PACIFIC GAS AND ELECTRIC COMPANY'S APPLICATION TO CONSTRUCT LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT CPUC A.04-11-011

Final Mitigated Negative Declaration

SCH# 2005122042

Prepared for:
California Public Utilities Commission

March 2006

STATE OF CALIFORNIA **ARNOLD SCHWARZENEGGER, Governor**

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

To: **Interested Parties**

From: **Dorris Lam, Environmental Project Manager**

Subject: **NOTICE OF AVAILABILITY OF A FINAL MITIGATED NEGATIVE DECLARATION – Pacific Gas and Electric Company's Lakeville-Sonoma 115 kV Transmission Line Project (A.04-11-011) SCH# 2005122042**

Date: **March 23, 2006**

The California Public Utilities Commission (CPUC) has prepared a Final Mitigated Negative Declaration (Final MND) under the California Environmental Quality Act (CEQA) for consideration of Pacific Gas and Electric Company's (PG&E) Application to Construct the Lakeville-Sonoma 115 kV Transmission Line Project (A.04-11-011). The Final MND details the proposed project, evaluates and describes its potential environmental impacts, identifies those impacts that could be significant, and presents mitigation measures to avoid or minimize these impacts.

Description of the Proposed Project. To address low voltage and overloading problems in the Sonoma/Napa area, PG&E seeks authority, pursuant to CPUC General Order 131-D, Section III(B), to upgrade the electric transmission system by installing a second 115 kV transmission circuit (new) within its existing single-circuit 115 kV transmission line route between its Lakeville (at the eastern edge of the City of Petaluma) and Sonoma Substations (at the southern edge of the City of Sonoma). The second 115 kV transmission line would be installed on a rebuilt version of PG&E's existing single-circuit 115 kV transmission line, thus co-locating the two circuits on a single set of poles for a total distance of approximately 7.23 miles.

A 3,060-foot length of the new second circuit transmission line along Leveroni Road from approximately Fifth Street West to the Sonoma Substation would be undergrounded (See attached map). Modifications to PG&E's Lakeville and Sonoma Substations are needed to accommodate the new circuit, but there would be no expansion beyond the existing utility-owned properties.

Contents of the Final MND. The Final MND consists of five chapters plus Appendices. Chapter 1 contains a description of the proposed project. Chapter 2 contains the text of the Final Draft MND as modified from the published Draft MND, with revised text shown in underline (for insertions) and deleted text shown in ~~strikeout~~ (for deletions). Chapter 3 contains the environmental determination of the proposed project. Chapter 4 provides a list of report authors and public agency outreach meetings and consultations. Chapter 5 presents comment letters received on the Draft MND and responses to those comments.

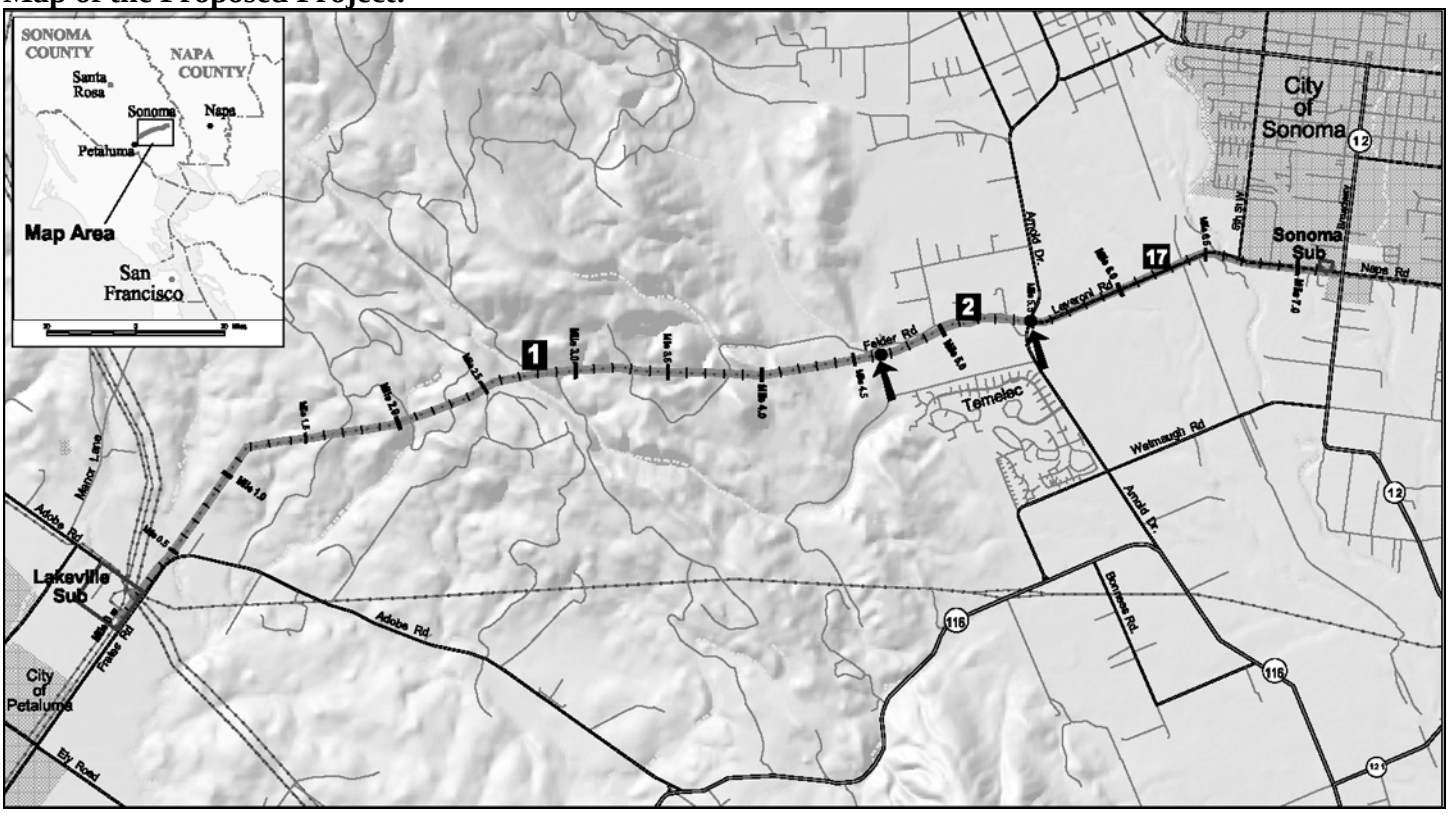
CPUC Actions After Final MND Publication. There is no comment period following issuance of the Final MND. The CPUC will determine the adequacy of the Final MND, and, if adequate, would adopt the document as compliant with CEQA. The CPUC would issue a Decision on the Application, which would be announced and published concurrent with a scheduled CPUC Meeting. After the Commission makes the decision on the Application, a Notice of Determination would be mailed to the State Clearinghouse within 5 days of the Decision. Within 30 days after the Decision is issued by the CPUC, parties can apply for rehearing. For further information on the CPUC's decision-making process, call the CPUC Public Advisor at (415) 703-2074.

