
Guenoc Gravelly Silt Loam, 30 to 75 percent slopes	Moderately deep, well-drained soils formed in material weathered from basaltic (volcanic) rock.
Laniger Loam, 30 to 50 percent slopes	Well- to excessively-drained soils. Underlying bedrock is rhyolite or rhyolitic tuff (igneous volcanic origin with high silica content).
Positas Gravelly Loam, 9 to 15 percent slopes	Deep and very deep, moderately well drained soils that formed in alluvial material from mixed rock sources
Riverwash	Alluvium from mixed sources.
Spreckles Loam, 2 to 9 percent slopes Spreckles Loam, 9 to 15 percent slopes Spreckles Loam, 15 to 30 percent slopes Spreckles Loam, 15 to 30 percent slopes, eroded Spreckles Loam, 30 to 50 percent slopes	Well-drained soils with/derived from tuffaceous sediments (volcanic origin)
Toomes Rocky Loam, 2 to 30 percent slopes Toomes Rocky Loam, 30 to 75 percent slopes	Very shallow and shallow, well- to somewhat excessively-drained soils, formed in material weathered from tuff breccia, basalt and andesite (volcanic origin).

5.1 Wetland and Water Features

The following section characterizes the wetland and water features identified within the survey area. A summary of wetland and water features observed within the survey area is provided in Table 5-2, and maps are in Appendix A.

Table 5-2. Wetland and Water Features within the Survey Area

Wetland/Water Feature Type	Number of Occurrences	Total Area (Acres)
Seasonal Watercourse	39	3.829
Open Water	2	0.701
Seasonal Wetland	15	1.210
Riparian Woodland	12	24.109

5.1.0 Seasonal Watercourse

The subject line crosses numerous watercourses. For the purpose of this preliminary mapping, watercourses are defined as areas with a defined bed, bank, and channel. Two types of seasonal watercourse were observed within the survey area, ephemeral channels and intermittent creeks. Ephemeral channels within the survey area are those seasonal drainages which support brief flowing water from precipitation only. Ephemeral channels can include unvegetated waterways or watercourses with vegetative communities along the banks or channel which are contiguous with the surrounding upland communities (e.g. ruderal or non-native grassland within the channel bed and banks). Intermittent creeks are defined as those seasonal drainages where both rain water and ground water flow during the wet season and sometimes extending into late spring or early summer. Intermittent creeks typically support some wetland or riparian vegetation within or surrounding the banks. For the purpose of mapping for this project, the two drainage types are mapped together as seasonal watercourses.

Perennial creeks flow year-round and, within the survey area, these watercourses support dense vegetative cover and therefore are mapped and described based on the canopy of the associated plant community (see Section 5.1.3 below).

5.1.1 Open Water

This mapping of open water includes unvegetated standing waters within the survey area. Open water within the survey area is represented by two man-made ponds located on private property. Generally, the depth of water precludes establishment of emergent vegetation, however mosquito fern (*Azolla sp.*) provided a thick surface cover. This mapping includes open waters to the top of bank as identified with aerial and topographic maps.

5.1.2 Seasonal Wetland

Seasonal wetlands occur in depressions, ditches, swales, and other low lying areas that are inundated or support saturated soil conditions for a portion of the growing season. Soil conditions within seasonal wetlands are generally dry in late summer through fall. These wetlands are usually supported by direct precipitation and/or overland flow during the wet

season. The vegetation composition and structure of seasonal wetlands is highly variable depending on soil type, hydrology, and disturbance levels. These sites are generally dominated by annual species, but may include some perennial species depending on local hydrology. Common plants in seasonal wetlands within the survey area include ryegrass, Harding grass, rushes (*Juncus bufonius*, *J. effusus*, *J. occidentalis*, *J. patens*, and *J. xiphioides*), curly dock (*Rumex crispus*), hyssop loosestrife (*Lythrum hyssopifolia*), pennyroyal (*Mentha pulegium*), ox-tongue (*Helminthotheca echioides*) wild hyacinth (*Triteleia hyacinthina*), and vernal sweet grass (*Anthoxanthum odoratum*). Regular disturbance by cattle has resulted in invasion of the depressions by non-native species and invasive exotics from adjacent habitats. However, the observation of ponding during the surveys indicates potential for suitable conditions for seasonal wetland habitats in the absence of regular disturbance.

Seasonal wetlands are widely distributed through the survey area and are found in both natural and man-made settings. In many locations, seasonal watercourses which expand into broad terraces which support characteristic seasonal wetland vegetation are mapped based on the wetland community type. Additionally, seasonal wetlands have developed adjacent to seasonal and perennial watercourses and open water in some locations where overland stormwater runoff accumulates prior to passing into the watercourse. Seasonal wetlands are also present within and adjacent to access roads, in a small dig within grassland habitat, and surrounding a power pole (pole 72) where seasonal precipitation accumulates in sufficient quantity and duration within disturbed areas to support wetland vegetation.

5.1.3 Riparian Woodland

Riparian woodland community³ includes a tree canopy ranging from continuous to intermittent over the associated stream course (perennial and intermittent creeks). Riparian tree cover can replace or complement shrub cover associated with riparian scrubs. Within the survey area, the tree canopy of riparian woodlands is dominated by coast live oak, interior live oak, and/or valley oak, with tree willows such as arroyo willow and red willow (*Salix laevigata*), big-leaf maple, California buckeye, and California bay. Riparian woodlands are identified along watercourses throughout the survey area.

For the purposes of this preliminary wetland and water feature mapping, riparian woodlands are identified in the survey area where a tree canopy is present in association with perennial and intermittent creeks. In several areas along the survey area these woodlands are contiguous with upland oak woodland communities. In other locations, riparian woodland is mapped where tree canopy is present along small, seasonal watercourses. While the vegetative community identification in some of these locations is more appropriately affiliated with upland communities, the vegetated corridor along the watercourses is mapped herein as riparian.

³ This wetland type generally corresponds to areas identified as “coast live oak woodland and forest” and/or “central coast live oak riparian forest” in the vegetation mapping.

5.2 Special Status Species

GANDA biologists utilized information collected as a result of background research/literature review in concert with observations from surveys of the study area to determine the potential for occurrence of special-status plant or wildlife species. The potential for occurrence of special status species in the study area was determined based on the following criteria:

- **Low** - Habitat within the study area and/or project vicinity satisfies very few of the species' requirements and/or the range of the species overlaps with the vicinity of the study area, but not with the study area itself. The species' presence within the study area is unlikely.
- **Moderate** - Habitat within the study area and/or study area vicinity meets some of the species' requirements and/or known locations for the species are found in the vicinity of the study area. Presence of the species within the study area is moderately likely.
- **High** - Habitat within the study area and/or study area vicinity meets most or all of the species' requirements and known locations for the species are found within proximity to the study area. Presence of the species within the study area is highly likely.

The determination of potential for occurrence of special status plant and wildlife species within the study area is included in the species lists in Appendices B and C, respectively. Observations of special status plant species within the survey area as well as special status wildlife species having moderate or high potential to occur are described below.

5.2.1 Special Status Plants

Background research identified 66 special status species from the nine quad search areas. A review of this list indicates that 51 of these species have potential to occur in the habitats within the survey area. Details of this analysis are presented in Appendix B.

As a result of surveys conducted in 2011 and 2012, no federal- or state-listed or CRPR List 1 or 2 plant species were observed in the plant survey area. Suitable habitat for federally-listed plant species covered under the Santa Rosa Plain Conservation Strategy (USFWS 2005) was found to be absent in portions of the plant survey area which are within the urban growth boundaries.

One occurrence of sulfur pea (*Lathyrus sulphureus*, CRPR 3) was observed incidentally outside the plant survey area in a drainage between poles 75 and 74 (Weston Ranch, Sonoma Open Space District), and near pole 50. Other occurrences of non-flowering pea (correct timing, plants were vegetative) were found in other locations near poles 89 to 91 (Minaglia Ranch), between poles 57 to 55, and 50 to 45. These plants may be sulfur pea, or non-flowering common species such as Pacific pea. In addition, bristly leptosiphon (*Leptosiphon acicularis*, CRPR 4.2) was observed in the grassland between poles 81 and 83.

Several weed species that are listed by the California Department of Food and Agriculture (CDFA) and/or the California Invasive Pest Council (Cal-IPC) were observed during surveys. Noxious weeds observed during the surveys include the following: barbed goatgrass, Italian

thistle (*Carduus pyncocephalus*), purple star-thistle (*Centaurea calcitrapa*), yellow star-thistle (*Centaurea solstitialis*), Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), and Spanish broom (*Spartium junceum*).

A list of plant species recorded from the survey area is provided in Appendix E.

5.2.2 Special Status Wildlife Species

As a result of background research of the survey area, 25 species listed on CDFG's Special Animals List were identified as historically occurring in the research area. Eight of these species do meet the criteria of special status as defined in Section 4.0 above. The remaining 17 special status species identified include two invertebrates, four fish, three amphibians, one reptile, two birds, and five mammals which are described in Appendix C.

Special Status Wildlife with Low Potential to Occur Within the Survey Area

Ten of the special status species identified during background research - two invertebrates, four fish, two amphibians, one bird, and one mammal - were determined to have low potential to occur in the survey area as a result of the habitat evaluation. A brief description of this determination is provided below and these species are not discussed further in this report.

Two invertebrates - Navarro roach (*Lavinia symmetricus navarroensis*) and California freshwater shrimp (*Syncaris pacifica*) - four fish species - Russian River tule perch (*Hysteroecarpus traski pomo*), hardhead (*Mylopharodon conocephalus*), central California coast evolutionarily significant unit of coho salmon (*Oncorhynchus kisutch*), and the central California coast distinct population segment of steelhead (*Oncorhynchus mykiss irideus*) - and one amphibian - foothill yellow-legged frog (*Rana boylei*) - are all associated with perennial stream habitats which are not present in project work areas. The unnamed creek adjacent to Dumps Road and Pool Creek are designated critical habitat for steelhead within the survey area, however these watercourses are beneath long spans of the power line and no work activities are proposed in association with perennial watercourses in the survey area. Similarly, foothill yellow-legged frog (*Rana boylei*) tend to remain in or close to perennial watercourses with rocky or gravelly bottoms, shallow runs or riffles, and deep pools. Within the survey area, the watercourse immediately south of Dumps Road, Pool Creek, Wright Creek, and Windsor Creek were all observed to have gravel substrates and aquatic features suitable for foothill yellow-legged frog. However, these watercourses are also well removed from project facilities and work areas and it is not anticipated that the species would be encountered in association with project work sites unless sediments or other pollutants were allowed to travel from upland work sites into these watercourses. It is expected that implementation of best management practices for erosion control and stormwater protection would eliminate the possibility for impacts to special status aquatic invertebrate, fish, and amphibian species.

California tiger salamander (CTS) is not anticipated to be present in the project area. A segment of the southern portion of the power line alignment east of Faught Road, from pole 25 to 41, runs adjacent to a portion of the Santa Rosa Plain Conservation Strategy (SRPCS) Study Area described as being within the potential range of CTS (USFWS 2005). However, this segment of the powerline is above 300 feet in elevation and generally characterized by oak woodland habitats and therefore is not considered to be within areas described for conservation of CTS

(USFWS 2007). The dense oak woodland and vineyard habitats within the southern portion of the powerline alignment do not support grassland mosaics often associated with CTS upland dispersal. Further, ground squirrel and pocket gopher burrows typically utilized by the species in upland habitats, were not observed in project work areas at the south end of the powerline alignment. Portions of the northern portion of the power line alignment run adjacent to and within the urban growth boundary of the SRPCS in areas where the SRPCS Study Area is described as outside the potential range for CTS. Finally, ponds observed near the project area (Figure 3) are perennially wetted and seasonally ponded habitat preferred for breeding by the species was not observed. Perennial ponds are more likely to support aquatic predators of CTS eggs and larvae and therefore have decreased likelihood for supporting breeding CTS. For these reasons, CTS are considered unlikely to occur in the project work areas and access routes and the species is not discussed further in this report.

Western burrowing owl (*Athene cunicularia*) and Sonoma tree vole (*Arborimus pomo*) have not been recorded within five miles from the survey area and opportunities for these species are limited to isolated areas of marginal habitat and therefore these species are not expected to occur in the project area.

Special Status Wildlife with Moderate Potential to Occur Within the Survey Area

California red-legged frog (Rana draytonii), Federally Threatened, State Species of Special Concern

The California red-legged frog (CRLF) occurs primarily in ponds or pools of perennial or intermittent stream courses that retain water long enough for breeding and development of young. Adults prefer dense, emergent or shoreline riparian vegetation closely associated with deep, still or slow-moving water and may disperse upstream, downstream or upslope from their breeding habitat (Jennings and Hayes 1994). Key habitat features for CRLF include good water quality and absence of introduced bullfrogs (*Lithobates catesbeianus*) and predatory fish. Adults and sub-adults can shelter in small mammal burrows, moist leaf litter, or debris piles generally found within 300 feet of aquatic habitat. However, during wet periods, CRLF can move long distances between aquatic features, traversing up to one mile from ponds and ephemeral drainages (Jennings and Hayes 1994).

Although there are no records for CRLF within 5 miles from the survey area, there are numerous ponds and drainages within and adjacent to the survey area which represent suitable aquatic habitat for the species (Figure 3). Suitable aquatic habitat is distributed along the power line alignment such that the entire alignment is within the one mile dispersal range for the species during wet periods. However, some of the project work areas are located on ridgelines which are well removed from aquatic habitats and are unlikely to be in areas which would be utilized for upland dispersal, even during the wet season. Due to their connectivity with perennially suitable aquatic breeding habitats, seasonal watercourses and seasonal wetlands in the survey area are considered to have potential to be utilized for wet season dispersal, foraging, and cover for the species. During the dry season, CRLF are expected to be found closer to aquatic habitats. As a result, dry season work activities having potential to affect CRLF are limited to upland sites within 300 feet from suitable aquatic habitat which could be within the range of sheltering adults or sub-adults. Individuals could be impacted during the dry season within 300

feet from aquatic habitat as a result of excavation into upland sheltering habitat or having upland sheltering sites or individuals crushed by vehicles accessing project work areas. In the event that work occurs during the wet season or during wet periods, there is increased potential for CRLF to occur in the project area as individuals dispersing across upland habitats, and therefore construction activities have potential to affect the species along a greater portion of the power line alignment during wet periods. Suitable aquatic habitat is present within 300 feet from work areas at the following work areas:

- Dumps Road guard structures, between poles 34 to 35, 37, 54, 55, access to 56 through 62, access to 68 through 70, 71-73, 82 to 83

During wet periods or when seasonal watercourses and wetlands are wetted, the potential for occurrence of CRLF in the study area is more extensive and could include all work areas and access within the following project reaches:

- Access, road improvements and excavation at poles 23 through 26; excavation for guard structures at Dumps Road; access, road improvements and other ground disturbance at work areas from pull site/staging area 2 to pole 42; access, road improvements, and other ground disturbance at work areas from poles 54 to 58; access, road improvements, and other ground disturbance at work areas from poles 63 through 92

Although aquatic habitat which appears to be suitable for CRLF is located within dispersal range from project access and work areas, the likelihood for impacts to the species is considered to be relatively low. There are no records for the species within five miles from the project area (CDFG 2012), and the recorded distribution for the species is somewhat limited in this portion of Sonoma County (Jennings and Hayes 1995). No direct impacts are anticipated to perennial aquatic habitats as a result of project activities. Additionally, the majority of work activities are anticipated to occur during dry periods when CRLF tend to remain close to ponds or streams with aquatic habitat (Bulger, et.al. 2003). In the event CRLF are utilizing aquatic habitats within dispersal range from the project area, the greatest potential for occurrence in access or work areas would be migrating or non-migrating individuals dispersing through terrestrial habitats during wet periods. Non-migrating individuals would be anticipated to remain within approximately 300 feet from ponds or streams, and migrating individuals would be expected to travel in relatively direct, straight paths to other aquatic habitats (Bulger, et. al. 2003). Implementation of avoidance and minimization measures described in Section 7, below, is expected to minimize the likelihood for project impacts to CRLF in the unlikely event they are found in terrestrial work areas.

There is no critical habitat for CRLF within the survey area.

Western pond turtle (Emys marmorata), State Species of Special Concern

The preferred habitat for western pond turtles includes ponds or slow-moving water with numerous basking sites (logs, rocks, etc.), food sources (plants, aquatic invertebrates, and carrion), and few predators (raccoons, introduced fishes, and bullfrogs). Western pond turtle individuals have been reported to make overland movements of up to a mile to access other aquatic habitat (Ernst et al. 1994).

Several CNDDDB occurrence records exist within 5 miles of the survey area. Sections of the alignment located close to permanent or semi-permanent ponds offer suitable habitat for nesting females (specifically near the poles in Foothill Park), in grassland areas. Additionally, ponds below poles 35 and 37 as well as within the Windsor Oaks Vineyard (Pull site/staging area 6 and poles 71, 72, and 73) appear to provide suitable aquatic habitat for the species.

Pallid bat (Antrozous pallidus), State Species of Special Concern

Pallid bats occurs in a wide variety habitats throughout the state of California, including habitats ranging from deserts to moist oak woodlands and redwood forests along the coast (Pierson et al. 2002). Commonly, this species is found in open, dry grasslands, oak savannah, and open scrublands (Williams 1986). This bat is highly social and roosts in rock crevices, caves, mines, tunnels, tree hollows, bridges, and buildings (Pierson et al. 2002). Suitable habitat for pallid bats is located in the oak woodlands and other woodland habitat which is found throughout the reach of the power line alignment as well as in barns, outbuildings and other structures which are distributed along the survey area.

Townsend's big-eared bat (Corynorhinus townsendii), State Species of Special Concern

Townsend's big-eared bat is widely distributed throughout California with most populations concentrated in habitats with caves or mines for roosting (Pierson et al. 2002); however, buildings are sometimes used (Jameson and Peeters 2004). This species is locally common in coastal and lower montane habitats (Zeiner et al. 1990; Pierson et al. 2002). There are no records for the species within five miles from the study area (CDFG 2011a) and no caves or mines are known from the vicinity of the survey area. However, suitable roosting habitat may be present in barns and outbuildings on properties located along the power line alignment. The most notable potential roosting site along the survey area is a large barn located adjacent to pull site/staging area 2.

Western red bat (Lasiurus blossevillii), State Species of Special Concern

The western red bat is known to occur in habitats ranging from forested canyons, riparian zones and arid areas (Reid 2006). The winter range includes western lowlands and coastal regions south of San Francisco Bay. Typically, this species roosts in trees (2–40 feet high), most often in the edges of forests or woodlands adjacent to streams, fields, or urban areas. There are no records for this species within five miles from the survey area. However, trees in oak woodlands and other wooded habitat throughout the project area provide suitable roosting habitat for the species.

American badger (Taxidea taxus), State Species of Special Concern

American badgers are known to be widely distributed occurring in grassland and open scrub habitats. This species is primarily solitary and nocturnal, and a proficient digger that constructs burrows for resting and rearing young. The species has not been recorded from within five miles from the survey area and no burrows of suitable size for the badger were observed during reconnaissance surveys. However, despite the absence of observations of suitable burrows,

there is suitable open, grassland habitat for the species within the grasslands and open woodland habitats within the survey area, primarily north of pole 80.

Special Status Wildlife with High Potential to Occur Within the Survey Area

White-tailed kite (Elanus leucurus), State Fully Protected

White-tailed kites inhabit open lowland valleys and low, rolling foothills. They forage in grasslands, marshes, riparian edges, and cultivated fields where prey species (mainly ground squirrels and jackrabbits) are relatively abundant (Kaufman 1996). White-tailed kites typically nest on the tops of trees in close proximity to good foraging locations.

The CNDDDB includes one record for this species within 5 miles of the project (Figure 2; CDFG 2011a). Potentially suitable habitat for the species is present throughout the survey area. Suitable nesting habitat is present isolated coast live oak trees within annual grassland habitats or in coast live oak woodland habitats near the ecotone between annual grassland habitat and oak woodland habitat. Larger oaks in woodlands with thick canopies were observed close to poles 29, 35, 51, 52, 53, 58, 66, and 74. Grassland foraging habitat with surrounding oak woodlands is more prevalent in the northern portion of the survey area, north of pole 80. However, due to the close proximity of vineyards and rangelands, which also provide foraging opportunities, to oak woodlands along the southern reach of the power line alignment, white-tailed kite are considered to have potential to occur throughout the survey area.

6. POTENTIAL BIOLOGICAL CONSTRAINTS

The following section discusses potential biological resource constraints related to the project. The proposed project may be constrained by potential impacts to wetland and water features, the potential presence of the 6 special status wildlife species having moderate to high potential for occurrence in the project area, and nesting birds. Based on the observation of suitable habitat and/or species present, proposed construction activities and location of suitable habitat in the study area, the resources discussed in this section were identified as having the potential to pose constraints on the proposed project.

6.0 Wetland and Water Features

There are eleven locations where project access may impact wetland and/or water features potentially subject federal and/or state jurisdiction. These locations are displayed as sites S1-S11 on maps provided in Appendix A. Potential impacts to wetland and/or water features are generally associated with locations where access roads cross seasonal watercourses or seasonal wetlands, with the exception of S5, where a seasonal wetland is identified within proposed pull site/staging area 5. The area of wetland and water features within project access and work areas and site descriptions associated with sites S1-S11 is provided in Table 6-1. The determination of area within access routes assumes 12 foot wide access roads. Impacts to seasonal watercourses and seasonal wetlands are based on preliminary mapping and assessment of potentially jurisdictional features. A formal delineation of jurisdictional limits in the survey area has not been prepared.

Table 6-1. Wetland and Water Features within Project Access and Work Areas

Site Number	Approximate Area within Access/Work Area (Sq. ft.)		Comments
	Seasonal Watercourse	Seasonal Wetland	
S1	12 (<0.01 acre)	--	Access road crosses small channel one-foot wide at ordinary high water mark (OHWM) which drains upstream ravine to downstream confluence with additional drainages. Access to pole 23.
S2	12 (<0.01 acre)	600 (0.01 acre)	Access road crosses seasonal watercourse with primary flow channel approximately one foot wide at OHWM with associated seasonal wetlands on either side of the channel approximately 50 feet wide. Access to poles 55 to 62 and pull site/staging area 5.
S3	24 (<0.01 acre)	--	Access road crosses confluence of two small, unvegetated seasonal watercourses. Approximately two foot wide ordinary flow channel.
S4	--	1,306 (0.03 acre)	Small seasonal wetland within existing access road identified by presence of hydrophytic vegetation. Located along access to poles 61, 62, and pull site/staging area 5.

Site Number	Approximate Area within Access/Work Area (Sq. ft.)		Comments
	Seasonal Watercourse	Seasonal Wetland	
S5	--	2,178 (0.05 acre)	Small seasonal wetland identified by presence of hydrophytic vegetation. Located within depression created by existing access road to tower 62 in location proposed for pull site/staging area 5.
S6	72 (<0.01 acre)	--	Overland access to pole 66 requires crossing unvegetated seasonal watercourse. Primary channel is approximately six feet wide at OHWM.
S7	36 (<0.01 acre)	--	Existing access road crosses unvegetated seasonal watercourse over existing culvert. Road is eroded at crossing and culvert may require replacement to allow for construction vehicle passage. No impacts will occur at this site if culvert is deemed adequate. Approximately three foot channel at OHWM.
S8	12 (<0.01 acre)	--	Overland access to pole 68 crosses a small seasonal watercourse with a narrow, approximately one foot channel at OHWM.
S9	120 (<0.01 acre)	--	Access to pole 74 requires crossing approximately ten foot wide seasonal watercourse within wooded drainage.
S10	24 (<0.01 acre)	--	Overland access to pole 86 crosses a small seasonal watercourse with approximately two foot wide channel at OHWM
S11	24 (<0.01 acre)	--	Existing dirt access road crosses a small seasonal watercourse with approximately two foot wide channel at OHWM
TOTAL	336 (0.01 acre)	4,084 (0.09 acre)	

It is understood that potential impacts to seasonal watercourses and wetlands will be limited to placement of crossing structures such as fiberglass matting, steel plates, and/or temporary bridges on or over the features to facilitate access for excavation of pole replacement sites. Most of the crossing structures will be placed where access to pole sites crosses small, seasonal drainages. To the extent feasible, crossing structures will be supported outside of the top of bank of the features so that no material or impacts occur within the bed, bank, or channel. Following excavation of the pole sites, it is anticipated that access to the poles for reconductoring would be mostly accomplished with helicopters. Therefore, with the exception of the matting along the access route to and within pull site/staging area 5, all structures are anticipated to remain in place for a relatively short duration. The access to pull site/staging area 5 is an existing access road which crosses a small watercourse with associated seasonal wetlands (Site S2), where the access road extends from the end of Mt. Weske Drive. While the watercourse is narrow at the location of the access road crossing (approximately one foot wide), a broad seasonal wetland is present on the flood terrace on either side of the channel (approximately 50 feet wide). Due to the width of the seasonal wetlands, it is not feasible to span the wetland and water features with a supported crossing structure. Therefore, it is anticipated that matting will be placed along the existing access road to avoid rutting and other impacts to the feature during project access to poles 56 through 62 and pull site/staging area 5. Two additional small, seasonal wetlands have been identified along the access route to and

within pull site/staging area 5. It is anticipated that matting would be placed on these features during access and work at the pull site/staging area. Placement of the crossing structures over and across wetland and water features during access will avoid ground disturbance within the features. As a result, the majority of impacts to wetland and water features can either be avoided or will be limited to temporary fill associated with placement of the crossing structures. If it is determined to be necessary, replacement of the culvert at S7 would result in minor ground disturbance during removal of the existing culvert and placement of the new culvert. However, repair of this culvert may be determined to be unnecessary, which would result in no impacts to potentially jurisdictional features at this location. A proposed access route to poles 66 and 65, south of S7, was eliminated from consideration due to the presence of two seasonal watercourses within the access route. An alternative access to the poles from the south was identified to avoid the need for crossing structures at these watercourses. The project will not result in permanent impacts to wetland or water features.

As described above, the determination of federal and/or state jurisdiction of the wetland and water features within the study area is considered preliminary. A formal wetland delineation is recommended to confirm the boundaries of the features at S1-S11 and determine the limits of federal and/or state jurisdiction. Further investigation of wetland and water features may also show that some identified features do not support all of the parameters necessary for being subject to federal and/or state jurisdiction. For features which are determined to be subject to federal and/or state jurisdiction, placement of temporary fill on the features may require permits from the USACE, CDFG, and/or the Regional Water Quality Control Board (RWQCB).

6.2 Special Status Plants

No special status plants or suitable habitat for SRPCS plant species were observed during surveys conducted in 2011 and 2012, and special status plant species are not expected to be impacted by project activities.

6.3 Special Status Wildlife

The following seven special status wildlife species have been identified as having moderate or high potential to occur in the project area and may be impacted by project activities:

- California red-legged frog
- Western pond turtle
- White-tailed kite
- Pallid bat
- Townsend's big-eared bat
- Western red bat
- American badger

Of these special status wildlife species having potential to occur in the survey area, white-tailed kite is listed as a fully protected species. Incidental take authorization cannot be granted for fully protected species and any taking of a fully protected species is considered a violation of the California Fish and Game Code.

California red-legged frog is a federally-listed threatened species. Impacts to aquatic and upland habitats may require incidental take authorization from U.S. Fish and Wildlife Service pursuant to the Endangered Species Act. Perennial aquatic habitat appearing to be suitable for the species is present in ponds and perennial watercourses in habitats adjacent to project work areas (Figure 3 and Appendix A). No impact to perennial aquatic habitat is anticipated as a result of the project. The potential for occurrence of CRLF in project access and work areas is limited to terrestrial habitats and seasonal wetland and water features. Impacts to seasonal watercourses and seasonal wetlands as a result of the project may represent impact to aquatic dispersal habitat for CRLF, but impacts to these features is anticipated to be brief in duration and minimized by using spanning structures and matting to avoid ground disturbance (Section 6.0). Further, CRLF would only be anticipated to utilize seasonally wetted habitats for non-migration terrestrial travel within approximately 300 feet from perennial aquatic habitat or migration between perennial aquatic habitat during periods of rain events. Similarly, many of the upland portions of the project area may serve as terrestrial sheltering and dispersal habitat, particularly (but not limited to) pull site/staging areas 2; access road improvements and excavation at poles 23 through 26; excavation for guard structures at Dumps Road; access, road improvements and other ground disturbance at work areas from pull site/staging area 2 to pole 42; access, road improvements, and other ground disturbance at work areas from poles 54 to 58; access, road improvements, and other ground disturbance at work areas from poles 63 through 92. The likelihood for occurrence of CRLF at these work areas is considered relatively low due to the absence of records for the species within five miles from the survey area and because the utilization of terrestrial habitats in the survey area is expected to be limited to periods of rain events. The potential for impacts to the species and the likelihood of occurrence at upland work areas and seasonal watercourses and wetlands will be minimized by limiting construction to the dry season and implementing avoidance and minimization measures (AMM's) provided below in Section 7.

Pallid bat, Townsend's big-eared bat, western red bat, and American badger are all considered species of special concern by the CDFG. Species of special concern are not afforded formal protection under the federal or state Endangered Species Acts, however impacts to these species may be considered significant pursuant to the California Environmental Quality Act. Measures are recommended in Section 7 for protection of bat species potentially occurring in the project area. The project will not result in conversion of potentially suitable habitat for American badger and therefore this species is not anticipated to be impacted by project activities.

6.4 Nesting Birds

Migratory birds, protected under the Migratory Bird Treaty Act (MBTA) and sections of the California Fish and Game Code, could nest throughout most of the study area. Nesting is not anticipated to occur, however, on agricultural lands in row crop production. Take of active nests is prohibited pursuant to the MBTA and California Fish and Game Code. For construction occurring within the nesting season (typically considered to be February 1 through August 31), pre-construction surveys for nesting birds should be conducted within five days prior to the initiation of construction activities at a project work site. If active nests are found close enough to the construction area to be disturbed by these activities, non-disturbance buffers will be established around the nest.

7. RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

Recommended measures to reduce the likelihood of adverse temporary and/or permanent impacts to biological resources that could result from implementation of the project are discussed below. Additional mitigation agreements, if necessary, would be developed through consultation with the resource agencies (USACE, USFWS, CDFG, etc.) prior to project implementation. Prior to construction, responsibility for each mitigation effort should be expressly assigned.

Recommended measures include general measures for protection of biological resources as well as specific measures for protection of sensitive habitats and special-status species. It is anticipated that specific locations for application of AMMs may be refined as a result of further refinement of construction methods and schedules and agency coordination.

7.0 General Avoidance and Minimization Measures

General AMMs are applicable at all project locations, with the exception of implementation of biological monitoring prescribed in AMM-8. While biological monitoring will be applicable to activities in portions of the survey area, the use of monitors will vary dependent on the timing of construction and the presence of biological resources in association with the work areas when construction moves forward (e.g. presence/absence of active nests near work areas).

AMM-1 – Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed trash containers. Trash containers will be removed from the project area at the end of each working day.

AMM-2 – Parking. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed or developed areas or work areas as identified in this document. Off-road parking shall only be permitted in previously identified and designated work areas.

AMM-3 – Route and speed limitations. Vehicles will be confined to established roadways and pre-approved access roads, overland routes and access areas. Access routes and temporary work areas will be limited to the minimum necessary to achieve the project goals. Routes and boundaries of work areas, including access roads, will be clearly mapped prior to initiating project construction. Vehicular speeds will be kept to 15 mph on unpaved roads.

AMM-4 – Maintenance and refueling. All equipment will be maintained such that there will be no leaks of automotive fluids such as fuels, solvents, or oils. All refueling and maintenance of vehicles and other construction equipment will be restricted to designated staging areas located at least 100 feet from any down gradient aquatic habitat unless otherwise isolated from habitat. Proper spill prevention and cleanup equipment shall be maintained in all refueling areas.

AMM-5 – Prohibited activities. Trash dumping, firearms, open fires (such as barbecues), hunting, and pets will be prohibited in the work site.

AMM-6 – Restore temporarily disturbed upland and aquatic habitats. Sensitive habitats and habitats having potential to support special-status species which are temporarily disturbed as a result of project activities will be restored upon completion of construction. Habitats to be restored following temporary disturbance include annual grasslands, oak woodlands, and wetland and water features. Restoration requirements are dependent upon the area and extent of disturbance and may include activities such as restoration of topography, topsoil preservation and replacement, mulching, seeding, and/or planting. Site-specific restoration requirements will be initially assessed by onsite biological monitors and further defined by a revegetation specialist in areas with significant disturbance.

AMM-7 – Development and implementation of a Worker Environmental Awareness Program. An environmental awareness program for all construction personnel will be conducted by a qualified biologist prior to the beginning of construction activities. The program will be repeated for all new crew members prior to their commencement of work on the project. Training will include a discussion of measures being implemented to protect biological resources as well as the terms and conditions of all permits. Training will include information on the federal and state Endangered Species Acts, MBTA, and Porter-Cologne Water Quality Act, and the consequences of noncompliance with these acts. Under this program, workers will be informed about the presence, life history, and habitat requirements of all special-status species with a potential to be affected within the project area. Training will include information on state and federal laws protecting nesting birds, wetlands, and other water resources.

An educational brochure will be produced for construction crews working on the project. The brochure will include color photos of sensitive species as well as a discussion of avoidance and minimization measures.

AMM-8 – Biological monitor on-site during construction activities in sensitive areas. A qualified biological monitor will be on site during all ground-disturbing construction activities in or near sensitive habitats. For the purpose of this measure, sensitive habitats are defined herein as those areas identified as occupied by special-status species or having potential to support special-status species and/or wetland habitats. The monitor would ensure implementation of and compliance with all resource protection measures. The monitor will have the authority to stop work or determine alternative work practices in consultation with agencies and construction personnel as appropriate if construction activities are likely to impact sensitive biological resources.

AMM-9 – Erosion control materials. Only tightly woven netting or similar material shall be used for all geo-synthetic erosion control materials such as coir rolls and geo-textiles. No plastic monofilament matting will be used.

7.1 Wetland and Water Resources

AMM 10 – Wetland and water feature protection measures. The following measures will be implemented to avoid and minimize project impacts to wetland and water features:

- To the maximum extent feasible, design the project to avoid wetland and water features. Where impacts to the features cannot be avoided, coordination may be required with the USACE, USFWS, CDFG, and/or RWQCB.

- Where avoidance is feasible, delineate wetland and water features and establish fenced exclusion zones along the upland margins to restrict entrance by construction personnel and equipment.
- Minimize the amount of area disturbed near exclusion zones to the minimum amount necessary to complete the work. Align work areas to avoid wetland areas and margins as much as feasible.
- Conduct all fueling of vehicles, equipment, and helicopters at least 100 feet from wetland and water features.
- To the extent feasible, complete any necessary construction activities within or adjacent to wetland or water features during the dry season (October 15 to April 15). For construction activities occurring outside of the dry season, appropriate erosion control and stormwater protection measures will be implemented as identified in the project Stormwater Pollution Protection Plan (SWPPP), if necessary.

7.2 Special-Status Wildlife

AMM 11 – Pre-construction surveys for CRLF. Within two weeks prior to initiation of construction activities, a Service-approved biologist will survey suitable habitats within 300 feet from the work area for CRLF. To the extent feasible, construction will occur during the dry season (generally considered to be April 1 through November 1). Pre-construction surveys during dry periods will focus on active work areas within 300 feet from aquatic habitat. For work activities during wet periods, pre-construction surveys will include work areas in terrestrial habitats having potential to be utilized for upland dispersal (described in Section 5.2.2). If CRLF are found, the approved biologist will contact the Service to determine if moving the individual(s) is appropriate. The determination of relocating individuals will include identification of the nearest suitable habitats for relocation where the individuals will be outside of project work areas. Only Service-approved biologists will participate in the capture, handling, and relocation of CRLF. Upon completion of pre-construction surveys for CRLF, the Service-approved biologist will designate a person to conduct daily pre-construction surveys and monitoring for compliance with avoidance and minimization measures.