PG&E'S APPLICATION TO CONSTRUCT LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT INFORMATION REPOSITORIES

Availability of Final MND. Copies of the Final MND will be available for review at the Sonoma Valley Regional Library, Petaluma Regional Library, and on the project website: http://www.pgelakevillesonoma.info. Hard copies or CDs copies of the Final MND may be requested by telephone at (415) 962-8420 or by e-mail at Lakeville-Sonoma@esassoc.com.

Sonoma Valley Regional Library	Petaluma Regional Library
755 West Napa Street	100 Fairgrounds Drive
Sonoma, CA 95476	Petaluma, CA 94952
(707) 996-5217	(707) 763-9801

Map of the Proposed Project:



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SCH# 2005122042

Prepared for:
California Public Utilities Commission
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San Francisco, CA 94102

March 2006

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EXECUTIVE SUMMARY

Introduction

The Pacific Gas and Electric Company (PG&E), in its California Public Utilities Commission (CPUC) application (A.04-11-011), seeks a Permit to Construct (PTC) approximately 7.23 miles of 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to General Order (GO) 131-D. A 3,060-foot length of the new transmission line along Leveroni Road from approximately Fifth Street West to Sonoma Substation would be undergrounded. The objective of the project is to address low voltage and overloading problems in the area. If PG&E's application is approved by the CPUC, PG&E proposes to begin construction activities in 2006. This ~~Draft~~ Final Mitigated Negative Declaration (~~Draft~~ MND) considers environmental impacts that would occur from construction and operation of the transmission line. The analysis in this ~~Draft~~ Final MND concludes that any environmental impacts associated with PG&E's proposed project can be mitigated to a less than significant level with implementation of mitigation measures identified in this document~~. As part of a mitigation measure, a portion of the new transmission line along Leveroni Road from approximately Fifth Street West to Sonoma Substation would be undergrounded.~~

Document Organization

The ~~Draft~~ Final MND is organized as follows:

- This Executive Summary introduces the project, describes the method for reviewing and submittal of comments, describes the organization of the document, and provides a summary of the impacts and mitigation measures.
- The Project Description (Section 1) provides objectives and components of the proposed project and details of proposed construction activities.
- The Impacts Discussion (Section 2) includes all required CEQA checklist items and a discussion of the impacts and their significance for the proposed project.
- The Environmental Determination (Section 3) includes a statement by the CPUC as to the type of environmental review that is required.
- The Summary of Preparers (Section 4) summarizes the names and affiliation of persons involved with development of this MND.

- Comments and Responses (Section 5) presents the comments received on the Draft MND and provides responses to each comment.

- The Mitigation Monitoring, Reporting and Compliance Program (MMRCP) (~~Section 5~~Appendix G) summarizes the program for ensuring effective implementation of the mitigation measures for the proposed project.

Public Review Period and Comments

On December 9, 2005, the CPUC distributed a Draft Mitigated Negative Declaration (DMND) for public review in compliance with CEQA and CPUC Rule 17.1. The DMND was filed with the State Clearinghouse on December 9, 2005, initiating a 30-day public comment period for the DMND. A public information meeting was held on January 4, 2006 in the town of Sonoma. Comments received at this meeting and responses are provided in the response to comments portion of this document (See Chapter 5), although the concerns raised by the attendees of the public information meeting were subsequently restated in the written comments of the attendees.

The majority of the issues and concerns raised during the public comment period included biological effects, land use, visual effects and concerns over the application of mitigation measures proposed to be applied to the project during construction and operation of the project. These issues are addressed in the responses to comments section (See Section 5) in the form of specific responses to each comment provided by the commenter. Following closure of the public review period on January 9, 2006, written responses to all comments received were prepared and various modifications to the DMND were made, as appropriate, to reflect these comments.

There is no comment period following issuance of a Final MND. The CPUC will determine the adequacy of the Final MND, and, if adequate, will adopt the document as compliant with CEQA. The CPUC will issue a Decision on the applications, which will be announced and published concurrent with a scheduled CPUC Meeting. After the Commission makes the decision on the Application, a Notice of Determination will be mailed to the State Clearinghouse within 5 days of the Decision. Within 30 days after the Decision is issued by the CPUC, parties can apply for rehearing. For further information on the CPUC's decision-making process, call the CPUC Public Advisor at (415) 703-2074.~~CEQA and the CPUC encourage public participation in the planning and environmental review processes. The public may present comments and concerns regarding the proposed project and the adequacy of the Draft MND during a public review and comment period. Written public comments may be submitted to the CPUC at any time during the 30-day public review and comment period, ***December 9, 2005 through January 9, 2006***. Information regarding the MND availability and process for submitting comments is as follows:~~

How to Get a Copy of the Final MND ~~Study~~	~~**How to Submit Comments**~~
Review online or download from the website: http://www.pgelakevillesonoma.info Request by telephone at (415)962-8420 or email at lakeville@essassoc.com	~~Mail to:~~ ~~Lakeville-Sonoma Transmission Project~~ ~~c/o ESA~~ ~~225 Bush Street, Suite 1700~~ ~~San Francisco, CA 94104~~

Review at the following library branches: Sonoma Valley Regional Library 755 West Napa Street Sonoma, CA 95476 (707) 996-5217 Petaluma Regional Library 100 Fairgrounds Drive Petaluma, CA 94952 (707) 763-9801	~~E-mail: Lakeville-Sonoma@esassoc.com~~ ~~Phone: (415) 962-8420~~ ~~Fax: (415) 896-0332~~

Project Description

PG&E seeks a PTC, through its Application (A.04-11-011) to the CPUC, for an approximately 7.23 miles of 115 kV single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to General Order (GO) 131-D. The objective of the project is to address low voltage and overloading problems in the area.

PG&E, who currently owns a single-circuit 115 kV electric transmission system in the Petaluma-Napa–Sonoma area of the San Francisco Bay Area Region, requests to install a second 115 kV transmission circuit within its existing single-circuit 115 kV transmission line route between its Lakeville (at the eastern edge of the City of Petaluma) and Sonoma Substations (at the southern edge of the City of Sonoma). The second 115 kV transmission line would be installed on a rebuilt version of PG&E's existing single-circuit 115 kV transmission line, thus co-locating the two circuits on a single set of poles. The transmission line would begin at the Lakeville Substation, parallel Adobe Road for approximately 1.2 miles, and then pass northeast through vineyards and ranch lands for approximately 3.6 miles. The line roughly would then parallel Felder Road for approximately 0.8 miles from the junction of Felder Road and Felder Creek east to the junction of Felder Road and Leveroni Road where would continue, approximately 1.7 miles, following Leveroni Road, to the Sonoma Substation. A 3,060-foot length ~~portion~~ of the new transmission line along Leveroni Road from approximately Fifth Street West to Sonoma Substation would be undergrounded. ~~The inclusion of this underground transmission line segment beneath Leveroni Road is provided as a mitigation measure to avoid inconsistency with the City of Sonoma's General Plan.~~

PG&E also proposes to modify the Lakeville and Sonoma Substations. At the Lakeville Substation, PG&E proposes modification to the existing substation yard as well as installation of facilities to support a 115 kV line position. One new tubular steel pole (TSP) would be located within the substation property line. Similarly, at the Sonoma Substation, PG&E would install facilities to support the new 115 kV line position and replace an existing wood pole with a TSP.

Because the CPUC must decide whether or not to approve the PG&E application, CEQA requires the CPUC to be the lead agency and consider the potential environmental impacts that may occur

as the result of its decisions and require feasible mitigation for significant impacts that are identified.

The CPUC has reviewed the impacts that would result from approval of this application and has determined that all potential impacts can be mitigated to less than significant levels. If the CPUC approves PG&E's application, PG&E would be responsible for implementing the proposed mitigation measure as a condition of approval of the application.

Potential Environmental Impacts

The attached Mitigated Negative Declaration presents and analyzes potential environmental impacts that would result from for construction and operation of the new transmission line and substation modifications, and proposes mitigation measures, as appropriate.

Based on the Mitigated Negative Declaration, approval of the application would have no impact or less than significant effects in the following areas:

- Geology, Soils, and Seismicity
- Hydrology and Water Quality
- Mineral Resources
- Population and Housing
- Land Use and Planning ~~Mandatory Findings of Significance~~

The ~~Draft~~ Mitigated Negative Declaration indicates that approval of the application would result in potentially significant impacts in the areas of:

- Aesthetics
- Agriculture Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Mandatory Findings of Significance ~~Land Use and Planning~~
- Noise
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