AMM 12 – Daily pre-construction surveys and relocation of species. All pole holes will be backfilled or covered at the end of the work day to prevent entrapment of special-status species. Project excavations will be inspected daily to ensure that special-status species cannot become entrapped. Prior to initiation of construction each morning, the designated biologist will check under any equipment and stored construction supplies left in the work area overnight within 300 feet of suitable aquatic habitat for special-status reptiles and amphibians. If special-status reptiles or amphibians are encountered in the project area, work within 50 feet of the animal shall cease immediately and the project biologist shall be notified. Based on the professional judgment of the designated biologist, and in coordination with the USFWS, as appropriate, if project activities can be conducted without harming or injuring the animal(s), the individual shall be left at the location of discovery and monitored by the designated biologist. All project personnel shall be notified of the finding and at no time shall work occur within 50 feet of the animal without a biological monitor present. If it is determined by the biologist that relocating the individual(s) is necessary, the following steps shall be followed:

- Prior to handling and relocation, the biologist shall take precautions to prevent introduction of amphibian diseases in accordance with the most current protocols for handling amphibian species. Equipment and clothing of biologists shall be disinfected prior to mobilizing to the action area to handle amphibians after working in other aquatic habitats.
- If relocation of special-status reptiles or amphibians is determined to be necessary, individuals shall be captured by hand, dipnet, or other USFWS-approved methods; transported by hand, dipnet, or temporary holding container; and released as soon as practicable the same day of capture. Handling shall be avoided to the maximum extent practicable. Holding/transporting containers and dipnets shall be thoroughly cleaned and disinfected prior to transporting to the action area and shall be rinsed with freshwater on site immediately prior to usage unless doing so would result in the injury or death of the animal(s) due to the time delay. Only Service-approved biologists will participate in activities associated with capture, handling, and relocation of CRLF.
- Individuals shall be relocated to the nearest suitable habitat outside of an area where actions could result in mortality, harm, or harassment. The individual(s) shall be released within adjacent suitable habitat.

AMM 13 – Pre-construction surveys for bats. A survey for roosting bats should be conducted prior to conducting any necessary tree trimming or removal. In the event suitable roosting trees or roosting individuals are identified at locations where tree trimming or removal is required, the following measures will be implemented:

Before felling the tree:

- Trees should be removed under the warmest possible conditions.
- Peel any sections of the exfoliating bark off the tree gently and search for any roosting bats underneath.
- Create noise and vibrations on the tree itself. Noise and vibrations include: Running chain saw and making shallow cuts in the trunk (where bark has been peeled off). Striking the tree base with fallen limbs or tools such as hammers. This disturbance should continue for ten minutes, before the tree is felled.

When felling the tree:

When cutting sections of the bole, if any hollows or cavities (such as woodpecker holes) are discovered, be especially careful to check for the presence of bats in those areas. Cut slowly and carefully at all times. If possible, section bole near cavities to focus noise and vibrations, and open hollows by sectioning off a side.

Active maternal colonies will not be removed.

7.3 Nesting Birds

AMM-14 – Pre-construction survey and avoidance of active nests. If work during the breeding/nesting season (typically considered to be February 1 to September 1) cannot be avoided, a qualified biologist shall survey within the project footprint and adjacent habitats. Surveys shall occur within five working days prior the start of construction or ground disturbing activities at each work area. If no active nests are found within the survey area, no further action shall be necessary. If breeding activities and/or an active nest(s) are found within the survey area, a qualified on-site biologist will determine a non-disturbance buffer distance sufficient to minimize disturbance based on the nest location, topography, cover, species' tolerance to disturbance, and type/duration of potential disturbance, as determined by the qualified on-site biologist. If it is determined, based on the professional judgment of the biologist that work is unlikely to adversely impact the active nest(s) or disrupt breeding behavior, then work may proceed within the non-disturbance buffer as long as a qualified biologist is on site to monitor nest(s) for signs of disturbance. Alternatively, if it is determined that project activities are resulting in nest disturbance, no further work shall occur within the non-disturbance buffer(s) until the nest becomes inactive or the young have fledged, as determined by the biologist. The appropriate agency(ies) shall be contacted regarding identified nests of listed and/or species of special concern.

All project facilities shall conform to PG&E's most current version of Bird and Wildlife Protection Standards, and shall include the use of bird guards. The configuration for each pole will meet or exceed Avian Power Line Interaction Committee guidelines.

AMM 15 – Avoid disturbance of active nests by helicopter use. Helicopters will be used for necessary trips to install and remove towers and poles, install power lines, and deliver and remove crews and equipment to areas lacking vehicle access. Helicopter flight paths will be designed to minimize impacts to known, identified nests.

8. CONCLUSIONS

8.0 Report Results

As a result of the review of biological resources associated with the project, it is concluded that the project may result in impacts to wetland and/or water features, 8 special status wildlife species, and nesting birds. Implementation of avoidance and minimization measures described in Section 7 of this report will reduce the likelihood of impacts to these sensitive resources. It is anticipated that adoption of the avoidance and minimization measures into the project design will reduce the impacts to biological resources to less than significant levels under review of the project pursuant to CEQA. A description of potential permitting requirements is described below in Section 8.1.

There is potential for impacts to wetland and/or water features at eleven locations (Table 6-1) from utilization of existing access roads and overland vehicle access routes as well as establishment of work areas. There is also potential for indirect impacts to these features as a result of erosion and stormwater runoff from disturbed access and work areas. Direct impacts to wetland and water features will be limited to the temporary placement of crossing structures and/or protective matting to facilitate access. To the extent feasible, crossing structures will be designed to provide access over small, seasonal watercourses to avoid impacts within the bed, bank, or channel. Additionally, where possible, access routes have been modified to avoid wetland and water features. Where passage over the wetland or water features is not feasible, protective matting will be utilized to protect the feature from ground disturbance. As a result of utilization of supported crossing structures over seasonal watercourses, it may be feasible to limit impacts to wetland and water features to three locations. A formal jurisdictional delineation will identify whether the wetland and water features which may be temporarily affected by project activities are subject to federal and/or state jurisdiction. The project will not result in permanent impacts to wetland or water features. Indirect impacts to wetland and water features as a result of erosion and stormwater runoff can be effectively avoided with implementation of best management practices and measures for protection of water quality (including, but not limited to AMM-9 and AMM-10).

Suitable aquatic habitat for CRLF is present within dispersal range from project access and work areas. CRLF is federally listed as threatened. Suitable habitat for the species is located in stock ponds and watercourses distributed within and adjacent to the survey area along the length of the power line (Figure 3). It is anticipated that incorporation of pre-construction surveys and biological monitoring into the project (AMM-7, AMM-8, AMM-11, and AMM-12), will minimize the potential for direct impacts to individuals. No impacts are anticipated to perennial aquatic habitat. Due to the absence of project activities in areas with perennial aquatic habitat, the likelihood for occurrence of CRLF in project work areas is limited to individuals dispersing through terrestrial or seasonally wetted habitats. CRLF are anticipated to remain within or very near perennial aquatic habitats during dry periods, and therefore there is considered to be a low likelihood for individuals to be found in project work areas during construction activities between April 1 and November 1 (assuming an absence of rain events). For construction activities during the wet season, there is a slightly increased potential for CRLF dispersing from

perennial aquatic habitats to be found along access routes and in work areas in upland and seasonally wetted habitats. It is anticipated that implementation of AMM-11 and AMM-12 will minimize the potential for project impacts to the species. Activities having potential for impacts to individuals and which result in impacts to potentially occupied habitat are likely to require resource agency authorization. Due to the limited and temporary nature of project effects to upland and seasonally wetted habitats and the low likelihood of effect to individual CRLF, the project is likely consistent with the suitability criteria of the Programmatic Biological Opinion (USFWS 1999) issued to the U.S. Army Corps of Engineers for projects that may affect CRLF.

Suitable roosting habitat for three special-status bat species is present in woodland areas and barns and other outbuildings in and adjacent to the survey area. Roosting bats may be impacted by removal or pruning of occupied trees. Pre-construction surveys and implementation of protective measures prescribed in AMM-17 at tree pruning/removal site identified as occupied or potentially occupied will minimize the potential for impacts to special status bats as a result of the project.

Birds may nest in habitats throughout the project area. It is understood that PG&E has authorization for management of avian nests on existing facilities, which is implemented through the PG&E Avian Protection Program (Program). However, the Program has specific species and guidelines for implementation which do not cover all of the activities associated with the project. Impacts to active nests cannot be authorized outside of the guidelines of the Program. Implementation of AMM-15 will minimize the potential for the project to impact active nests.

8.1 Permitting Implications

The following resource agency permits may be required as a result of project impacts to sensitive habitats and/or special status species. The project will be designed to avoid impacts to wetland and water features to the maximum extent practicable. Activities that involve excavation or fill within unavoidable water features are subject to section 404 of the federal Clean Water Act (CWA), and may require permitting and notification to the U.S. Army Corps of Engineers (USACE). The project activities are likely suitable for inclusion in the Nationwide Permit process. Assuming that excavation and/or fill of jurisdictional waters will be unavoidable, a Nationwide Permit application may need to be prepared and submitted to the USACE. This application may include a delineation of water features, and an assessment of project impacts to these features.

As part of the Section 404 permitting process, USACE may initiate consultation (formal or informally, depending on project impacts) with USFWS to address any impacts to federally listed species and designated critical habitat. A biological assessment, evaluating the effects of the project on federally listed species, should be submitted with the Nationwide Permit application. USACE would submit the biological assessment to USFWS as a part of the Endangered Species Act (ESA) Section 7 consultation. A review of cultural resources, specifically sites that are or could be included on the Historical Register, is also required to complete this process.

Pursuant to Section 401 of the CWA, projects that apply for the Nationwide Permit process for discharge of dredge or fill material must also obtain water quality certification from the Regional Water Quality Control Board (RWQCB) indicating that the project would uphold state water quality standards.

The State typically has utilized the authorizations required pursuant to Section 401 of the CWA for protection of waters of the State. Waters of the state are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. However, recent Supreme Court decisions have reduced limits of federal jurisdiction over wetlands and waters of the State. Therefore, the State is implementing its independent authority to regulate waters of the State under the Porter-Cologne Water Quality Control Act (Porter-Cologne) through the Wetland and Riparian Area Protection Policy (WRAPP). Under the WRAPP, the RWQCB is currently exerting jurisdiction over non-federal wetlands through the “Wetland Area Protection Policy and Dredge and Fill Regulations for California.” Under this policy, actions which result in discharge of dredge or fill to wetlands within the state which are not subject to protection pursuant to Section 404 of the CWA must submit a report of waste discharge to the RWQCB and comply with requirements of the Porter-Cologne. Wetlands are generally defined following the USACE Guidelines with the exception that they are not defined simply by anaerobic conditions in soil, but in any substrate, and wetlands may include unvegetated sites as well as areas with predominantly hydrophytic vegetation. Areas within the survey area which may not be subject to federal regulation but may be regulated by the State pursuant to Porter-Cologne include the isolated seasonal wetlands along the access route and within pull site/staging area 5 and adjacent to pole 87.

Section 1602 of the California Fish and Game Code may apply to locations where access routes cross watercourses with defined bed, bank, and channel. Depending on the construction activities planned, and/or improvements needed to facilitate access over these routes, a Lake and Streambed Alteration Agreement (LSAA) with the California Department of Fish and Game (CDFG) may be required.

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Appendix A: Habitat and Wetland Assessment Maps

Note: Project particulars are preliminary and subject to change

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

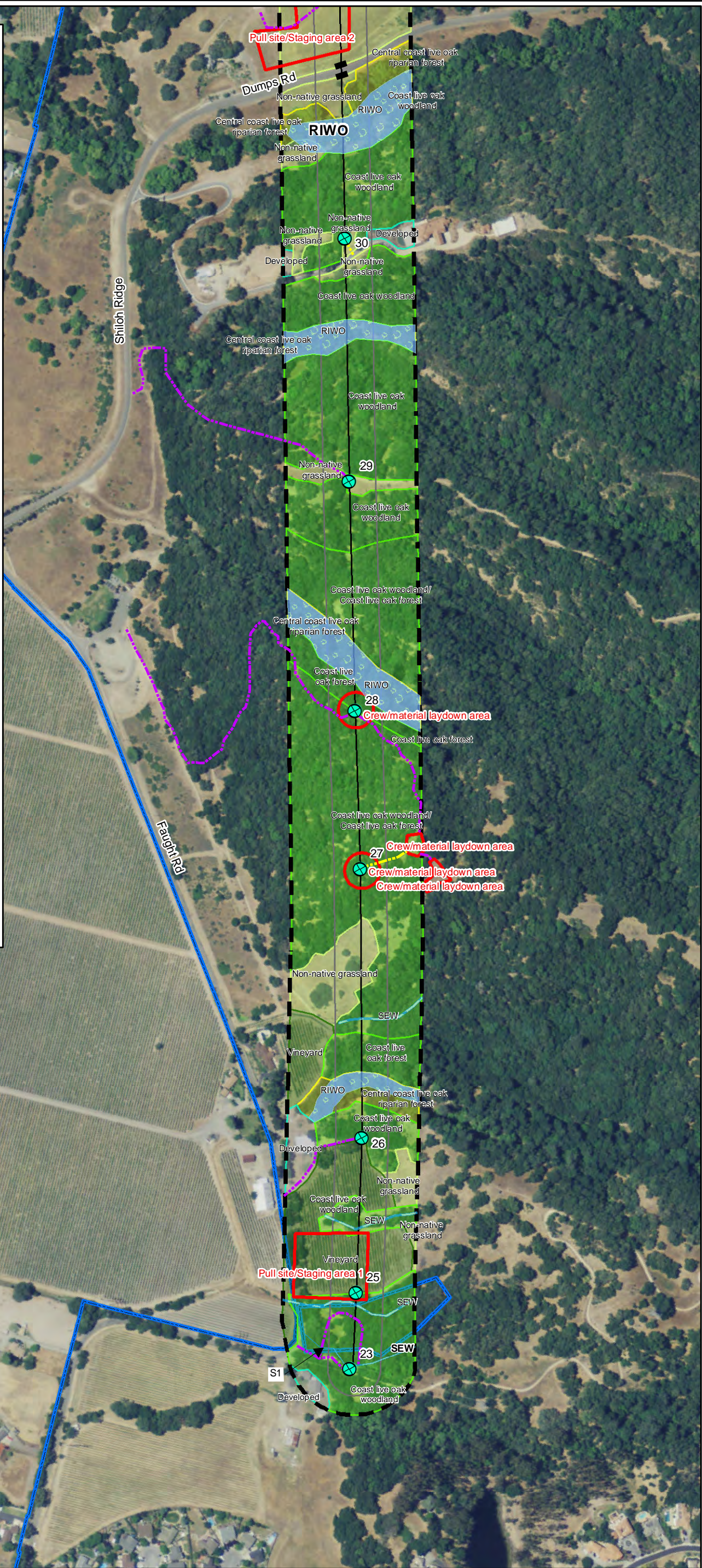
Wetland Types

- Open water (OW)
- Riparian woodland (RIWO)
- Seasonal watercourse (SEW)
- Seasonal wetland (SW)

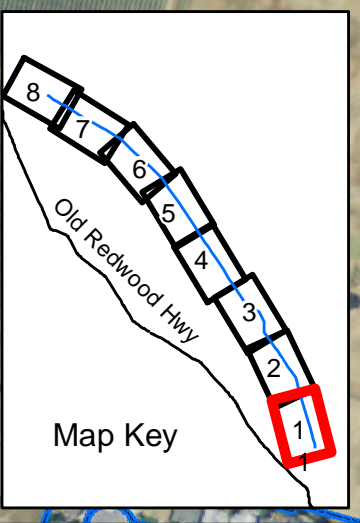
Vegetation Types

- Blue oak woodland
- California bay forest
- Central coast live oak riparian forest
- Coast live oak woodland and/or forest
- Developed
- Douglas'-fir forest
- Eucalyptus
- Oregon oak woodland
- Grassland
- Mixed north slope cismontane woodland
- Vineyard

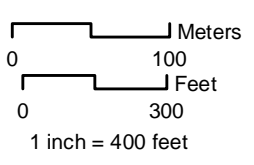
S# Wetland/Water Feature Crossing



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Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 1 of 8

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

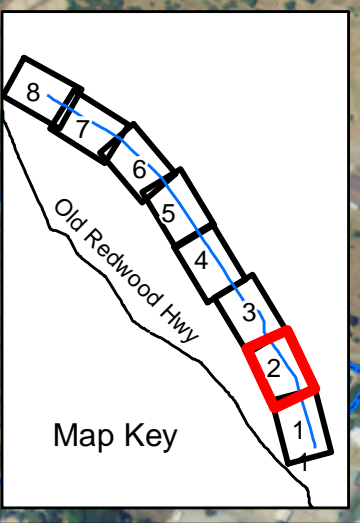
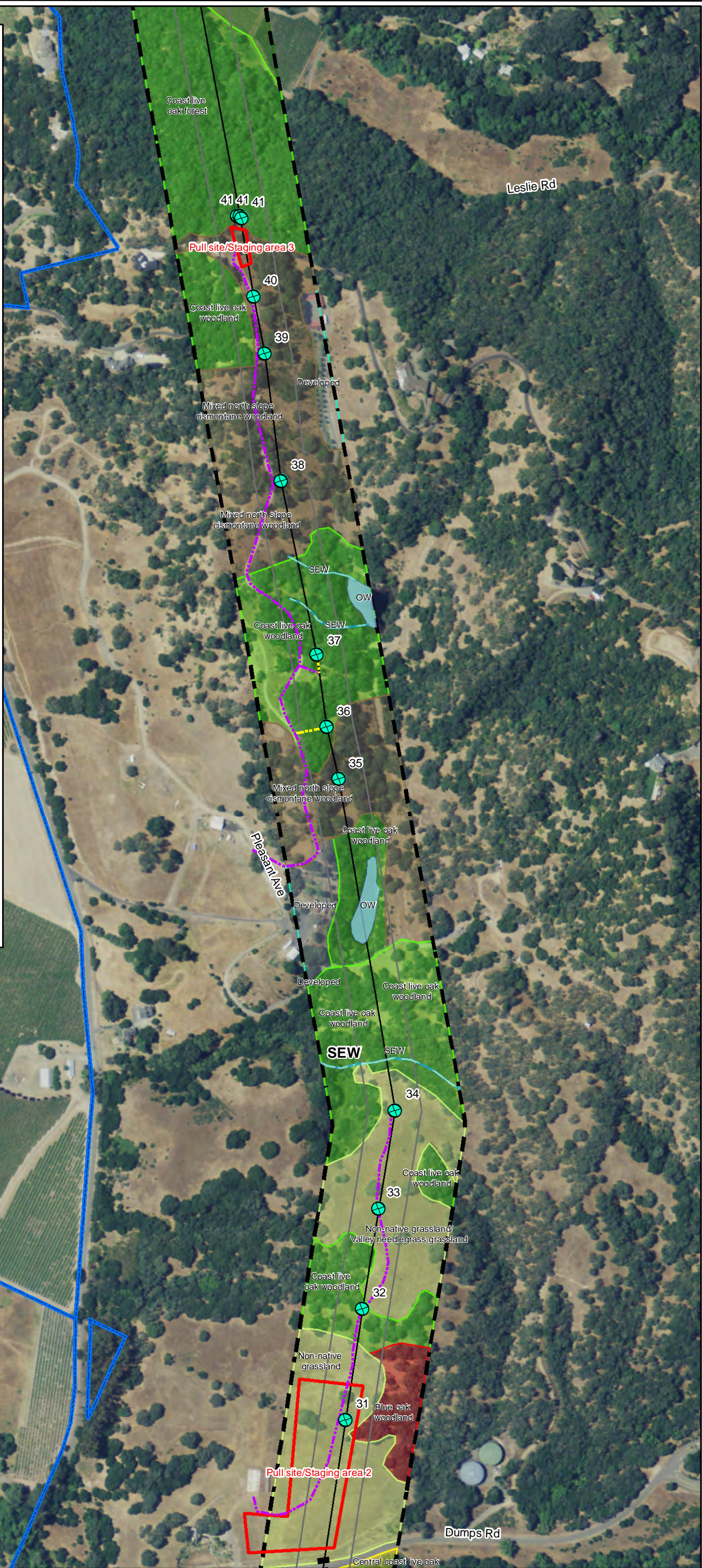
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- Seasonal wetland (SW)