Mitigation and Monitoring

Each of the identified impacts can be mitigated to avoid the impact or reduce it to a less than significant level. The mitigation measures presented in the Draft MND have been agreed to by PG&E. The Impact and Mitigation Measure Summary **Table ES-1** that follows is a complete, condensed presentation of the environmental impacts and mitigation measure for the proposed Lakeville-Sonoma project. Full descriptions of the Mitigation Monitoring, Reporting and Compliance Plan are included in ~~Section 5~~ Appendix G of this MND to specify how all mitigation measures would be implemented.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Aesthetics		
Impact 2.9-1: Use of temporary construction staging areas and pull sites 2a, 2b, 3a, 3b, 6a, 6b, 7a, 7b, and 8a (see Figures 1-4(a) through 1-4(d) for exact locations) during the approximately 19-month construction period could result in adverse, albeit temporary, impacts to visual quality.	**Mitigation Measure 2.9-1**: Although PG&E would prepare the pull/tension sites during the dry season to minimize impacts, equipment shall not be placed on such sites any sooner than two weeks prior to the required use. After each pull/tensions site is no longer being used, PG&E and/or its contractor(s) shall clean up the site and restore in accordance with the SWPPP Plan.	Less than Significant
Impact 2.9-2: After construction activities have been completed, if staging areas, ~~and~~ pull/tension sites, and the undergrounded portion of the project area along Leveroni Road have not been restored to preexisting conditions, then the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area.	**Mitigation Measure 2.9-2**: PG&E and/or its contractors shall clean up and restore each staging area, ~~and~~ pull/tension site~~s~~, and the undergrounded portion of the project area along Leveroni Road to preconstruction conditions after construction activities in accordance with the SWPPP Plan.	Less than Significant
~~**Impact 2.9-3**: After construction activities have been completed, if the portion of the project area encompassed under Mitigation Measure 2.1-1 has not be restored to preexisting conditions, the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area.~~	~~**Mitigation Measures 2.9-3**: PG&E and/or its contractors shall clean up and restore the Leveroni Road construction area encompassed under Mitigation Measure 2.1-1 to preconstruction conditions after construction activities in accordance with the SWPPP Plan.~~	~~Less than Significant~~
Agricultural Resources		
Impact 2.2-1: The Proposed Project would result in the temporary removal of farmland that is designated *Prime Farmland* and *Farmland of Statewide Importance*. In total, the construction staging areas, pull sites and crane pads, and new access roads would temporarily reduce the amount of land available for agricultural purposes by about 30 acres, about half of which would be on lands designated as *Prime Farmland* and *Farmland of Statewide Importance*.	**Mitigation Measure 2.2-1**: PG&E shall preserve the topsoil beneath temporary construction activities areas (i.e., on staging areas, pull sites, and temporary access roads) on agricultural lands by laying fabric topped with a layer of gravel over the areas prior to their use. After construction activities are complete, PG&E shall remove the gravel and fabric and implement the measures specified in the SWPPP Plan which shall be prepared and submitted to the CPUC for approval prior to construction.	Less than Significant
Impact 2.2-2: The installation of pole foundations and construction of new permanent access roads would result in the permanent conversion of approximately 0.33 acres of land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. This would be a less than significant impact.	None required.	
Air Quality		
Impact 2.3-1: Construction activities associated with the project would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions.	**Mitigation Measure 2.3-1a**: During construction, PG&E shall ensure that its employees and contractors implement the following measures prescribed by BAAQMD to ensure the reduction of the project's contribution to local PM10 concentrations are to a level that is less than significant:	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• For all active construction areas, water as needed or apply soil stabilizers to control dust. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard. • If applicable, sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at or nearby construction sites. • Sweep streets daily (with water sweepers) if visible soil materials are carried onto adjacent public streets. **Mitigation Measure 2.3-1b**: The following enhanced control measures shall be implemented at the Leveroni Road staging area or any construction sites greater than four acres pursuant to BAAQMD requirements: • Hydroseed or apply (non-toxic) soil stabilizers to previously graded inactive (for more than 10 days) construction areas. • Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 15 mph. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. **Mitigation Measure 2.3-1c**: To mitigate equipment exhaust emissions, PG&E shall require its employees and/or construction contractors to comply with the following requirements: • Properly tune and maintain construction equipment in accordance with manufacturers' recommended maintenance schedule, if reasonably available. This applies to vehicles used for construction activities only, and does not apply to commuter vehicles. • Use best management construction practices to avoid unnecessary emissions (i.e., require trucks and vehicles in loading and unloading queues to turn engines off when not in use). • Use diesel trucks which are post-1991 based on CARB inspection program (dated June 3, 1998) for heavy-duty diesel trucks and buses (CARB, 1998).	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Implement a carpooling strategy for construction workers prior to commencing construction (during construction worker orientation and training).	
~~**Impact 2.3-2**: Construction activities associated with Mitigation Measure 2.1-1 would generate additional emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Implementation of Mitigation Measure 2.1-1 could violate air quality standards or contribute substantially to an existing or projected air quality violation.~~	~~**Mitigation Measure 2.3-2**: Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~	~~Less than Significant~~
Impact 2.3-~~3~~2: Construction activities would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. These activities could expose sensitive receptors to substantial pollutant concentrations.	**Mitigation Measure 2.3-~~3~~2**: Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.	Less than Significant
Biological Resources		
Impact 2.4-1: Construction activities associated with pole removal and installation and equipment access could result in temporary or permanent impacts to special-status plants located within the vicinity of the transmission line alignment.	**Mitigation Measure 2.4-1a**: PG&E shall contract with a Specialist[1] to conduct preconstruction surveys for special status plants. Preconstruction surveys shall occur during the appropriate blooming period immediately prior to the start of construction activities at poles 43 and 44 and poles 58 and 59. The Specialist shall establish an appropriate protection zone around known populations of Lobb's aquatic buttercup and *cotula navarretia* and any new populations of special-status plants observed during preconstruction surveys. The protection zone shall be staked and flagged in the field prior to construction by a qualified botanist. To the extent feasible, poles or other project components shall not be placed in areas where these plant populations have been identified. If avoidance of special-status plants is not feasible, PG&E shall contract with a Specialist to harvest plant seeds and top-soil for post-construction restoration or replanting in an appropriate location. PG&E shall prepare a Special Status Plant Species Protection Plan that shall incorporate the following measures which shall be implemented during all phases of construction in areas marked in the field with temporary fencing. • Restrict construction personnel and equipment from entering the fenced protected area (exclusion zone and plant habitat) for any purpose. Protection areas shall remain until all construction activities have concluded in known areas of special-status plant species.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• During construction activities near areas of known special-status plant occurrences, daily monitoring shall occur using a qualified Environmental Monitor[2] to ensure protection zones and water quality measures are being implemented at construction sites. If direct or indirect impacts to special-status plant species are observed then the monitoring biologist shall notify the construction manager immediately. Examples of impacts may include, but are not limited to damage to exclusionary fencing or water or sediment from construction areas entering exclusion zone. The Environmental Monitor shall report any direct or indirect impacts resulting from construction activities in daily monitoring report. • Keep construction vehicles on designated access routes only. Do not fuel or repair construction vehicles within the vicinity of special status plants. **Mitigation Measure 2.4-1b**: Project construction shall avoid known habitat for Lobb's aquatic buttercup to the extent feasible. To the extent feasible, major earthmoving activities in the vicinity of poles 43 and 44 shall occur during the dry season (June 1 to October 15), or, if this is not feasible, the appropriate erosion and sediment control measures to prevent water quality degradation as described in the SWPPP Plan. To the extent feasible, poles and other project components shall not be placed in known habitat for Lobb's aquatic buttercup. If habitat for this species cannot be avoided, **Mitigation Measure 2.4-7f** shall be implemented to compensate for the direct loss of vernal pool habitat.	