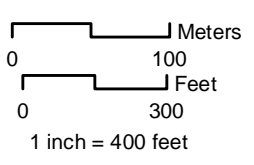
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- Mixed north slope cismontane woodland
- Vineyard

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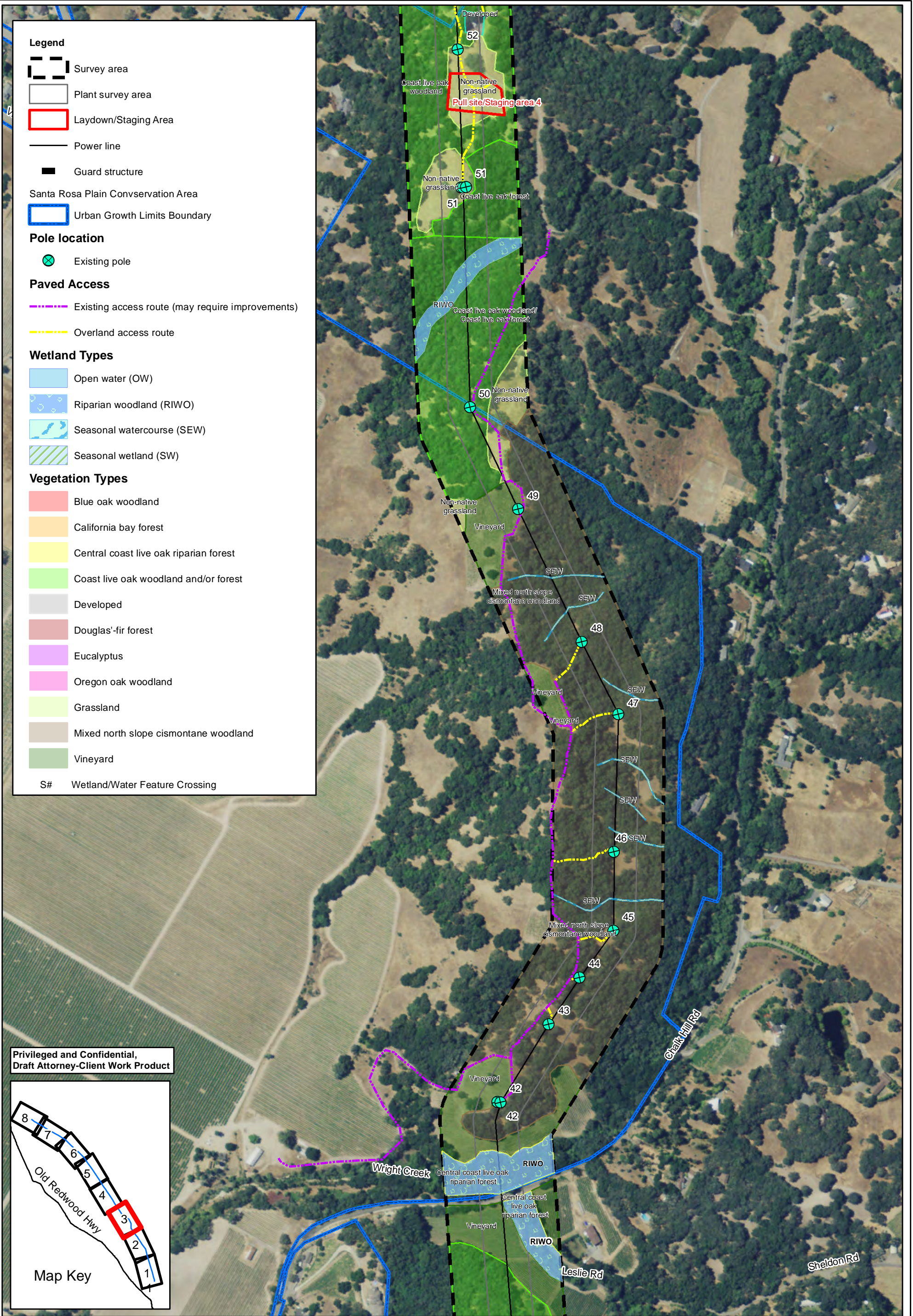


Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 2 of 8



Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
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Wetland Types

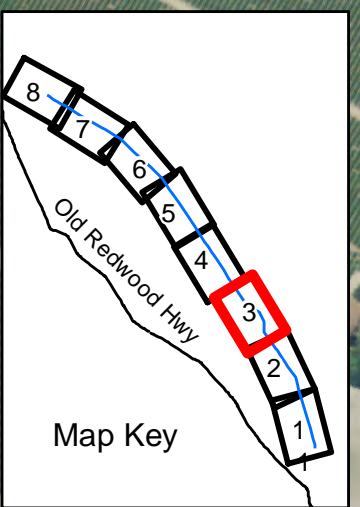
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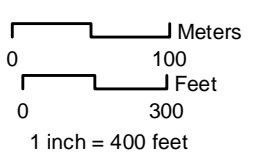
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S# Wetland/Water Feature Crossing

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Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 3 of 8

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

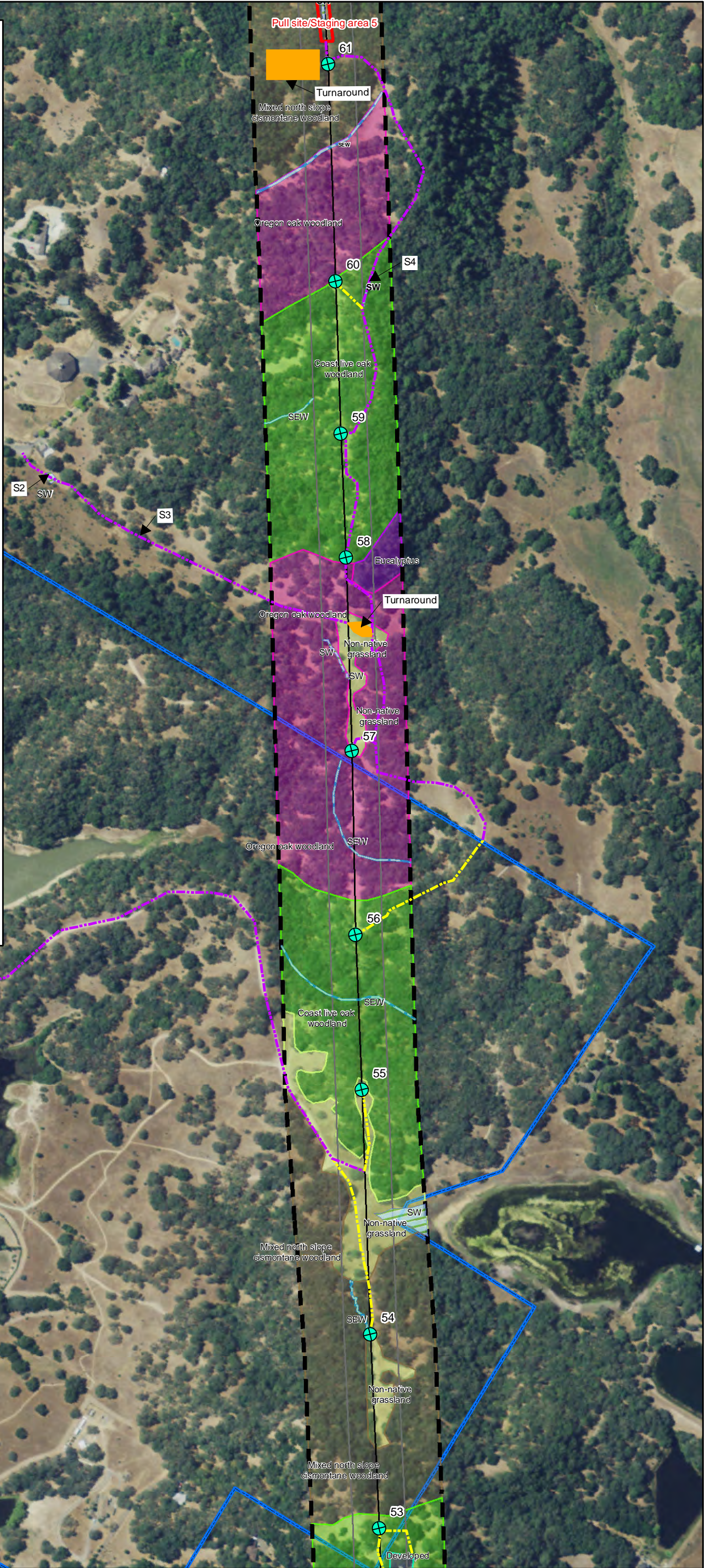
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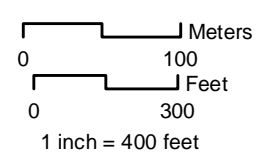
Flamenco Ct
Mifflin St
Valle Vista Ct
Buena Tierra Ct
Quinta Ct
Huffman Rd

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Map Key



Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 4 of 8

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

Wetland Types

- Open water (OW)
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- Seasonal wetland (SW)

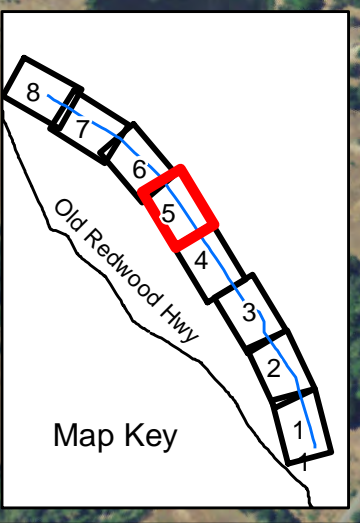
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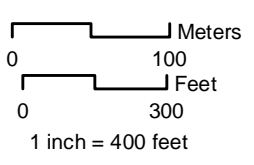
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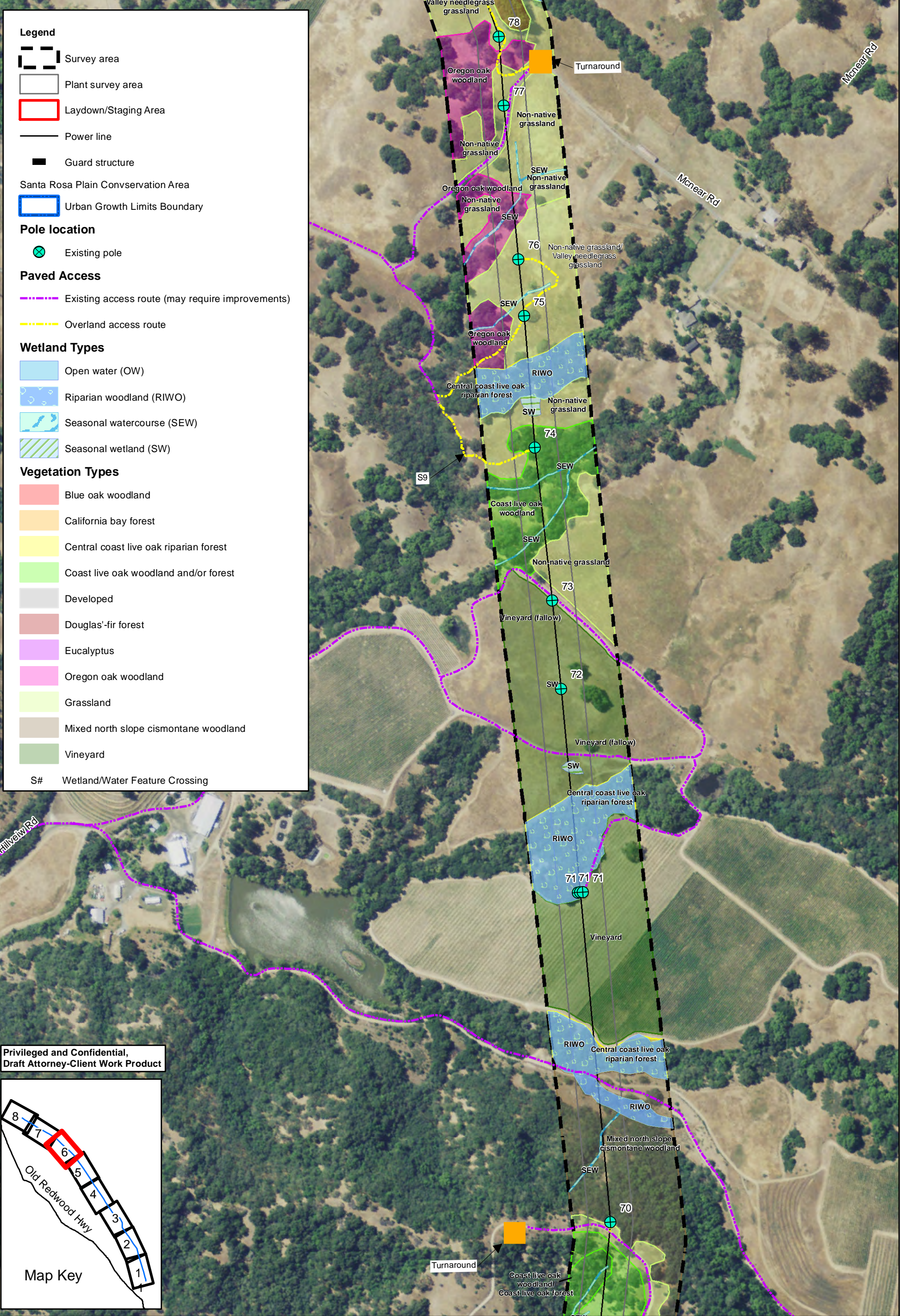


Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 5 of 8



Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

Wetland Types

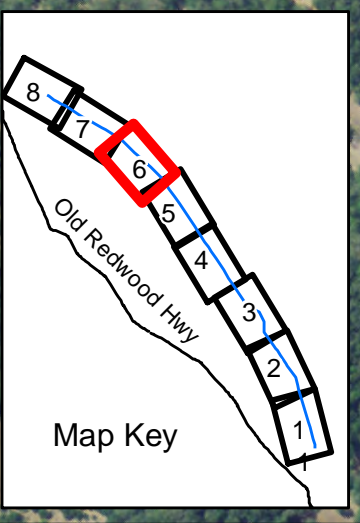
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Vegetation Types

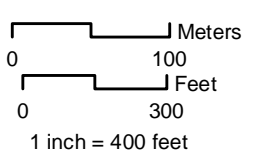
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USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 6 of 8

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

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Paved Access

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- Overland access route

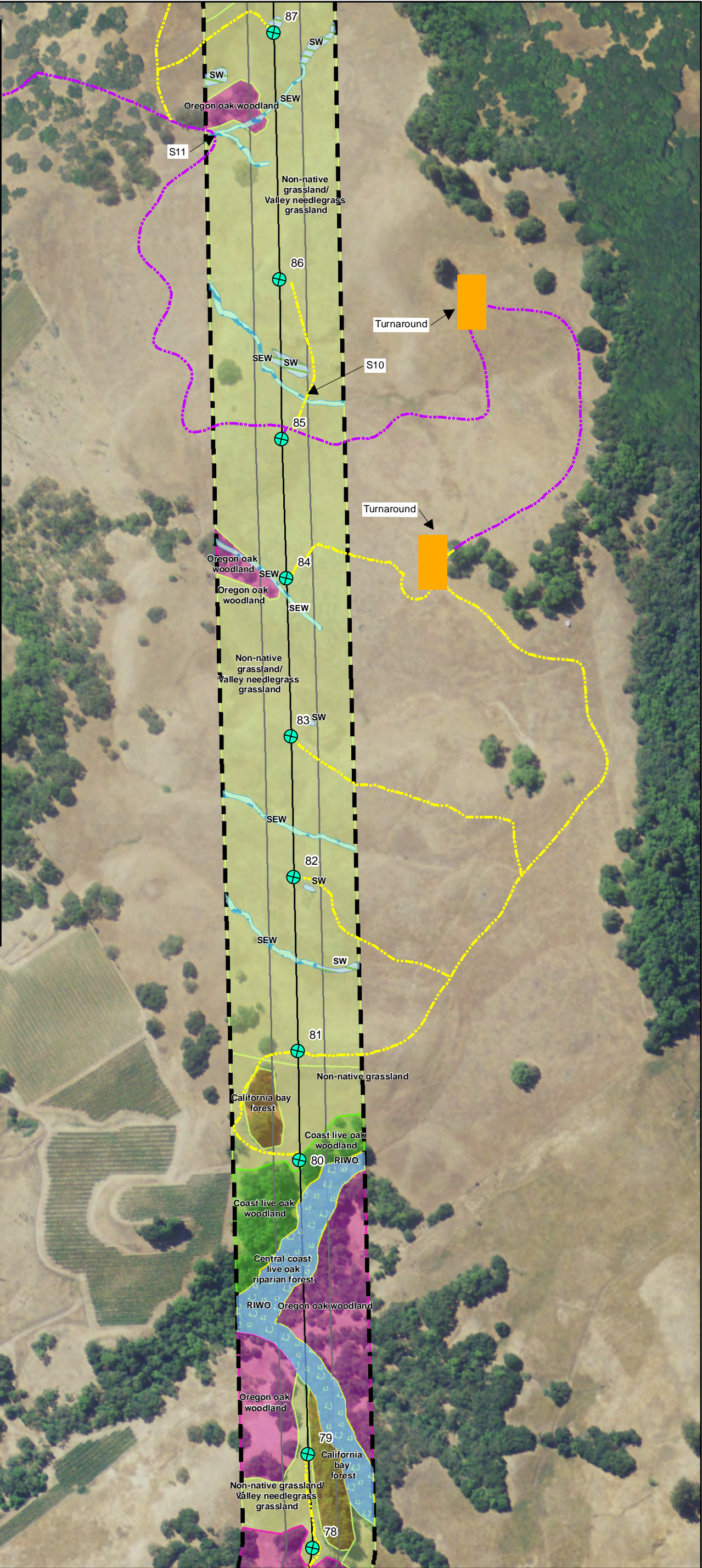
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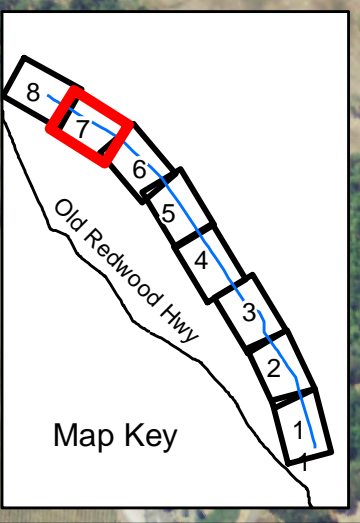
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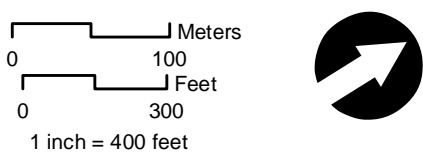
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USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 7 of 8

Legend

- Survey area
- Plant survey area
- Laydown/Staging Area
- Power line
- Guard structure

Santa Rosa Plain Conservation Area

- Urban Growth Limits Boundary

Pole location

- Existing pole

Paved Access

- Existing access route (may require improvements)
- Overland access route

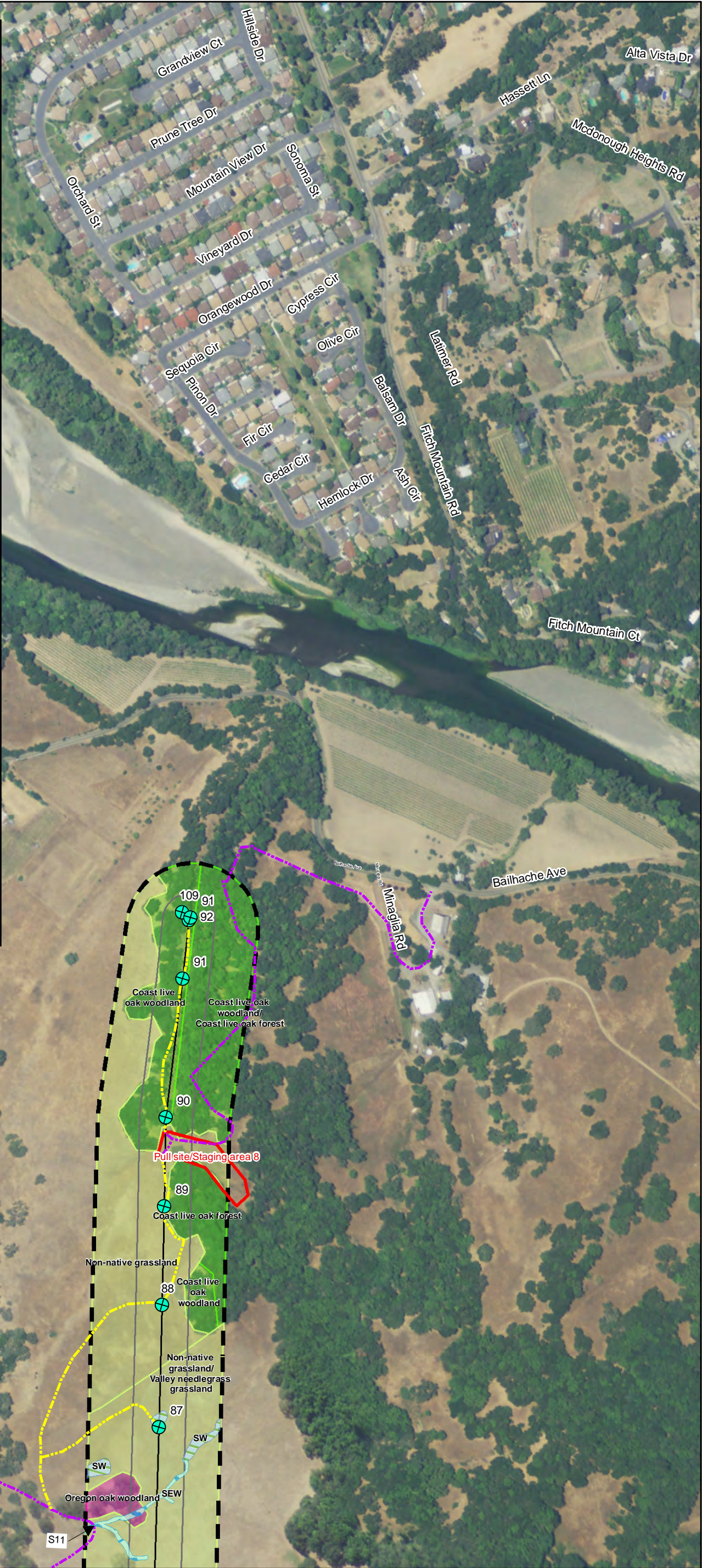
Wetland Types

- Open water (OW)
- Riparian woodland (RIWO)
- Seasonal watercourse (SEW)
- Seasonal wetland (SW)

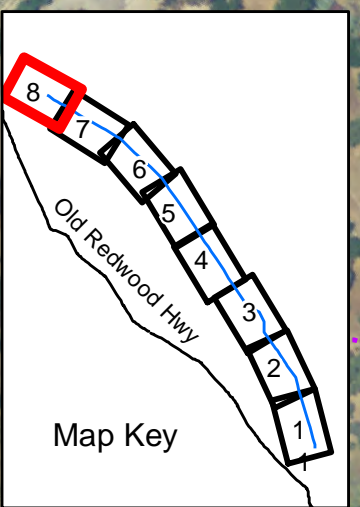
Vegetation Types

- Blue oak woodland
- California bay forest
- Central coast live oak riparian forest
- Coast live oak woodland and/or forest
- Developed
- Douglas'-fir forest
- Eucalyptus
- Oregon oak woodland
- Grassland
- Mixed north slope cismontane woodland
- Vineyard

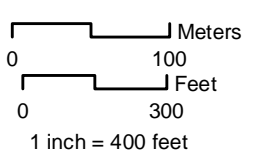
S# Wetland/Water Feature Crossing



Privileged and Confidential,
Draft Attorney-Client Work Product



Source: NAIP 2009 Aerial; GANDA GIS 2012
USGS 7.5' Quadrangle: HEALDSBURG



Fulton-Fitch 60kV
Power Line
Vegetation Community and Wetland
Habitat Assessment

Sonoma County, CA
May, 2012
Map 8 of 8

Appendix B:
Special Status Plant Species Identified from Background Research of the Survey Area

Special Status Plant Species Identified from Background Research of the Survey Area

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Alopecurus aequalis</i> var. <i>sonomensis</i> Sonoma alopecurus	FE/--/1B.1	Freshwater marshes and swamps, riparian scrub. 16-1,197 feet. (May-July)	Low: A small amount of somewhat suitable habitat is present along the portions of the project located in proximity to wetter streams, and ponds. No occurrences known within five miles.
<i>Amorpha californica</i> var. <i>napensis</i> Napa false indigo	--/--/1B.2	Chaparral, cismontane woodland, and openings in broadleaved upland forest. 394-6,562 feet. (April-July)	High: Suitable habitat is present along most of the project corridor, and taxon is known to occur within five miles.
<i>Amsinckia lunaris</i> Bent-flowered fiddleneck	--/--/1B.2	Cismontane woodland, valley and foothill grassland, coastal scrub. 10-1,640 feet. (March-June)	Moderate: Suitable habitat present along most of the project corridor, but taxon not known within five miles.
<i>Anomobryum julaceum</i> slender silver moss	--/--/2.2	Damp rock and soil on outcrops or roadcuts, in Broadleaved upland forest, lower montane coniferous forest, north coast coniferous forest. 328-3,280 feet.	Low: Suitable habitat only in a few limited areas of the project corridor. Not known within five miles, but likely underreported.
<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i> Baker's Manzanita	--/SR/1B.1	Broadleaved upland forest, chaparral, often on serpentine. 246-984 feet. (February-April)	Low-Moderate: No preferred serpentine habitat present, but plenty of broadleaved upland forest on volcanic soils. Not known within five miles.
<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i> The Cedars manzanita	--/SR/1B.2	Serpentine seeps in chaparral and closed-cone coniferous forest. 607-2,493 feet. (February-May)	Low: No serpentine habitat present. Not known within five miles. Very restricted range all to the west of the project.
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i> Sonoma canescent manzanita	--/--/1B.2	Chaparral, lower montane coniferous forest. Sometimes serpentine. 590-5,485 feet. (January-June)	Moderate-High: No preferred serpentine habitat, and no conifer forest or chaparral. However, mixed north slope woodland which may provide habitat present in large portions of survey area. Known within five miles.
<i>Arctostaphylos densiflora</i> Vine Hill manzanita	--/SE/1B.1	Chaparral, with acid marine sand substrate. 164-394 feet. (February-April).	Low: Very restricted range, and not known within five miles. Sand substrate not present, but sedimentary substrate in somewhat suitable plant community present in portions of the project corridor.
<i>Arctostaphylos manzanita</i> ssp. <i>elegans</i> Konocti Manzanita	--/--/1B.3	Volcanic soils in chaparral, cismontane woodland, and lower montane coniferous forest. 1,296-5,300 feet. (March-May)	Moderate: Suitable habitat present in much of the project corridor. However, not known within five miles, known range all north of project, and known elevation all higher than project.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i> Rincon Ridge manzanita	--/--/1B.1	Chaparral and cismontane woodland, restricted to red rhyolites in Sonoma County. 246-1,214 feet. (February-May)	Moderate: Extensive suitable vegetation type, but only small amount of suitable rhyolite substrate present. Known within five miles.
<i>Astragalus claranus</i> Clara Hunt's milk-vetch	FE/ST/1B.1	Cismontane woodland, valley and foothill grassland, or chaparral. Usually found on serpentinite, volcanic, or rocky clay substrates. 246-902 feet. (March-May)	Moderate: Suitable vegetation type, and patches of suitable rocky/bare habitat occasional in survey area. Not known within five miles.
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> Big-scale balsamroot	--/--/1B.2	Valley and foothill grassland, chaparral, and cismontane woodland. Sometimes on serpentinite. 295-5,102 feet. (March-June)	Moderate: Suitable vegetation types throughout survey area, but no preferred serpentinite substrates. Not known within five miles, but range of the species is very scattered.
<i>Blennosperma bakeri</i> Sonoma sunshine	FE/SE/1B.1	Vernal pools, and other mesic areas in valley and foothill grassland. 33-361 feet. (March-May)	High: Suitable habitat in proximity to seasonal wetlands and drainages, particularly in grasslands at the north end of the project. Several occurrences known within five miles.
<i>Brodiaea californica</i> var. <i>leptandra</i> narrow-anthered California brodiaea	--/--/1B.2	Volcanic soils in cismontane woodland, valley and foothill grassland, broadleaved upland forest, chaparral, and lower montane coniferous forest. 361-3,002 feet (May-July)	High: Suitable habitat is present in grassland, woodlands, and forest, and known from within five miles.
<i>Calamagrostis crassiglumis</i> Thurber's reed grass	--/--/2.1	Mesic areas in coastal scrub, and freshwater marsh. Usually found in marshy swales. 33-148 feet. (May-July)	Low: Small amounts of slightly suitable habitat are present of the project located in proximity to drainages, seasonal wetlands, and open water. Known occurrences in valleys or coastal. Not known within five miles.
<i>Campanula californica</i> Swamp harebell	--/--/1B.2	Bogs and fens, meadows and seeps, freshwater marsh, and other freshwater mesic habitats. Can include areas in closed-cone coniferous forest, coastal prairie, North Coast coniferous forest. 3-1,329 feet. (June-October)	Low: Small amounts of suitable habitat are located in proximity to drainages, streams, and open water. Occurrences from the background research not within five miles, and thought to be extirpated from the area. Most known occurrences are west of survey area.
<i>Carex albida</i> white sedge	FE/SE/1B.1	Freshwater marsh, and bogs and fens. 49-295 feet. (May-July)	Low: Small amounts of somewhat suitable habitat are present along the portions of the project located in proximity to streams, seasonal wetlands, drainages, and open water. Only one extant occurrence is known from Pitkin Marsh, which is more than five miles from the survey area.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Carex comosa</i> Bristly sedge	--/--/2.1	Mesic areas such as freshwater marshes and swamps, and areas in valley and foothill grassland, and coastal prairie. 0-2,050 feet. (May-September)	Low: Small amounts of slightly suitable habitat are present of the project located in proximity to streams, drainages, seasonal wetlands, and open water. Not known within five miles.
<i>Castilleja uliginosa</i> Pitkin Marsh Indian paintbrush	--/SE/1.A	Freshwater marshes and swamps (June-July)	Low: Small amounts of slightly suitable habitat are present along the portions of the project located in proximity to streams, drainages, seasonal wetlands, and open water. Thought to be extirpated from last known occurrence at Pitkin Marsh, which is more than five miles from the survey area.
<i>Ceanothus confusus</i> Rincon Ridge ceanothus	--/--/1B.1	Serpentine or volcanic soils in closed-cone coniferous forest, chaparral, and cismontane woodland. 246-3,494 feet. (February-June)	High: Although serpentine substrates not present, generally suitable habitat (cismontane woodland with volcanic soil) is present throughout the project corridor. Known within five miles.
<i>Ceanothus divergens</i> Calistoga ceanothus	--/--/1B.2	Rocky, serpentine or volcanic sites, in chaparral or cismontane woodland. 558-3,117 feet. (February-April)	Low-Moderate: Somewhat suitable vegetation type (cismontane woodland) and patches of suitable rocky habitat occasional in survey area. No serpentine habitat present. Not known within five miles.
<i>Ceanothus foliosus</i> var. <i>vineatus</i> Vine Hill ceanothus	--/--/1B.1	Chaparral. 148-1,001 feet. (March-May)	Moderate: Somewhat suitable habitat (cismontane woodland) is present throughout the project corridor. Not known within five miles.
<i>Ceanothus purpureus</i> Holly-leaved ceanothus	--/--/1B.2	Chaparral, with rocky volcanic soils. 394-2,100 feet. (February-June)	Low-Moderate: Somewhat suitable habitat (cismontane woodland), and patches of suitable rocky habitat occasional in survey area. Not known within five miles.
<i>Ceanothus sonomensis</i> Sonoma ceanothus	--/--/1B.2	Chaparral with sandy, serpentine or volcanic soils. 705-2,635 feet. (February-April)	Moderate: Suitable habitat (cismontane woodland with volcanic soils) is scattered throughout the project corridor. No serpentine present. Project at low end of elevation range of species. Not known within five miles.
<i>Centromadia parryi</i> ssp. <i>parryi</i> pappose tarplant	--/--/1B.2	Usually alkaline or salty areas. These include coastal prairie, meadows and seeps, coastal salt marsh, and mesic areas in valley and foothill grassland. 7-1,378 feet. (May-November)	Moderate: Somewhat suitable habitat present (wetlands within grassland) within the survey area, particularly at northern end. However, no alkaline or salty soils present. Known from within five miles.
<i>Chorizanthe valida</i> Sonoma spineflower	FE/SE/1B.1	Sandy areas in coastal prairie. 33-1,001 feet. (June-August)	Low: No coastal prairie habitats present. Not known from within five miles. Many occurrences extirpated.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Clarkia imbricata</i> Vine Hill clarkia	FE/SE/1B.1	Acidic sandy loam in chaparral and valley and foothill grassland. 164-246 feet. (June-August)	Moderate: Suitable vegetation type is scattered throughout of the project corridor, although sandy soils not observed. Not known from within five miles.
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i> Pennell's bird's-beak	FE/SR/1B.2	On serpentine soils in closed-cone coniferous forest and chaparral. 148-1,001 feet. (June-September)	Low: No serpentine soils present. Not known from within five miles.
<i>Cryptantha clevelandii</i> var. <i>dissita</i> (= <i>C. dissita</i>) Serpentine cryptantha	--/--/1B.1	On serpentine soils in chaparral. 1,296-1,903 feet. (April-June)	Low: No serpentine soils present. Not known from within five miles.
<i>Delphinium bakeri</i> Baker's larkspur	FE/SE/1B.1	Mesic areas on decomposed shale in coastal scrub, broadleaved upland forest, and valley and foothill grassland. 262-1,001 feet. (March-May).	Low-Moderate: Limited suitable habitat present in mesic areas on sedimentary soils (Dibble series). Not known from within five miles. Current known range all south of project, and many occurrences extirpated.
<i>Delphinium luteum</i> Golden larkspur	FE/SR/1B.1	Rocky areas in chaparral, coastal prairie, and coastal scrub. 0-328 feet. (March-May).	Low-Moderate: Limited rocky areas in somewhat suitable habitat (cismontane woodland) widely scattered in survey area. Project at high end of elevation range, and somewhat north of known range; range limited. Not known within five miles.
<i>Downingia pusilla</i> dwarf downingia	--/--/2.2	Vernal pools and similar mesic sites in valley and foothill grassland. 3-1,460 feet. (March-May)	High: Suitable habitat (seasonal wetlands in grassland) present in the survey area, particularly at the north end. Range widely scattered. Known from within five miles.
<i>Erigeron greenei</i> Green's narrow-leaved daisy	--/--/1B.2	Serpentine and volcanic soils in chaparral. 262-3,297 feet. (May-September)	Moderate: Somewhat suitable habitat (volcanic soils in cismontane woodland) scattered throughout the survey area. No serpentine present. Not known within five miles, but species range scattered around survey area.
<i>Erigeron serpentinus</i> serpentine daisy	--/--/1B.3	Serpentine seeps in chaparral. 197-2,198 feet. (May-August)	Low: No suitable habitat present within the survey area. No serpentine substrate present. Known from Healdsburg quad.
<i>Eriogonum nervulosum</i> Snowy Mountain buckwheat	--/--/1B.2	Serpentine chaparral. 984-6,906 feet. (June-September)	Low: No serpentine habitat present. Not known from within five miles. Survey area slightly lower elevation than known range of species.
<i>Fritillaria liliacea</i> fragrant fritillary	--/--/1B.2	Coastal scrub, valley and foothill grassland, and coastal prairie. Often found on serpentine. 10-1,345 feet. (February-April)	Moderate-High: Grassland habitat is present in portions of the survey area. No serpentine present. Known from within five miles.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Hemizonia congesta</i> ssp. <i>congesta</i> seaside tarplant, pale yellow hayfield tarplant	--/--/1B.2	Valley and foothill grassland, sometimes on roadsides. 66-1,827 feet. (April-November)	High: Several CNDDDB records within five miles. Suitable habitat present in portions of the survey area in grasslands.
<i>Hesperolinon bicarpellatum</i> Two-carpellate western flax	--/--/1B.2	Serpentine/serpentinite in chaparral. 197-3,297 feet. (May-July)	Low: No serpentine/serpentinite soils present. Not known from within five miles.
<i>Horkelia tenuiloba</i> thin-lobed horkelia	--/--/1B.2	Mesic openings with sandy soil in broadleaved upland forest, chaparral, and valley and foothill grassland. 164-1,640 feet. (May-July)	Low-Moderate: Vegetation communities generally suitable, but no mesic sandy soil openings noted. Not known within five miles.
<i>Lasthenia burkei</i> Burke's goldfields	FE/SE/1B.1	Vernal pools, and meadows and seeps. 49-1,968 feet. (April-June)	Moderate: Limited amounts of somewhat suitable habitat (seasonal wetlands and drainages) scattered throughout the survey area, particularly at north end. Most wetlands do not appear deep/wet enough for this species. Known from within five miles.
<i>Lasthenia californica</i> ssp. <i>bakeri</i> (= <i>L. macrantha</i> ssp. <i>bakeri</i>) Baker's goldfields	--/--/1B.2	Openings in closed-cone coniferous forest, coastal scrub, meadows and seeps, marshes and swamps. 197-1,706 feet. (April-October)	Low: Small amounts of somewhat suitable habitat associated with larger/wetter seasonal wetlands, drainages, and open water. Local occurrences believed to be extirpated, current range closer to coast. Not known from within five miles.
<i>Legenere limosa</i> legenere	--/--/1B.1	Vernal pools. 3-2,887 feet. (April-June).	Moderate: No vernal pools present, but somewhat suitable habitat in larger seasonal wetlands, drainages, and edges of open water. Not known from within five miles, but range is widely scattered around the survey area.
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	--/--/1B.2	On volcanic soil or the periphery of serpentine substrates, in chaparral and cismontane woodland. (328-1,640 feet. (March-May)	High: Suitable habitat (cismontane woodland on volcanic soil) is scattered throughout the survey area. Several occurrences known from within five miles.
<i>Lessingia arachnoidea</i> Crystal Springs lessingia	--/--/1B.2	Serpentine soils in coastal sage scrub, valley and foothill grassland, and cismontane woodland. 197-656 feet. (July-October).	Low: Suitable vegetation is present, but no serpentine soils. Not known within five miles.
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i> Pitkin Marsh lily	FE/SE/1B.1	Mesic areas with sandy soils in cismontane woodland, meadows and seeps, and freshwater marsh. 115-213 feet. (June-July)	Low: Small amounts of somewhat suitable habitat in a few locations near larger seasonal wetlands and open water. Known range is marshes near Sebastopol. Not known within five miles.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Limnanthes vinculans</i> Sebastopol meadowfoam	FE/SE/1B.1	Vernal pools and similar mesic areas in meadows and seeps, and valley and foothill grassland. 49-1,001 feet. (April-May)	Moderate: Some suitable habitat present in seasonal wetlands and drainages, and near open water particularly in the northern portion of the survey area. Most wetlands likely are not deep/wet enough. Known within five miles.
<i>Lupinus sericatus</i> Cobb Mountain lupine	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, and broadleaved upland forest. 902-5,003 feet. (March-June)	Moderate: Suitable vegetation types extensive within the survey area. Project below known end of elevation range. Not known within five miles.
<i>Microseris paludosa</i> marsh microseris	--/--/1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland. 16-984 feet. (April-July)	High: Suitable habitat is common in the survey area. Not known within five miles.
<i>Monardella villosa</i> ssp. <i>globosa</i> robust monardella	--/--/1B.2 ⁴	Openings in broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. 328-3,002 feet. (June-August).	High: Suitable habitat is present throughout the survey area. Known within five miles.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/--/1B.1	Vernal pools, meadows and seeps, and similar mesic areas in cismontane woodland, valley and foothill grassland, and lower montane coniferous forest. 16-5,709 feet. (April-July)	High: Suitable habitat (seasonal wetlands, drainages) are present in the survey area, particularly at the northern end. Known from within five miles.
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i> many-flowered navarretia	FE/SE/1B.2	Vernal pools with volcanic ash flow substrates. 98-3,117 feet. (May-June)	Moderate: Somewhat suitable habitat (seasonal wetlands, drainages) within the survey area, particularly at the northern end. These do not appear to have ash flow substrates. Known from within five miles.
<i>Penstemon newberryi</i> var. <i>sonomensis</i> Sonoma beardtongue	--/--/1B.3	Rocky areas in chaparral. 2,297-4,495 feet. (April-August)	Low: Somewhat suitable vegetation community (cismontane woodland), but few rock outcrops and survey area well below known elevation range. Not known within five miles.
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	--/ST/1B.1	Meadows and seeps, and similar mesic areas in broadleaved upland forest and north coast coniferous forest. 33-2,201 feet. (April-June)	Low: Small amounts of somewhat suitable habitat in a few locations in larger seasonal wetlands and open water. Not known within five miles, but range is widely scattered.