Impact 2.4-2: Construction of the transmission line could result in temporary and permanent impacts to California red-legged frog breeding and associated upland habitat.	**Mitigation Measures 2.4-2**: PG&E shall implement measures to minimize and avoid "take" of California red-legged frog. These measures include complying with the federal Endangered Species Act and implementation of measures that would substantially reduce the risk of incidental "take" of CRLF within the project area. Prior to and during construction, PG&E shall perform the following actions to minimize adverse effects to California red-legged frog: • To the extent feasible, earthmoving activities in the vicinity of Felder Creek shall be conducted during the dry season (June 1-October 1). • PG&E shall contract with ~~a Specialist~~ an environmental monitor and submit the name and credentials of this individual to act as construction monitor(s) to USFWS for approval at least 15 days prior to commencement of any construction activities.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Immediately prior to activities in the vicinity of Felder Creek, the USFWS-approved Specialist shall perform a preconstruction survey for California red-legged frog. For wet season work sites, t~~T~~he survey area should consist of all proposed wet season work sites within one mile of Felder Creek and should include all suitable aquatic and upland habitats within 90 m (300 ft) of these proposed work sites Preconstruction surveys during the dry season shall consist of all suitable aquatic habitat in Felder Creek and upland habitat within 300 feet of proposed construction activities. If CRLF are found within a work area prior to construction, the Specialist, with prior authorization from the USFWS, would relocate the frogs out of the project area in coordination with USFWS. A temporary silt-fence barrier would be installed around the work area to prevent CRLF from re-entering the work area. If a California red-legged frog is found nearby but outside a proposed work area, it should not be disturbed and USFWS shall be contacted. • During wet season construction, temporary construction fencing should be installed to mark the limits of the affected work area(s) and to limit construction personnel and equipment to the designated work area. The location of the fencing should be determined by the Environmental Monitor in coordination with the construction supervisor. In addition, as recommended by the Specialist, a temporary drift fence (e.g. silt-fence) barrier should be installed to prevent California red-legged frogs from entering those work area(s) during project activities. • A USFWS–approved Specialist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the any construction activities may occur. The biologist should provide maps of potential CRLF habitat to construction personnel. • Following construction, remove all trash and construction debris from work areas. All trash and construction debris shall be properly contained.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Ensure that all fueling and maintenance of vehicles and other equipment and staging areas occurs at least 20 meters from any riparian habitat or water body. PG&E shall ensure contamination of habitat does not occur during such operations. Prior to the start of construction, PG&E shall prepare a plan to ensure a prompt and effective response to any accidental spills.	
Impact 2.4-3: Project construction activities, such as tree removal and trimming, grading of temporary work areas, improvement of access roads, operation of heavy equipment, installation and removal of poles, and conductor installation, could disturb nesting birds, including raptors. Tree removal or trimming could disrupt nesting behavior or destroy active nests if they occur. Use of helicopters to remove and install poles and transmission line and to move equipment to and from remote areas could also impact nesting birds and raptors. Use of helicopters in nesting areas could cause adult and juvenile birds to flush and abandon the nest.	**Mitigation Measure 2.4-3a**: To the extent feasible, project activities shall not occur during the nesting and breeding season (from March 1 through August 15) to avoid impacts to nesting birds and raptors. If seasonal avoidance is not feasible, then Mitigation Measures 2.4-3b through 2.4-3d shall be implemented to avoid impacts to nesting birds and raptors.	Less than Significant
	Mitigation Measure 2.4-3b: Prior to any potential nest-disturbing activities during the period from March 1 through August 15, PG&E shall contract with an Environmental Monitor who shall conduct a pre-construction survey for nesting birds. The survey shall be conducted no more than one week prior to the start of work activities and would cover all affected areas including the transmission line route, staging areas, pull sites, and access road improvement areas where substantial ground disturbance or vegetation clearing is required. Additional pre-construction surveys shall be conducted for each new phase of project implementation that occurs during the nesting season, no more than two weeks prior to construction (e.g., prior to road improvement and pole installation, and again prior to conductor installation). If any active nests are found, an appropriate nest protection zone shall be established by the Environmental Monitor. These guidelines for protection zones shall be used: For passerine birds, a 50 - 100-foot protection zone shall be established around active nests; For raptors, a 300-foot protection zone and for golden eagles a 500 foot protection zone shall be established around active nests. These protection zones may be modified on a site-specific basis as determined by the Environmental Monitor or in coordination with CDFG. Active nests within the project area would be monitored for signs of disturbance. If the biological monitor determines that a disturbance is occurring, construction shall be halted, and the agencies shall be contacted as to the measures that shall be implemented.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	Mitigation Measure 2.4-3c: Use of helicopters shall be restricted to necessary trips to install and remove poles, install the transmission line, and to deliver and remove equipment to areas lacking vehicular access or in areas where access would cause severe erosion. Helicopters may be used in an area if active raptor nests occur if an appropriate buffer has been established in coordination with CDFG. In active nesting areas, helicopters may be used after young have fledged, as ~~determined by a qualified biologist in coordination with CDFG~~ set forth in Mitigation Measure 2.4-3b.	
Impact 2.4-4: Project construction activities adjacent to Sonoma Creek could have short-term effects on aquatic habitat of the California freshwater shrimp. Construction activities could result in water quality impacts within Sonoma Creek.	**Mitigation Measure 2.4-4**: Certain construction activities at Pole 107 shall be conducted during the dry season (June 1 through October 1) to avoid impacts to California freshwater shrimp. Installation of the Pole 107 foundation and construction/improvement of the access road to Pole 107 shall be done during the dry season to avoid sediment or other debris discharge into Sonoma Creek. Installation of TSPs on top of foundations, wire and wood pole removal shall be done outside of the dry season using BMPs.	Less than Significant
Impact 2.4-5: Pond turtle habitat occurs throughout the project alignment in detention basins and stock ponds located on agricultural areas and in freshwater streams including Rodgers Creek, Felder Creek, Sonoma Creek, and Fryer Creek. Construction activities in the vicinity of streams or ponds occupied by Western pond turtle could harm individual turtles or temporarily affect their habitat.	**Mitigation Measure 2.4-5**: Prior to the start of construction activities, PG&E shall contract with a Specialist who shall perform pond turtle surveys within Rodgers Creek, Felder Creek, Sonoma Creek, Fryer Creek and in other ponded areas within 700 feet of the project features where ground-disturbing activities would occur. If no turtles are found during surveys, search for turtle nests is then not necessary. If turtles are found in aquatic habitat, then clearance of the nearby terrestrial habitat that would be impacted shall occur prior to construction activities; the biologist(s) shall look for eggs and WPT individuals including over-wintering hatchlings. If eggs are found, the biological monitor shall contact CDFG for the appropriate measures to relocate the eggs. Measures outlined in the SWPPP Plan shall be implemented to avoid impacts to pond turtle aquatic habitat.	Less than Significant
Impact 2.4-6: Project construction activities at or adjacent to the Leveroni Road Bridge over Sonoma Creek in Segment 17 could disturb common or special-status bat species, including pallid bat if they are present during construction. This would be a less than significant impact.	None required.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Impact 2.4-7: Construction of the Proposed Project could result in impacts to potentially jurisdictional wetlands or waters of the U.S. under the jurisdiction of the Corps and waters of the state under the jurisdiction of the SWRCB or RWQCB. The Proposed Project could also result in impacts to the streambed and banks under jurisdiction of CDFG. Potential impacts include sedimentation of channels downstream of the construction areas during trenching and excavating activities and loss of riparian and instream wetland vegetation. Permanent impacts to jurisdictional features would not be greater than 1/2 acre qualifying the project to be authorized under a Section 404 Nationwide Permit (NWP).	**Mitigation Measure 2.4-7a**: In order to determine the extent of jurisdictional features within the project area, PG&E shall conduct a wetland delineation and submit it to the Corps prior to the start of construction. Potentially jurisdictional features have only been preliminarily identified. To remain in compliance with state and federal CWA, a determination of jurisdictional features shall be made. A wetland delineation, identifying and mapping potentially jurisdictional features subject to CWA Section 404 and 401 jurisdiction shall be completed. The wetland delineation map and report shall be submitted to the Corps for field verification of jurisdiction. The wetland delineation report and Corps verified map shall be submitted to RWQCB and CDFG, and other appropriate regulatory agencies. **Mitigation Measure 2.4-7b**: To the extent feasible, final project design shall avoid impacts to wetlands and other waters. State and federal regulations specify that wetland avoidance is required to the extent feasible. Areas that are avoided shall be subject to Best Management Practices (BMPs). These Best Management Practices (BMPs), or storm water protection methods are standard in the construction industry and are proven effective to reduce water quality degradation. PG&E shall implement specific erosion control and surface water protection methods for each construction activity conducted as part of the project. As discussed in the Regulatory Context of Section 2.8, *Hydrology and Water Quality*, the project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit and therefore, be required to employ specific BMPs for the protection of surface water. PG&E is required to provide details as to the design and monitoring of the BMPs in the Stormwater Pollution Prevention Plan (SWPPP). Examples of standard BMPs, which PG&E would implement as part of the SWPPP and the typical application of those BMPs are as follows: • Site grading operations necessary to develop temporary staging areas and pull and tension sites would be required to use appropriately-placed silt fencing to protect surface water sources from entrainment of sediment. Surfaces of these staging areas would be graveled during wet weather use to minimize erosion and sediment laden runoff. To restore vegetation at disturbed temporary staging areas, measures and monitoring specified in the SWPPP Plan shall be implemented to achieve the performance standards indicated in the Plan.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Silt fencing is proposed as part of the project and is standard BMP to control erosion and siltation from loose or disturbed soil. Silt fencing would be placed as appropriate at each pole installation site, especially those adjacent to natural surface water bodies. Stockpiled soil generated from the excavation of pier foundations or boreholes would not be left at the site. Loose soil would be loaded and used elsewhere or stockpiled in staging areas. Soil stockpiled at the staging area would be managed as required in the SWPPP and be appropriately covered, vegetated, or bermed during rainy periods to ensure that eroded sediments do not runoff to surface water resources. • As part of the Proposed Project, access roads would be in- or out-sloped, as appropriate, providing effective surface sheet flow to avoid formation of erosive gullies caused by concentrated runoff. Where necessary, flow diversions, known as water bars, would be used on roadways exceeding gradients of 10 degrees. Water bars divert runoff from roads before gullies can form. Where necessary, all-weather roads would be covered with gravel base material. The gravel base would reduce the erosive energy to reduce erosion. • NPDES requires that the SWPPP show BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and waste. The SWPPP must also describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage or service areas. The SWPPP would require PG&E to identify equipment storage, cleaning and maintenance areas. **Mitigation Measure 2.4-7c**: To the extent practicable, ground-disturbing activities such as access road construction, site grading, and foundation installation shall be conducted during the dry season (June 1 through October 1). The dry season window may begin as early as May 1 if ground conditions at the work sites and access routes are determined to be sufficiently dry by an Environmental Monitor. **Mitigation Measure 2.4-7d**: Wetlands and other waters, including vernal pools, shall be avoided during construction activities to the extent feasible. Installation of exclusionary fencing and other appropriate methods shall be installed at specific locations described below.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• For the vernal pools between Poles 43 and 44, an Environmental Monitor shall establish an protection zone of the maximum practicable distance, not less than 50 or greater than 100 feet, from the wetland edge. The exclusion zone shall be staked and flagged or delineated with temporary fencing. For work at Pole 107 and its access road near Sonoma Creek, temporary exclusion fencing and silt fencing shall be installed at the downslope edge of the work footprint and not less than 25 feet from the top of the bank of Sonoma Creek. Staking and flagging or fencing shall be completed prior to any construction activities and shall remain in place during all construction activities. • For the vernal marsh near Poles 40 and 41, silt fencing shall be installed between the access road and the marsh as close as practicable to the edge of the road improvements footprint to prevent sedimentation impacts to the marsh (see Mitigation Measure 2.4-7b). • PG&E shall contract with an Environmental Monitor to monitor protected areas during all work activities in the vicinity of wetlands and sensitive aquatic and riparian habitats including Sonoma Creek, Felder Creek, and other watercourses that may be affected by the project. The Environmental Monitor shall verify that environmental fencing, erosion and sediment control measures, and other protection measures are properly installed and are effective. If problems are found, the Environmental Monitor shall recommend remedial measures. Consistent with project safety, t~~T~~he monitor shall have the authority to stop activities that are likely to adversely affect sensitive aquatic habitats and recommend alternative work practices in consultation with construction personnel.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	Mitigation Measure 2.4-7e: Prior to the start of construction, for any jurisdictional features identified as a result of implementing Mitigation Measure 2.4-7a, PG&E shall obtain necessary regulatory permits. Construction activities within jurisdictional features including wetlands and vernal pools would require permit approval from the Corps and RWQCB for fill in wetlands and other Waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. Water quality certification from RWQCB would also be required pursuant to Section 401 of the federal CWA. In addition, the CDFG has jurisdiction pursuant to Section 1601-1616 of the Fish and Game Code for construction activities affecting, or within the channels or banks of (or under) Sonoma, Rodgers, Fryer and Felder Creeks which would require Streambed Alteration Agreements. Terms and conditions of the permits would include measures to protect and maintain water quality, restore work sites, and mitigate for permanent and temporary impacts. **Mitigation Measure 2.4-7f**: Measures to prevent erosion and sedimentation and to restore work areas where vegetation would be removed or where bare soil is exposed shall be applied to project elements as specified in the SWPPP Plan.	
Impact 2.4-8: Trees considered significant by local municipalities could be damaged during project construction activities. This would be a less than significant impact.	None required.	