⁴ Species currently under review to change or remove this ranking. Species possibly too common to have CRPR 1.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Rhynchospora alba</i> white beaked-rush	--/--/2.2	Freshwater areas such as bogs and fens and marshes and swamps. 197-6,693 feet. (July-August)	Low: Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams, larger seasonal wetlands, drainages and open water. Not known from within five miles, but range widely scattered.
<i>Rhynchospora californica</i> California beaked-rush	--/--/1B.1	Bogs and fens, marshes and swamps, meadows and seeps, and similar mesic areas in lower montane coniferous forest. 148-3,314 feet. (May-July)	Low: Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams, larger seasonal wetlands, drainages and open water. Not known from within five miles, but range widely scattered.
<i>Rhynchospora capitellata</i> brownish beaked-rush	--/--/2.2	Meadows and seeps, freshwater marshes and swamps, and similar mesic areas in lower montane coniferous forest and upper montane coniferous forest. 1,493-6,562 feet. (July-August)	Low: Only small amount of conifer forest present (Douglas'-fir). Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams, larger seasonal wetlands, drainages and open water. Survey area below known elevation range. Not known from within five miles, but range widely scattered.
<i>Rhynchospora globularis</i> var. <i>globularis</i> round-headed beaked-rush	--/--/2.1	Freshwater marshes and swamps. 148-197 feet. (July-August)	Low: Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams, larger seasonal wetlands, drainages and open water. Has very limited known range. Not known from within five miles.
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i> Marsh checkerbloom	--/--/1B.2	Freshwater marshes and swamps, and mesic areas in riparian forest. 3,609-7,546 feet. (July-August)	Low: Survey area is well below known elevation range of taxon. Not know from within five miles.
<i>Sidalcea oregana</i> ssp. <i>valida</i> Kenwood Marsh checkerbloom	FE/SE/1B.1	Freshwater marshes and swamps. 377-492 feet. (June-September)	Low: Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams, larger seasonal wetlands, drainages and open water. Has very limited known range. Not known from within five miles.
<i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i> Freed's jewel-flower	--/--/1B.2	Serpentine soils/rock in chaparral and cismontane woodland. 1,608-4,003 feet. (May-July)	Low: No serpentine soils present. Survey area somewhat below known elevation range. Not known from within five miles.
<i>Streptanthus breweri</i> var. <i>hesperidis</i> (= <i>S. hesperidis</i>) Green jewel-flower	--/--/1B.2	Serpentine soils/rock in chaparral and cismontane woodland. 426-2,493 feet. (May-July)	Low: No serpentine soils present. Not known from within five miles.

<i>Scientific name</i> Common Name	Status ¹ Federal/State/CRPR	Habitat Requirements (Blooming Period)	Potential to Occur in the Survey area ²
<i>Stuckenia filiformis</i> Slender-leaved pondweed	--/--/2.2	Assorted shallow freshwater habitats such as marshes and swamps. 984-7,054 feet. (May-July)	Low: Small amounts of somewhat suitable habitat present along the portions of the survey area located in proximity to streams and open water. Survey area somewhat below known range. Not known from within five miles, but widely scattered range.
<i>Trifolium amoenum</i> Showy rancheria clover/two-forked clover	FE/--/1B.1	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentinite. 16-1,361 feet. (April-June)	Low: Somewhat suitable habitat present in grassland, but no preferred serpentine habitat present. Very limited range. Many occurrences believed to be extirpated. Not known within five miles.
<i>Trifolium hydrophilum</i> Saline clover	--/--/1B.2	Marshes and swamps, vernal pools, and similar mesic areas in valley and foothill grassland. Alkaline areas. 0-984 feet. (April-June)	Low: No alkaline wetlands present. Not known within five miles.
<i>Triquetrella californica</i> Coastal triquetrella	--/--/1B.2	Soil in coastal bluff scrub and coastal scrub. 33-328 feet.	Low: No suitable coastal habitat present. Not known within five miles.
<i>Viburnum ellipticum</i> oval-leaved viburnum	--/--/2.3	Chaparral, cismontane woodland, and lower montane coniferous forest. 705-4,593 feet. (May-June)	High: Suitable habitat is present along most of the project corridor, although survey area at low end of known range. Known from within five miles.
¹ Status <u>Federal</u> FE Listed as Endangered under the federal Endangered Species Act FT Listed as Threatened under the federal Endangered Species Act <u>State of California</u> SE California Fish and Game Code Endangered Species ST California Fish and Game Code Threatened Species SR California Fish and Game Code Rare Species <u>California Rare Plant Rank (CRPR)</u> 1A Plant assumed extinct in California 1B Plants rare, threatened, or endangered in California and elsewhere 2 Plants rare, threatened, or endangered in California, but more common elsewhere <u>Threat Ranks</u> 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat) 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat) 0.3-Not very threatened in California (<20% of occurrences threatened /low degree and immediacy of threat or no current threats known)			
² The determination of potential for occurrence (low, moderate, high) is based on habitat requirements (e.g., substrate, hydrology, vegetation type, and disturbance factors), and range, and known presence near the survey area based on background research and observation of the plant survey area during surveys. All special-status plant species were determined to be not present as a result of rare plant surveys.			

Appendix C:
Special Status Wildlife Species Identified from Background Research of the Survey Area

Special Status Wildlife Species Recorded from Background Research of the Fulton-Fitch Survey Area

<i>Scientific name</i> Common Name	Status ¹ Federal/State	Habitat Requirements	Potential to Occur in the Survey Area
Invertebrates			
<i>Lavinia symmetricus navarroensis</i> Navarro roach	--/ SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.	Low: Occurrence records within 5 miles of the survey area. However, no habitat present in the survey area or vicinity.
<i>Syncaris pacifica</i> California freshwater shrimp	FE / SE	Found in low elevations, low gradient streams where riparian cover is moderate to heavy. Shallow pools away from main streamflow.	Low: Low gradient streams occur at Pool, Wright, and Windsor Creeks. However, no project activities will occur in areas with potentially suitable habitat.
Fish			
<i>Hysteroecarpus traski pomu</i> Russian River tule perch	-- / SSC	Low elevation streams of the Russian River system. Requires clear, flowing water with abundant cover. They also require deep (> 1 m) pool habitat.	Low: No habitat present in the survey area or vicinity. Project outside of known range.
<i>Mylopharodon conocephalus</i> hardhead	-- / SSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Also present in the Russian River. Clear, deep pools with sand-gravel-boulder bottoms & slow water velocity.	Low: No suitable habitat in the survey area; all waterway crossings in the survey area lack suitable habitat for this species.
<i>Oncorhynchus kisutch</i> coho salmon - central California coast ESU	FE / SE	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water & sufficient dissolved oxygen.	Low: Suitable watercourses not present in the survey area. No work activities are proposed for perennial watercourses in the survey area.
<i>Oncorhynchus mykiss irideus</i> steelhead - central California coast DPS	FT / -	Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.	Low: Perennial watercourses are present within the survey area. No work activities proposed for watercourses having potential to support the species

<i>Scientific name</i> Common Name	Status ¹ Federal/State	Habitat Requirements	Potential to Occur in the Survey Area
Amphibians			
<i>Ambystoma californiense</i> California tiger salamander	FT / ST	Vernal pools and/or seasonal water sources; requires underground refuges in adjacent upland areas, especially ground squirrel burrows.	Low: Potentially suitable seasonally ponded breeding habitat not observed in the survey area. Project area is located within and adjacent to portions of the Santa Rosa Plain Conservation Area where projects are determined not likely to adversely affect the species (USFWS 2011a). Records for the species within 5 miles from the survey area limited to a single occurrence within the Santa Rosa Plain, approximately 3 miles from the south end of the project
<i>Rana boylei</i> foothill yellow-legged frog	-- / SSC	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying.	Low: Potentially suitable riffle habitat with cobble substrate present in watercourse immediately south of Dumps Road and in Pool, Wright, and Windsor Creeks. No project activities proposed within perennial watercourses
<i>Rana draytonii</i> California red-legged frog	FT / SSC	Breeds in ponds and pools in slow-moving streams with emergent vegetation; adjacent upland habitats are often used for temporary refuges or dispersal movements.	Moderate: No occurrence records within 5 miles of the survey area. However, suitable breeding habitat found in ponds located in grassland habitat in the survey area. Suitable upland habitat also present in the grassland habitat.
Reptiles			
<i>Emys marmorata</i> western pond turtle	- / SSC	Occurs in both permanent and seasonal waters, including marshes, streams, rivers, ponds and lakes. Also found in irrigation canals and agricultural drains. They favor habitats with large amounts of emergent logs or boulders, where they aggregate to bask.	Moderate: CNDDDB occurrences within 5 miles of the survey area. Suitable aquatic habitat present in ponds just outside the survey area, and upland nesting habitat within the survey area.

<i>Scientific name</i> Common Name	Status ¹ Federal/State	Habitat Requirements	Potential to Occur in the Survey Area
Birds			
<i>Athene cunicularia hypugaea</i> western burrowing owl	- / SSC	Nests in burrows (often constructed by ground squirrels) and forages in low-growing grasslands and other open, semi-arid habitats	Low: No CNDDDB occurrences within 5 miles of the survey area. Some marginal habitat is present in the grassland habitat in the northern portion of the survey area, however this habitat lacks significant small mammal activity. The survey area is outside of the breeding range for the species and it is not regularly known from Sonoma County (Shuford and Gardali 2008)
<i>Elanus leucurus</i> white-tailed kite	- / FP	Nests in oak, willow or other trees and forages over open grasslands. A coast live oak tree is often chosen as a nest site.	High: CNDDDB occurrences within 5 miles of the survey area. Suitable nesting (large oaks) and foraging habitat present in the survey area.
Mammals			
<i>Antrozous pallidus</i> pallid bat	- / SSC	Open, dry habitats such as grasslands, shrublands, and woodlands with rocky areas for roosting. Roosts in anthropogenic structures (buildings and bridges), cliff crevices of rock faces, and hollow trees.	Moderate: CNDDDB occurrences within 5 miles of the survey area. Suitable day roosting habitat present in trees in the survey area. A large barn adjacent to pull site/staging area 2 may provide roosting habitat.
<i>Arborimus pomo</i> Sonoma tree vole	- / SSC	In douglas-fir, redwood & montane hardwood-conifer forests. Feeds almost exclusively on douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	Low: No CNDDDB occurrences within 5 miles of the survey area, and no recent records in 9-quad search. While some suitable habitat is present within the survey area, the habitat consists of a small, isolated grove
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	- / SSC	Found throughout California in a wide variety of habitats; most commonly associated with mesic sites. Roosts in the open, hanging from walls and ceilings of caves, mines or abandoned structures in or near woodlands and forests. Extremely sensitive to human disturbance.	Moderate: Caves and mines not known from the survey area, but barns and outbuildings in and near the survey area represent potentially suitable roosting habitat

<i>Scientific name</i> Common Name	Status ¹ Federal/State	Habitat Requirements	Potential to Occur in the Survey Area																				
<i>Lasiurus blossevillii</i> western red bat	- / SSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.	Moderate: No CNDDDB records within 5 miles of the survey area, however, some suitable roosting habitat present in larger oaks throughout the survey area.																				
<i>Taxidea taxus</i> American badger	- / SSC	Prefers dry open stages of most shrub, forest, and herbaceous habitats. Requires sufficient food (mostly on burrowing rodents), friable soils and open, uncultivated ground.	Moderate: No CNDDDB records within 5 miles of the survey area, but suitable foraging and denning habitat in the grasslands and woodlands throughout the survey area (though no larger mammal burrows were observed during surveys).																				
<p>¹. Status designations:</p> <table> <thead> <tr> <th colspan="2"><u>Federal</u></th> <th colspan="2"><u>State of California</u></th> </tr> </thead> <tbody> <tr> <td>FE</td> <td>Listed as Endangered under the federal Endangered Species Act</td> <td>SE</td> <td>California Fish and Game Code Endangered Species</td> </tr> <tr> <td>FT</td> <td>Listed as Threatened under the federal Endangered Species Act</td> <td>ST</td> <td>California Fish and Game Code Threatened Species</td> </tr> <tr> <td></td> <td></td> <td>FP</td> <td>California Fish and Game Code Fully Protected Species</td> </tr> <tr> <td></td> <td></td> <td>SSC</td> <td>California Department of Fish and Game Species of Special Concern</td> </tr> </tbody> </table>				<u>Federal</u>		<u>State of California</u>		FE	Listed as Endangered under the federal Endangered Species Act	SE	California Fish and Game Code Endangered Species	FT	Listed as Threatened under the federal Endangered Species Act	ST	California Fish and Game Code Threatened Species			FP	California Fish and Game Code Fully Protected Species			SSC	California Department of Fish and Game Species of Special Concern
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Appendix D: Photographs of the Survey Area



Pond located to the west of pull site/staging area 7



Coast live oak woodland at pole 74.