Impact 2.4-9: Construction activities could potentially spread noxious or invasive weeds into the project area and within the project area where weeds do no currently exist. New noxious or invasive weed species could also be transported into the project area if seeds or plant material is carried on vehicles and construction equipment.	**Mitigation Measure 2.4-9a**: To reduce the likelihood of spreading noxious or invasive weeds within the project area or increasing their abundance in the project area, or introducing new noxious or invasive weed species to the project area, PG&E shall prepare and submit a Vegetation Management & Restoration Plan which includes best management practices for control of noxious weeds**.** **Mitigation Measure 2.4-9b**: To reduce the potential for the spread of invasive or noxious weeds, cleaning stations shall be set up at key points along access roads. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Impact 2.4-10: The project could result in the spread of the Sudden Oak Death pathogen.	**Mitigation Measure 2.4-10a**: To reduce the potential for the spread of the Sudden Oak Death pathogen, PG&E shall comply with applicable regulations during the construction activities including vegetation trimming, clearing, and removal and by following the practices documented as part of the Vegetation Management & Restoration Plan which shall include the following mitigation measures to reduce the potential for spread of the SOD pathogen. **Mitigation Measure 2.4-10b**: To reduce the potential for the spread of SOD, **Mitigation Measure 2.4-9b** shall be implemented. Cleaning stations shall be set up at key points along access roads easily accessible for job site personnel and vehicles. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing. **Mitigation Measure 2.4-10c**: No plant material shall be removed from the project area to the extent feasible. Any branches, limbs, twigs, or other tree debris shall be left onsite. Any plant material trimmed or removed along Leveroni Road shall be removed and disposed of at an appropriate location. **Mitigation Measure 2.4-10d**: Work in the project area shall be performed during the dry season (May through October) to the extent feasible. If work is performed during the wet season vehicles and personnel shall, to the extent feasible, be kept to paved areas and avoid mud. **Mitigation Measure 2.4-10e**: PG&E shall institute a sanitation program to be approved by the CPUC including the implementation of Mitigation Measure 2.4-10b. Sanitation measures include decontamination of vehicles, personnel, tools and equipment. Mud and debris shall be scraped, brushed, or hosed from vehicles and equipment. A power washer shall be used where feasible. Sanitation of personnel shall include removal of mud and debris from boots clothing, and skin. Sanitation of tools that have contacted vegetation or soils shall be performed after completion of work to using Lysol® spray, a 70% or greater solution of alcohol, or a Clorox® solution (1 part Clorox® to 9 parts water or Clorox clean up®). At the cleaning stations, a person trained by a qualified biologist, botanist or arborist experienced with SOD shall inspect each worker's clothing, especially the shoes. Any branches, limbs, twigs, seeds, or other tree debris shall be removed from worker's clothing. The inspection shall occur daily after work has been completed.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	Mitigation Measure 2.4-10f: Prior to the start of construction, PG&E shall provide a worker education seminar to all personnel. The seminar shall include distribution of materials that help identify signs of SOD, description of sanitation procedures, and other measures to avoid the spread of the pathogen. The seminar shall be facilitated by a qualified biologist, botanist or arborist or other qualified person experienced with SOD. Any workers who join the construction job after the initial worker education seminar shall be trained by the Environmental Monitor on all topics covered in the seminar.	
Cultural Resources		
Impact 2.5-1: If construction of the proposed project encounters currently unknown cultural resources, including archaeological resources, pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), this could cause substantial adverse changes to the significance of the resource.	**Mitigation Measure 2.5-1a**: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and PG&E and/or the CPUC shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of PG&E and/or the CPUC and a Specialist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the CPUC. All significant cultural materials recovered shall be, as necessary, subject to scientific analysis, professional museum curation, and a report prepared by a Specialist according to current professional standards. In considering any suggested mitigation proposed by the Specialist in order to mitigate impacts to historical resources or unique archaeological resources, the CPUC shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	Mitigation Measure 2.5-1b: PG&E shall retain the services of a Specialist that has expertise in California prehistoric and urban historical archeology to be on-call during ground-disturbing activity within 200 feet of a perennial or seasonal watercourse (see Figures 1-4a through 1-4d). If an intact archeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/construction crews and heavy equipment until the deposit is evaluated. The archeological monitor shall immediately notify the CPUC of the encountered archeological deposit. The archeological monitor shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the CPUC. If the CPUC, in consultation with the Specialist, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, the CPUC shall require PG&E to: • Re-design the project to avoid any adverse effect on the significant archeological resource; *or* • Implement an archeological data recovery program (ADRP) (unless the archaeologist determines that the archeological resource is of greater interpretive use than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archeological data recovery program, an ADRP shall be conducted. The project archaeologist and the CPUC shall meet and consult to determine the scope of the ADRP. The archaeologist shall prepare a draft ADRP that shall be submitted to the CPUC for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archeological resource is expected to contain. That is, the ADRP shall identify the scientific/historical research questions are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Proposed Project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Impact 2.5-2: The Proposed Project could adversely affect unidentified paleontologic resources at the pole and road construction sites.	**Mitigation Measure 2.5-2**: In the event of unanticipated discoveries paleontologic discoveries, PG&E shall notify a Specialist who shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. In the event of an unanticipated discovery of a breas, true, and/or trace fossil during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995 and SVP, 1996). The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the CPUC determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the CPUC for review and approval.	Less than Significant
Impact 2.5-3: Project construction could result in damage to previously unidentified human remains.	**Mitigation Measure 2.5-3**: In the event that human skeletal remains are uncovered during construction activities for the Proposed Project, PG&E shall immediately halt work, contact the Sonoma County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, PG&E shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease until appropriate arrangements are made.	Less than Significant
Geology, Soils, and Seismicity		
~~No impacts identified.~~ No mitigation required.		
Hazards and Hazardous Materials		
Impact 2.7-1: Construction activities would require the use of certain materials such as fuels, oils, solvents, and other chemical products that, in large quantities, could pose a potential hazard to the public or the environment if improperly used or inadvertently released.	**Mitigation Measure 2.7-1a**: PG&E and/or its contractor(s) shall implement construction best management practices including but not limited to the following: • Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction; • Avoid overtopping construction equipment fuel gas tanks;	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• During routine maintenance of construction equipment, properly contain and remove grease and oils; and • Properly dispose of discarded containers of fuels and other chemicals. **Mitigation Measure 2.7-1b**: *Hazardous Substance Control and Emergency Response Plan* – PG&E shall prepare a Hazardous Substance Control and Emergency Response Plan (the Plan) for the project and implement it during construction. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include a discussion of appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. **Mitigation Measure 2.7-1c**: *Health and Safety Plan* – PG&E shall prepare and implement a Health and Safety Plan to ensure the health and safety of construction workers and the public during project construction. The plan shall include information on the appropriate personal protective equipment to be used during construction. **Mitigation Measure 2.7-1d**: *Worker Environmental Awareness Program(WEAP)* – PG&E shall ensure that an environmental training program is established and delivered to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program shall emphasize site-specific physical conditions to improve hazard prevention, and shall include a review of the Health and Safety Plan and the Hazardous Substance Control and Emergency Response Plan. PG&E shall submit documentation to the CPUC mitigation monitor that each worker on the project has undergone this training program. **Mitigation Measure 2.7-1e**: *Emergency Spill Supplies and Equipment* – PG&E shall ensure that oil-absorbent material, tarps, and storage drums shall be used to contain and control any minor releases. Emergency spill supplies and equipment shall be kept adjacent to all areas of work, and shall be clearly marked. Detailed information for responding to accidental spills and for handling any resulting hazardous materials shall be provided in the project's Hazardous Substance Control and Emergency Response Plan, which shall be implemented during construction.	
Hydrology and Water Quality ~~No impacts identified.~~ No mitigation required.		