Grassland habitat/fallow vineyard at pole 72. Looking west.



Looking south at coast live oak habitat at pole 68. Douglas-fir forest in bottom of drainage to the right of the pole.



Seasonal watercourse at pole 73.



Seasonal watercourse at pole 67.



Canyon span at pole 46

Appendix E: List of Plant Species Observed in the Survey Area

Family	Genus	Species	Common Name*
Agavaceae	<i>Agave</i>	hort.	cultivated agave
Agavaceae	<i>Chlorogalum</i>	<i>pomeridianum</i>	wavy-leaf soap-root
Anacardiaceae	<i>Toxicodendron</i>	<i>diversilobum</i>	western poison oak
Apiaceae	<i>Anthriscus</i>	<i>caucalis</i>	bur-chervil
Apiaceae	<i>Daucus</i>	<i>carota</i>	wild carrot
Apiaceae	<i>Daucus</i>	<i>pusillus</i>	American wild carrot
Apiaceae	<i>Foeniculum</i>	<i>vulgare</i>	fennel
Apiaceae	<i>Ligusticum</i>	<i>apiifolium</i>	celeryleaf licorice-root
Apiaceae	<i>Lomatium</i>	<i>californicum</i>	California lomatium
Apiaceae	<i>Lomatium</i>	<i>utriculatum</i>	biscuitroot
Apiaceae	<i>Osmorhiza</i>	<i>berteroi</i>	sweet-ciceley
Apiaceae	<i>Perideridia</i>	sp.	perideridia - NF
Apiaceae	<i>Sanicula</i>	<i>arctopoides</i>	footsteps-of-spring
Apiaceae	<i>Sanicula</i>	<i>bipinnata</i>	poison sanicle
Apiaceae	<i>Sanicula</i>	<i>bipinnatifida</i>	purple sanicle
Apiaceae	<i>Sanicula</i>	<i>crassicaulis</i>	Pacific blacksnakeroot
Apiaceae	<i>Torilis</i>	<i>arvensis</i>	tall sock-destroyer
Aristolochiaceae	<i>Aristolochia</i>	<i>californica</i>	pipevine
Asteraceae	<i>Achillea</i>	<i>millefolium</i>	yarrow
Asteraceae	<i>Achyrachaena</i>	<i>mollis</i>	blow-wives
Asteraceae		<i>aparigiodes</i> var.	
Asteraceae	<i>Agoseris</i>	<i>aparigiodes</i>	woolly goat chicory
Asteraceae	<i>Agoseris</i>	<i>grandiflora</i>	bigflower agoseris
Asteraceae	<i>Agoseris</i>	<i>retrorsa</i>	spearleaf agoseris
Asteraceae	<i>Anaphalis</i>	<i>margaritacea</i>	pearly everlasting
Asteraceae	<i>Anaphalis</i>	sp.	everlasting - NF
Asteraceae	<i>Anisocarpus</i>	<i>madioides</i>	woodland tarweed
Asteraceae	<i>Anthemis</i>	<i>cotula</i>	mayweed
Asteraceae	<i>Baccharis</i>	<i>pilularis</i>	coyote brush
Asteraceae	<i>Baccharis</i>	<i>salicifolia</i> ssp. <i>salicifolia</i>	mule fat
Asteraceae		<i>pycnocephalus</i> ssp.	
Asteraceae	<i>Carduus</i>	<i>pycnocephalus</i>	Italian thistle
Asteraceae	<i>Centaurea</i>	<i>calcitrapa</i>	purple star-thistle
Asteraceae	<i>Centaurea</i>	<i>solstitialis</i>	yellow star-thistle
Asteraceae	<i>Centromadia</i>	<i>fitchii</i>	Fitch's spikeweed
Asteraceae	<i>Cichorium</i>	<i>intybus</i>	chicory
Asteraceae		<i>occidentale</i> var.	
Asteraceae	<i>Cirsium</i>	<i>venustum</i>	Venus' thistle
Asteraceae	<i>Conyza</i>	sp.	horseweed
Asteraceae	<i>Crepis</i>	<i>capillaris</i>	smooth hawksbeard
Asteraceae	<i>Croton</i>	<i>setigerus</i>	doveweed

Family	Genus	Species	Common Name*
Asteraceae	<i>Gamochaeta</i>	<i>ustulata</i>	spoonleaf purple everlasting
Asteraceae	<i>Grindelia</i>	sp.	gumweed
Asteraceae	<i>Helminthotheca</i>	<i>echioides</i>	bristly ox-tongue
		<i>congesta</i> ssp.	
Asteraceae	<i>Hemizonia</i>	<i>luzulifolia</i>	hayfield tarweed
Asteraceae	<i>Hieracium</i>	<i>albiflorum</i>	white hawkweed
Asteraceae	<i>Hypochaeris</i>	<i>glabra</i>	smooth cat's-ear
Asteraceae	<i>Hypochaeris</i>	<i>radicata</i>	rough cat's ear
Asteraceae	<i>Lactuca</i>	<i>serriola</i>	prickly lettuce
Asteraceae	<i>Lagophylla</i>	<i>minor</i>	lesser hairleaf
Asteraceae	<i>Lasthenia</i>	<i>californica</i>	california goldfields
Asteraceae	<i>Leontodon</i>	<i>saxatilis</i>	hairy hawkbit
Asteraceae	<i>Logfia</i>	<i>gallica</i>	daggerleaf cottonrose
Asteraceae	<i>Madia</i>	<i>exigua</i>	small tarweed
Asteraceae	<i>Madia</i>	<i>gracilis</i>	gumweed
Asteraceae	<i>Madia</i>	sp.	madia NF
Asteraceae	<i>Micropus</i>	<i>californicus</i>	Q-tips
Asteraceae	<i>Psilocarphus</i>	<i>brevissimus</i>	woolly marbles
Asteraceae	<i>Senecio</i>	<i>vulgaris</i>	common groundsel
Asteraceae	<i>Silybum</i>	<i>marianum</i>	milk thistle
Asteraceae	<i>Solidago</i>	sp.	goldenrod - NF
Asteraceae	<i>Soliva</i>	<i>sessilis</i>	field burweed
Asteraceae	<i>Sonchus</i>	<i>asper</i> ssp. <i>asper</i>	prickly sow thistle
Asteraceae	<i>Taraxacum</i>	<i>officinale</i>	dandelion
Asteraceae	<i>Tolpis</i>	<i>barbata</i>	European umbrella milkwort
Asteraceae	<i>Tragopogon</i>	<i>porrifolius</i>	purple salsify
Asteraceae	<i>Uropappus</i>	<i>lindleyi</i>	silverpuffs
Asteraceae	<i>Wyethia</i>	<i>angustifolia</i>	California compassplant
Asteraceae	<i>Wyethia</i>	<i>glabra</i>	Coast Range mule's ears
Azollaceae	<i>Azolla</i>	sp.	mosquito fern
		<i>cornuta</i> ssp.	
Betulaceae	<i>Corylus</i>	<i>californica</i>	California hazelnut
Blechnaceae	<i>Woodwardia</i>	<i>fimbriata</i>	giant chain fern
Boraginaceae	<i>Amsinckia</i>	<i>intermedia</i>	common fiddleneck
Boraginaceae	<i>Amsinckia</i>	<i>menziesii</i>	Menzie's fiddleneck
Boraginaceae	<i>Cynoglossum</i>	<i>grande</i>	grand hound's tongue
Boraginaceae	<i>Cynoglossum</i>	sp.	hound's tongue NF
Boraginaceae	<i>Myosotis</i>	<i>discolor</i>	changing forget-me-not
Boraginaceae	<i>Nemophila</i>	<i>heterophylla</i>	small baby blue eyes
		<i>parviflora</i> var.	
Boraginaceae	<i>Nemophila</i>	<i>parviflora</i>	smallflower nemophila

Family	Genus	Species	Common Name*
Boraginaceae	<i>Nemophila</i>	<i>pedunculata</i>	littlefoot nemophila
Boraginaceae	<i>Phacelia</i>	<i>cicutaria</i>	caterpillar phacelia
		<i>heterophylla</i> ssp.	
Boraginaceae	<i>Phacelia</i>	<i>virgata</i>	varileaf phacelia
Boraginaceae	<i>Phacelia</i>	<i>umbrosa</i>	distant phacelia
Boraginaceae	<i>Plagiobothrys</i>	<i>nothofulvus</i>	common popcornflower
		<i>stipitatus</i> var.	
Boraginaceae	<i>Plagiobothrys</i>	<i>micranthus</i>	stalked popcornflower
Brassicaceae	<i>Brassica</i>	<i>rapa</i>	field mustard/turnip
Brassicaceae	<i>Cardamine</i>	<i>californica</i>	milk maids
Brassicaceae	<i>Hirschfeldia</i>	<i>incana</i>	short-pod mustard
Brassicaceae	<i>Nasturtium</i>	<i>officinale</i>	watercress
Brassicaceae	<i>Raphanus</i>	<i>raphanistrum</i>	jointed charlock
Brassicaceae	<i>Raphanus</i>	<i>sativa</i>	wild radish
Brassicaceae	<i>Sisymbrium</i>	<i>irio</i>	London rocket
Brassicaceae	<i>Thysanocarpus</i>	<i>curvipes</i>	fringe-pod
Calycanthaceae	<i>Calycanthus</i>	<i>occidentalis</i>	spicebush
		<i>concolor</i> var.	
Campanulaceae	<i>Downingia</i>	<i>concolor</i>	maroonspot calicoflower
		<i>hispidula</i> var.	
Caprifoliaceae	<i>Lonicera</i>	<i>vacillans</i>	pink honeysuckle
Caprifoliaceae	<i>Lonicera</i>	<i>interrupta</i>	chaparral honeysuckle
Caprifoliaceae	<i>Symphoricarpos</i>	<i>albus</i> var. <i>laevigatus</i>	snowberry
		<i>fontanum</i> ssp.	common mouse-ear
Caryophyllaceae	<i>Cerastium</i>	<i>vulgare</i>	chickweed
			sticky mouse-eared
Caryophyllaceae	<i>Cerastium</i>	<i>glomeratum</i>	chickweed
Caryophyllaceae	<i>Minuartia</i>	<i>howellii</i>	Howell's sandwort
Caryophyllaceae	<i>Petrorhagia</i>	<i>dubia</i>	hairypink
Caryophyllaceae	<i>Silene</i>	<i>gallica</i>	small-flower catchfly
Caryophyllaceae	<i>Spergularia</i>	<i>arvensis</i>	stickwort
Caryophyllaceae	<i>Spergularia</i>	<i>rubra</i>	red sand-spurrey
Caryophyllaceae	<i>Spergularia</i>	<i>sp. NF</i>	sandspurrey NF
Caryophyllaceae	<i>Spergularia</i>	<i>villosa</i>	hairy sand-spurrey
Caryophyllaceae	<i>Stellaria</i>	<i>media</i>	common chickweed
Convolvulaceae	<i>Convolvulus</i>	<i>arvensis</i>	bindweed
Crassulaceae	<i>Crassula</i>	<i>tillaea</i>	moss pygmyweed
Cucurbitaceae	<i>Marah</i>	<i>oregonanus</i>	coast man-root
Cyperaceae	<i>Carex</i>	<i>densa</i>	dense sedge
Cyperaceae	<i>Carex</i>	sp.	carex
Cyperaceae	<i>Cyperus</i>	<i>eragrostis</i>	tall flatsedge
Cyperaceae	<i>Cyperus</i>	<i>niger</i>	black flatsedge
Cyperaceae	<i>Eleocharis</i>	<i>acicularis</i>	needle spikerush

Family	Genus	Species	Common Name*
Cyperaceae	<i>Eleocharis</i>	<i>macrostachya</i>	pale spikerush
		<i>aquilinum</i> var.	
Dennstaedtiaceae	<i>Pteridium</i>	<i>pubescens</i>	bracken fern
Dryopteridaceae	<i>Dryopteris</i>	<i>arguta</i>	coastal woodfern
Dryopteridaceae	<i>Polystichum</i>	<i>munitum</i>	western sword fern
Ericaceae	<i>Arbutus</i>	<i>menziesii</i>	Pacific madrone
		<i>manzanita</i> ssp.	
Ericaceae	<i>Arctostaphylos</i>	<i>manzanita</i>	whiteleaf manzanita
		<i>standfordiana</i> ssp.	
Ericaceae	<i>Arctostaphylos</i>	<i>standfordiana</i>	Standford's manzanita
Euphorbiaceae	<i>Euphorbia</i>	<i>spathulata</i>	warty spurge
		<i>americanus</i> var.	
Fabaceae	<i>Acmispon</i>	<i>americanus</i>	Spanish lotus
Fabaceae	<i>Acmispon</i>	<i>brachycarpus</i>	Hill lotus
Fabaceae	<i>Acmispon</i>	<i>glaber</i>	deerweed/California broom
Fabaceae	<i>Acmispon</i>	<i>micranthus</i>	desert deervetch
Fabaceae	<i>Acmispon</i>	<i>wrangelianus</i>	Wrangel lotus
Fabaceae	<i>Astragalus</i>	<i>gambelianus</i>	Gambel milkvetch
		<i>scoparius</i> var.	
Fabaceae	<i>Cytisus</i>	<i>andreaanus</i>	Scotch broom (reddish flowers)
Fabaceae	<i>Genista</i>	<i>monspessulana</i>	French broom
Fabaceae	<i>Hosackia</i>	<i>stipularis</i>	balsam bird's-foot trefoil
		<i>jepsonii</i> var.	
Fabaceae	<i>Lathyrus</i>	<i>californicus</i>	California pea
Fabaceae	<i>Lathyrus</i>	<i>sulphureus</i>	sulfur pea (CNPS List 3)
Fabaceae	<i>Lathyrus</i>	<i>vestitus</i>	Pacific pea
Fabaceae	<i>Lathyrus</i>	<i>angulatus</i>	angled pea
Fabaceae	<i>Lathyrus</i>	<i>sativus</i>	white pea
Fabaceae	<i>Lupinus</i>	<i>bicolor</i>	miniature lupine
Fabaceae	<i>Lupinus</i>	<i>latifolius</i>	broadleaf lupine
Fabaceae	<i>Lupinus</i>	<i>nanus</i>	sky lupine
Fabaceae	<i>Medicago</i>	<i>lupulina</i>	black medic
Fabaceae	<i>Medicago</i>	<i>polymorpha</i>	California bur-clover
Fabaceae	<i>Rupertia</i>	<i>physodes</i>	California tea
Fabaceae	<i>Spartium</i>	<i>junceum</i>	Spanish broom
Fabaceae	<i>Trifolium</i>	<i>angustifolium</i>	narrow-leaved clover
		<i>bifidum</i> var.	
Fabaceae	<i>Trifolium</i>	<i>decipiens</i>	notch-leaf clover
Fabaceae	<i>Trifolium</i>	<i>campestre</i>	hop clover
Fabaceae	<i>Trifolium</i>	<i>ciliolatum</i>	foothill clover
Fabaceae	<i>Trifolium</i>	<i>depauperatum</i>	sack clover
Fabaceae	<i>Trifolium</i>	<i>dubium</i>	little hop clover
Fabaceae	<i>Trifolium</i>	<i>hirtum</i>	rose clover

Family	Genus	Species	Common Name*
Fabaceae	<i>Trifolium</i>	<i>incarnatum</i>	scarlet clover
Fabaceae	<i>Trifolium</i>	<i>repens</i>	white clover
Fabaceae	<i>Trifolium</i>	<i>striatum</i>	knotted clover
Fabaceae	<i>Trifolium</i>	<i>subterraneum</i>	subterranean clover
Fabaceae	<i>Trifolium</i>	<i>variegatum</i>	white-tipped clover
Fabaceae	<i>Trifolium</i>	<i>willdenovii</i>	tomcat clover
Fabaceae	<i>Vicia</i>	<i>americana</i>	American vetch
Fabaceae	<i>Vicia</i>	<i>sativa</i> ssp. <i>nigra</i>	narrow-leaved vetch
Fabaceae	<i>Vicia</i>	<i>sativa</i> ssp. <i>sativa</i>	vetch
Fabaceae	<i>Vicia</i>	<i>villosa</i>	winter vetch
Fagaceae	<i>Quercus</i>	<i>agrifolia</i>	coast live oak
Fagaceae	<i>Quercus</i>	(<i>agrifolia</i> x <i>lobata</i>)	hybrid oak
Fagaceae	<i>Quercus</i>	<i>douglasii</i>	blue oak
Fagaceae	<i>Quercus</i>	<i>garryana</i>	Oregon oak, Garry oak
Fagaceae	<i>Quercus</i>	<i>kelloggii</i> (<i>kelloggii</i> x <i>garryana</i>)	California black oak oak hybrids
Fagaceae	<i>Quercus</i>	<i>wislezeni</i>	interior live oak
Fagaceae	<i>Quercus</i>	<i>lobata</i>	Valley oak
Gentianaceae	<i>Centaurium</i>	<i>tenuiflorum</i>	slender centuary
Gentianaceae	<i>Cicendia</i>	<i>quadrangularis</i>	timwort
Geraniaceae	<i>Erodium</i>	<i>botrys</i>	long-fruited stork's-bill
Geraniaceae	<i>Erodium</i>	<i>cicutarium</i>	red-stemmed filaree
Geraniaceae	<i>Erodium</i>	<i>moschatum</i>	white-stemmed filaree
Geraniaceae	<i>Geranium</i>	<i>carolinianum</i>	Carolina geranium
Geraniaceae	<i>Geranium</i>	<i>dissectum</i>	cutleaf geranium
Geraniaceae	<i>Geranium</i>	<i>molle</i>	dove's-foot geranium
Hypericaceae	<i>Hypericum</i>	<i>perforatum</i>	Klamathweed
Iridaceae	<i>Iris</i>	<i>douglasiana</i>	Douglas' iris
Iridaceae	<i>Iris</i>	<i>fernaldii</i>	Fernald's iris
Iridaceae	<i>Iris</i>	<i>sp.</i>	iris - NF
Iridaceae	<i>Iris</i>	<i>macrosiphon</i>	bowltube iris
Iridaceae	<i>Sisyrinchium</i>	<i>bellum</i>	wester blue-eyed-grass
Isoetaceae	<i>Isoetes</i>	<i>sp.</i>	quillwort
Juncaceae	<i>Juncus</i>	<i>bolanderi</i>	Bolander's rush
Juncaceae	<i>Juncus</i>	<i>bufonius</i>	toad rush
Juncaceae	<i>Juncus</i>	<i>capitatus</i>	dwarf rush
Juncaceae	<i>Juncus</i>	<i>effusus</i> ssp. <i>pacificus</i>	Pacific rush
Juncaceae	<i>Juncus</i>	<i>occidentalis</i>	western rush
Juncaceae	<i>Juncus</i>	<i>patens</i>	spreading rush
Juncaceae	<i>Juncus</i>	<i>xiphioides</i>	iris-leaved rush
Juncaceae	<i>Luzula</i>	<i>comosa</i>	Pacific woodrush
Juncaginaceae	<i>Triglochin</i>	<i>scilloides</i>	flowering quillwort

Family	Genus	Species	Common Name*
Lamiaceae	<i>Marrubium</i>	<i>vulgare</i>	horehound
Lamiaceae	<i>Melissa</i>	<i>officinalis</i>	lemon balm
Lamiaceae	<i>Mentha</i>	<i>pulegium</i>	pennyroyal
Lamiaceae	<i>Mentha</i>	<i>x piperita</i>	peppermint
Lamiaceae	<i>Stachys</i>	<i>arvensis</i>	staggerweed
Lamiaceae	<i>Trichostema</i>	<i>lanceolatum</i>	vinegarweed
Lauraceae	<i>Umbellularia</i>	<i>californica</i>	California bay
Liliaceae	<i>Calochortus</i>	<i>luteus</i>	yellow mariposa lily
Liliaceae	<i>Fritillaria</i>	<i>affinis</i>	checker lily
Linaceae	<i>Linum</i>	<i>bienne</i>	pale flax
Linaceae	<i>Linum</i>	<i>lewisii</i>	Lewis' flax
Lythraceae	<i>Lythrum</i>	<i>hyssopifolium</i>	hyssop loosestrife
Lythraceae	<i>Punica</i>	<i>granatum</i>	pomegranate
Malvaceae	<i>Malva</i>	<i>neglecta</i>	common mallow
Malvaceae	<i>Sidalcea</i>	<i>calycosa</i> ssp. <i>calycosa</i>	hogwallow checkerbloom
Malvaceae	<i>Sidalcea</i>	<i>diploscypha</i>	fringed checkerbloom
Marsileaceae	<i>Pilularia</i>	<i>americana</i>	American pillwort
Montiaceae	<i>Claytonia</i>	<i>perfoliata</i>	miner's lettuce
Montiaceae	<i>Claytonia</i>	<i>perfoliata</i>	miner's-lettuce
Montiaceae	<i>Montia</i>	<i>fontana</i>	annual water miner's-lettuce
Myrsinaceae	<i>Anagallis</i>	<i>arvensis</i>	scarlet pimpernel
Myrtaceae	<i>Eucalyptus</i>	<i>calmadulensis</i>	red gum
Onagraceae	<i>Clarkia</i>	<i>gracilis</i> ssp. <i>sonomensis</i>	Sonoma clarkia
Onagraceae	<i>Clarkia</i>	<i>gracilis</i> ssp. <i>gracilis</i>	slender clarkia
Onagraceae	<i>Clarkia</i>	<i>purpurea</i> ssp. <i>viminea</i>	winecup clarkia
Onagraceae	<i>Clarkia</i>	<i>purpurea</i> var. <i>quadrivulnera</i>	four-spot
Onagraceae	<i>Epilobium</i>	sp.	epilobium
Onagraceae	<i>Taraxia</i>	<i>ovata</i>	golden eggs
Orchidaceae	<i>Piperia</i>	sp.	rein-orchid NF
Orobanchaceae	<i>Castilleja</i>	<i>attenuata</i>	valley tassels
Orobanchaceae	<i>Castilleja</i>	<i>densiflora</i>	denseflower Indian paintbrush
Orobanchaceae	<i>Parentucellia</i>	<i>viscosa</i>	yellow glandweed
Orobanchaceae	<i>Triphysaria</i>	<i>eriantha</i> ssp. <i>eriantha</i>	johnny-tuck
Orobanchaceae	<i>Triphysaria</i>	<i>pusilla</i>	dwarf owl's-clover
Orobanchaceae	<i>Triphysaria</i>	<i>versicolor</i> ssp. <i>faucibarbata</i>	yellowbeak owl's-clover

Family	Genus	Species	Common Name*
Oxalidaceae	<i>Oxalis</i>	<i>pilosa</i>	radishroot woodsorrel
Papaveraceae	<i>Eschscholzia</i>	<i>californica</i>	California poppy
Phrymaceae	<i>Mimulus</i>	<i>guttatus</i>	seep monkey-flower
Phrymaceae	<i>Mimulus</i>	<i>aurantiacus</i>	bush monkey-flower
Pinaceae	<i>Abies</i>	<i>concolor</i>	white fir
Pinaceae	<i>Abies</i>	<i>grandis</i>	grand fir
Pinaceae	<i>Pinus</i>	<i>sabiniana</i>	grey pine
		<i>menziesii</i> var.	
Pinaceae	<i>Pseudotsuga</i>	<i>menziesii</i>	Douglas'-fir
Plantaginaceae	<i>Callitriche</i>	sp.	water-starwort
Plantaginaceae	<i>Collinsia</i>	<i>heterophylla</i>	Chinese houses
Plantaginaceae	<i>Plantago</i>	<i>coronopus</i>	cutleaf plantain
Plantaginaceae	<i>Plantago</i>	<i>erecta</i>	erect plantain
Plantaginaceae	<i>Plantago</i>	<i>lanceolata</i>	English plantain
Plantaginaceae	<i>Plantago</i>	<i>major</i>	common plantain
Poaceae	<i>Achnatherum</i>	sp.	achnatherum
Poaceae	<i>Aegilops</i>	<i>triuncialis</i>	barbed goatgrass
Poaceae	<i>Agrostis</i>	<i>avenacea</i>	Pacific bentgrass
Poaceae	<i>Agrostis</i>	<i>capillaris</i>	colonial bentgrass
Poaceae	<i>Agrostis</i>	<i>exarata</i>	spike bentgrass
Poaceae	<i>Aira</i>	<i>caryophyllea</i>	silver hairgrass
Poaceae	<i>Alopecurus</i>	<i>saccatus</i>	Pacific foxtail
Poaceae	<i>Anthoxanthum</i>	<i>odoratum</i>	sweet vernal grass
Poaceae	<i>Arrhenatherum</i>	<i>elatius</i>	tall oatgrass
Poaceae	<i>Avena</i>	<i>barbata</i>	slender wild oat
Poaceae	<i>Avena</i>	<i>fatua</i>	wild oat
Poaceae	<i>Brachypodium</i>	<i>distachyon</i>	purple false-brome
Poaceae	<i>Briza</i>	<i>maxima</i>	rattlesnake grass
Poaceae	<i>Briza</i>	<i>minor</i>	small quaking grass
		<i>carinatus</i> var.	
Poaceae	<i>Bromus</i>	<i>carinatus</i>	California brome
Poaceae	<i>Bromus</i>	<i>diandrus</i>	ripgut brome
Poaceae	<i>Bromus</i>	<i>hordeaceus</i>	soft chess
Poaceae	<i>Bromus</i>	<i>japonicus</i>	Japanese brome
Poaceae	<i>Bromus</i>	<i>laevipes</i>	woodland brome
		<i>madritensis</i> ssp.	
Poaceae	<i>Bromus</i>	<i>rubens</i>	red brome
Poaceae	<i>Bromus</i>	<i>sterilis</i>	poverty brome
Poaceae	<i>Bromus</i>	<i>vulgaris</i>	Columbia brome
Poaceae	<i>Cynodon</i>	<i>dactylon</i>	Bermuda grass
Poaceae	<i>Cynosurus</i>	<i>echinatus</i>	hedgehog dogtail
Poaceae	<i>Danthonia</i>	<i>california</i>	California oat grass
Poaceae	<i>Danthonia</i>	<i>unispicata</i>	one-spike oatgrass

Family	Genus	Species	Common Name*
Poaceae	<i>Elymus</i>	<i>glaucus</i>	blue wild rye
Poaceae	<i>Elymus</i>	<i>multisetus</i>	big squirreltail
Poaceae	<i>Elymus</i>	<i>caput-medusae</i>	Medusahead grass
Poaceae	<i>Festuca</i>	<i>arundinacea</i>	tall fescue
Poaceae	<i>Festuca</i>	<i>bromoides</i>	brome fescue
Poaceae	<i>Festuca</i>	<i>microstachys</i>	small fescue
Poaceae	<i>Festuca</i>	<i>myuros</i>	rattail six weeks grass
Poaceae	<i>Festuca</i>	<i>perennis</i>	rye grass
Poaceae	<i>Festuca</i>	sp.	festuca NF
Poaceae	<i>Gastridium</i>	<i>phleoides</i>	nit-grass
Poaceae	<i>Glyceria</i>	<i>x occidentalis</i>	western manna grass
Poaceae	<i>Holcus</i>	<i>lanatus</i>	velvetgrass
Poaceae	<i>Hordeum</i>	<i>marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
Poaceae	<i>Hordeum</i>	<i>murinum</i> ssp. <i>leporinum</i>	hare barley
Poaceae	<i>Melica</i>	<i>bulbosa</i>	onion grass
Poaceae	<i>Melica</i>	<i>californica</i>	California onion grass
Poaceae	<i>Melica</i>	<i>geyerii</i>	Geyer's oniongrass
Poaceae	<i>Panicum</i>	<i>capillare</i>	witchgrass
Poaceae	<i>Phalaris</i>	<i>aquatica</i>	Harding grass
Poaceae	<i>Phalaris</i>	<i>minor</i>	canarygrass
Poaceae	<i>Phleum</i>	<i>pratense</i>	cultivated timothy
Poaceae	<i>Poa</i>	<i>annua</i>	annual bluegrass
Poaceae	<i>Poa</i>	sp.	poa
Poaceae	<i>Polypogon</i>	<i>monspeliensis</i>	rabbit's-foot grass
Poaceae	<i>Stipa</i>	<i>cernua</i>	nodding needlegrass
Poaceae	<i>Stipa</i>	<i>lepida</i>	foothill needlegrass
Poaceae	<i>Stipa</i>	<i>pulchra</i>	purple needlegrass
Polemoniaceae	<i>Leptosiphon</i>	<i>acicularis</i>	bristly leptosiphon (CNPS List 4.2)
Polemoniaceae	<i>Leptosiphon</i>	<i>bicolor</i>	bicolored linanthus
Polemoniaceae	<i>Leptosiphon</i>	<i>parviflorus</i>	variable linanthus
Polemoniaceae	<i>Navarretia</i>	<i>(squamrosa)</i>	navarretia NF - glandular, odiferous, upland (not <i>bakeri</i> or <i>plieantha</i>)
Polemoniaceae	<i>Navarretia</i>	<i>intertexta</i>	needleleaf navarretia
Polemoniaceae	<i>Navarretia</i>	<i>pubescens</i>	downy pincushion plant
Polemoniaceae	<i>Navarretia</i>	<i>tagetina</i>	marigold navarretia
Polygalaceae	<i>Polygala</i>	<i>californica</i>	california milkwort
Polygonaceae	<i>Eriophyllum</i>	<i>lanatum</i> var. <i>arachnoideum</i>	woolly sunflower
Polygonaceae	<i>Polygonum</i>	<i>aviculare</i> ssp. <i>depressum</i>	knotweed

Family	Genus	Species	Common Name*
Polygonaceae	<i>Rumex</i>	<i>(conglomeratus)</i>	clustered dock
Polygonaceae	<i>Rumex</i>	<i>acetosella</i>	sheep sorrel
Polygonaceae	<i>Rumex</i>	<i>obtusifolius</i>	bitter dock
Polygonaceae	<i>Rumex</i>	<i>pulcher</i>	fiddle dock
Polygonaceae	<i>Rumex</i>	sp.	dock
Polygonaceae	<i>Rumex</i>	<i>crispus</i>	curly dock
Polypodiaceae	<i>Polypodium</i>	<i>californicum</i>	California polypody
Polypodiaceae	<i>Polypodium</i>	<i>calirhiza</i>	nested polypody
Polypodiaceae	<i>Polypodium</i>	sp.	polypody fern
Primulaceae	<i>Dodecatheon</i>	<i>hendersonii</i>	mosquito bills
Pteridaceae	<i>Adiantum</i>	<i>jordanii</i>	California maidenhair
Pteridaceae	<i>Pellaea</i>	<i>andromedifolia</i>	coffee-fern
Pteridaceae	<i>Pentagramma</i>	<i>triangularis</i>	gold-backed fern
Ranunculaceae	<i>Delphinium</i>	<i>nudicale</i>	red larkspur
Ranunculaceae	<i>Delphinium</i>	<i>decorum</i>	coastal larkspur
Ranunculaceae	<i>Ranunculus</i>	<i>californicus</i>	California buttercup
Ranunculaceae	<i>Ranunculus</i>	<i>muricatus</i>	prickle-seeded buttercup
Ranunculaceae	<i>Ranunculus</i>	<i>occidentalis</i>	western buttercup
Rhamnaceae	<i>Frangula</i>	<i>californica</i>	California coffeeberry
Rosaceae	<i>Amelanchier</i>	<i>alnifolia</i>	serviceberry
Rosaceae	<i>Aphanes</i>	<i>occidentalis</i>	western lady's-mantle
Rosaceae	<i>Cotoneaster</i>	<i>pannosus</i>	silver-leaf cotoneaster
Rosaceae	<i>Fragaria</i>	<i>vesca</i>	woodland strawberry
Rosaceae	<i>Heteromeles</i>	<i>arbutifolia</i>	toyon
Rosaceae	<i>Holodiscus</i>	<i>discolor</i>	oceanspray
Rosaceae	<i>Holodiscus</i>	sp.	holodiscus
Rosaceae	<i>Potentilla</i>	sp.	cinquefoil - NF
Rosaceae	<i>Prunus</i>	<i>cerasifera</i>	cherry plum
Rosaceae	<i>Prunus</i>	sp.	cherry
Rosaceae	<i>Rosa</i>	<i>rubiginosa</i>	sweet-briar
Rosaceae	<i>Rosa</i>	<i>spithamea</i>	coast ground rose
Rosaceae	<i>Rubus</i>	<i>armeniacus</i>	Himalayan blackberry
Rosaceae	<i>Rubus</i>	<i>leucodermis</i>	whitebark raspberry
Rosaceae	<i>Rubus</i>	<i>ursinus</i>	California blackberry
Rubiaceae	<i>Galium</i>	<i>aparine</i>	goose-grass/bedstraw
Rubiaceae	<i>Galium</i>	<i>californicum</i> var. <i>californicum</i>	California bedstraw
Rubiaceae	<i>Galium</i>	<i>murale</i>	tiny bedstraw
Rubiaceae	<i>Galium</i>	<i>pariesiense</i>	wall bedstraw
Rubiaceae	<i>Galium</i>	<i>trifidum</i> ssp. <i>columbianum</i>	three-petal bedstraw
Rubiaceae	<i>Galium</i>	<i>porrigens</i> var. <i>tenu</i>	climbing bedstraw
Rubiaceae	<i>Sherardia</i>	<i>arvensis</i>	field madder

Family	Genus	Species	Common Name*
Rutaceae	<i>Citrus</i>	<i>x sinensis</i>	oranges
Salicaceae	<i>Salix</i>	<i>laevigata</i>	red willow
Salicaceae	<i>Salix</i>	<i>lasiolepis</i>	Arroyo willow
Sapindaceae	<i>Acer</i>	<i>macrophyllum</i>	bigleaf maple
Sapindaceae	<i>Aesculus</i>	<i>californica</i>	California buckeye
Saxifragaceae	<i>Lithophragma</i>	<i>affine</i>	San Francisco woodland-star
Themidaceae	<i>Brodiaea</i>	<i>elegans</i>	harvest brodiaea
Themidaceae	<i>Dichelostemma</i>	<i>capitatum</i>	blue-dicks
Themidaceae	<i>Dichelostemma</i>	<i>multiflorum</i>	wild hyacinth
Themidaceae	<i>Triteleia</i>	<i>hyacinthina</i>	white brodiaea/fool's-onion
Themidaceae	<i>Triteleia</i>	<i>laxa</i>	Ithuriel's spear
Valerianaceae	<i>Plectritis</i>	<i>macrocera</i>	longhorn plectritis
Viscaceae	<i>Phoradendron</i>	<i>serotinum</i>	American mistletoe
Vitaceae	<i>Vitis</i>	<i>vinifera</i>	wine grapes

Nomenclature is consistent with *The Jepson Manual, Second Edition, and Treatments for Public Viewing* (online)

Plants in bold have a CRPR

(plants in parentheses) means plants did not have all features needed for identification, identification tentative

“NF” means no flowers or fruit were present for identification

“hort” means found in a horticultural situation