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Land Use, Plans, and Policies		
~~**Impact 2.1-1**: The proposed substation improvements and a portion of the transmission line within the city of Sonoma from about Fifth Street West to the Sonoma Substation would be inconsistent with the City of Sonoma General Plan's intent for the *Gateway Commercial* designation.~~ No mitigation required.	~~**Mitigation Measure 2.1-1**: PG&E shall install the new 115 kV single-circuit transmission line underground beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see Figure 2.1-4), where the circuit would emerge through a substation riser structure and terminate on a substation bus structure. Pole 108, which shall be configured to allow the new circuit to be transferred underground and the existing circuit to continue to the next existing pole, shall be the last overhead pole (a 75-foot tall tubular steel riser pole) of the proposed new transmission line. This underground portion of the new transmission line shall be designed and installed as described in *Lakeville-Sonoma 115 kV Transmission Line Project Environmental Assessment Addressing Undergrounding 115 kV Transmission Line along Leveroni Road (between 5th Street West and Sonoma Substation) in the City of Sonoma* (EDAW, 2005).~~	~~Less than Significant~~
Mineral Resources		
~~No impacts identified.~~ No mitigation required.		
Noise		
Impact 2.11-1: The project could generate noise levels in excess of local standards during project construction.	**Mitigation Measure 2.11-1a**: Construction activity shall be limited to the least noise-sensitive daytime hours between 8:00 a.m. and 7:00 p.m., with some exceptions (as approved by the CPUC) as required for safety considerations or certain construction procedures that cannot be interrupted. **Mitigation Measure 2.11-1b**: The following noise reduction and suppression techniques shall be employed during project construction to minimize the impact of temporary construction-related noise on nearby sensitive receptors: • Comply with manufacturers' muffler requirements. • Notify residences in advance of the construction schedule and how many days they may be affected. Provide a phone number for a construction supervisor who would handle construction noise questions and complaints. • Minimize idling of engines; turn off engines when not in use, where applicable. • Shield compressors and other small stationary equipment with portable barriers when within 100 feet of residences.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Route truck traffic away from noise-sensitive areas where feasible.	
Population and Housing		
~~No impacts identified.~~ No mitigation required.		
Public Services		
Impact 2.13-1: Fire and emergency medical services could be required in the event of an accident or emergency during project construction or operation.	**Mitigation Measure 2.13-1a**: PG&E shall prepare a Health and Safety Plan that would address emergency medical services in the case of an emergency. The manual shall list procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations. PG&E shall prepare this manual and distribute it to all PG&E and contract workers involved in the project prior to construction and operation of the Proposed Project. **Mitigation Measure 2.13-1b**: Water tanks shall be sited in the project area that would be available to protect against fire. All vehicles shall carry fire suppression equipment. PG&E shall contact and coordinate with the City of Sonoma and Sonoma County fire departments to determine minimum amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks. PG&E shall submit verification of its consultation with the local fire departments and the CPUC mitigation monitor shall ensure these measures are implemented.	Less than Significant
Impact 2.13-2: Project construction and/or operation traffic could affect fire department response times.	**Mitigation Measure 2.13-2**: PG&E shall coordinate with the City of Sonoma and Sonoma County emergency personnel prior to construction to ensure that construction activities and associated lane closures would not significantly affect emergency response vehicles.	Less than Significant
Recreation		
Impact 2.14-1: Construction activities could result in temporary adverse impacts to the Madera Park and the Fryer Creek bike path, which terminates at Leveroni Road.	**Mitigation Measure 2.14-1a**: Construction activities that occur along Leveroni Road from Harrington Drive to Fryer Creek Drive shall only occur during the weekdays or as otherwise permitted by the City of Sonoma. PG&E and/or its contractor(s) shall ensure that Madera Park and the Fryer Creek bike path are fully accessible during weekends, as well as any holidays observed by the City of Sonoma. PG&E shall prepare a work plan to implement this measure and shall provide the work plan to CPUC staff for approval prior to the start of construction. Compliance with this measure shall be monitored by the CPUC mitigation monitor.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	Mitigation Measure 2.14-1b: PG&E shall provide signage that alerts bicyclists to walk their bicycles through the construction area. PG&E shall also provide notices to local residents of any planned disruption to Madera Park and/or the Fryer Creek bike path (properties within 300 feet of Madera Park). The notices and signage shall include the following details: • Expected dates of Madera Park and/or Fryer Creek bike path disruption. • Description and map of temporary relocation of park facilities. • Name and phone numbers of persons to contact at PG&E and the City of Sonoma. The notices shall be sent to residents and signage posted at least 14 days in advance of any planned construction activities along Leveroni Road between Harrington Road and Fryer Creek Drive. The CPUC mitigation monitor shall verify the posting of signage and notification prior to construction.	
Transportation / Traffic		
Impact 2.15-1: Project construction activities could adversely affect traffic and transportation conditions in the project area.	**Mitigation Measure 2.15-1a**: PG&E shall obtain and comply with local road encroachment permits for roads that are affected by construction activities (i.e., Frates Road, Felder Road, and Leveroni Road). **Mitigation Measure 2.15-1b**: PG&E shall prepare and implement a Traffic Management Plan subject to approval by the appropriate local jurisdiction (i.e., Sonoma County or City of Sonoma) prior to construction. The plan shall: • Include a discussion of work hours, haul routes, limits on the length of open trench, work area delineation, traffic control and flagging; • Identify all access and parking restriction and signage requirements; • Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints;	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
	• Include a plan to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers would be notified of the timing, location, and duration of construction activities. All roads would remain passable to emergency service vehicles at all times; • Include the requirement that all open trenches be covered with metal plates at the end of each workday to accommodate traffic and access; and • Specify the street restoration requirements pursuant to PG&E's franchise agreements with the local jurisdictions. **Mitigation Measure 2.15-1c**: PG&E shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) would be used to minimize impacts to traffic flow. **Mitigation Measure 2.15-1d**: PG&E shall develop circulation and detour plans to minimize impact to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone. **Mitigation Measure 2.15-1e**: PG&E shall encourage construction crews to park at substations to limit lane closures in the public right-of-way. **Mitigation Measure 2.15-1f**: PG&E shall coordinate with Caltrans, Sonoma County, City of Sonoma, and any other appropriate entity, regarding measures to minimize the cumulative effect of simultaneous construction activities in overlapping areas. **Mitigation Measure 2.15-1g**: PG&E shall consult with Sonoma County Transit at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.	
Impact 2.15-2: Operation of the "skycrane" helicopters could result in exposure of structures or persons to risk.	**Mitigation Measure 2.15-2**: PG&E shall prepare and comply with a Lift Plan approved by the FAA prior to all "skycrane" construction helicopter operations. The need for short-term road closures, if any, shall be identified in the Lift Plan and shall be coordinated with the appropriate jurisdictions as described in Mitigation Measures 2.15-1a through 2.15-1g. The Lift Plan shall also discuss the potential to adversely affect to nearby residents.	Less than Significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Significance after Mitigation
Impact 2.15-3: Project construction activities could increase potential traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways.	**Mitigation Measure 2.15-3**: Implement Mitigation Measure 2.15-1b through 2.15-1g.	Less than Significant
Impact 2.15-4: Project construction activities could result in delays for emergency vehicles on project area roadways.	**Mitigation Measure 2.15-4**: Implement Mitigation Measure 2.15-1b.	Less than Significant
Impact 2.15-5: Project construction activities could generate a demand for on-street parking spaces to accommodate construction worker vehicles on project area roadways.	**Mitigation Measure 2.15-5**: Implement Mitigation Measure 2.15-1e.	Less than Significant
Impact 2.15-6: Project construction activities could cause disruptions to transit service on project area roadways.	**Mitigation Measure 2.15-6**: Implement Mitigation Measure 2.15-1g.	Less than Significant
Utilities and Services		
Impact 2.16-1: Construction activities associated with ~~Mitigation Measure 2.1-1~~ undergrounding a portion of the new transmission line along Leveroni Road could inadvertently contact underground utility lines and/or facilities during underground construction, possibly leading to short-term utility service interruptions.	**Mitigation Measure 2.16-1**: PG&E shall ensure that Underground Service Alert is notified at least 14 days prior to initiation of construction activities of the underground portion of the transmission line. Underground Service Alert verifies the location of all existing underground utilities and alerts the other utilities to mark their facilities in the area of anticipated construction activities. Compliance with this measure shall be verified by the CPUC mitigation monitor.	Less than Significant
Mandatory Findings of Significance		
Impact 2.17-1: Project construction activities along Leveroni Road could adversely affect local noise and traffic conditions if the Proposed Project is constructed at the same time as the SVRWP segment along Leveroni Road.	**Mitigation Measure 2.17-1**: At least two weeks prior to commencement of project construction activities, PG&E shall contact the Sonoma County Water Agency to determine if construction of the Proposed Project and construction of the SVRWP would occur at the same time along Leveroni Road. If construction of both projects (the Proposed Project and SVRWP) would occur along Leveroni Road at the same time, then PG&E shall incorporate consideration of the SVRWP into its Traffic Management Plan required by Mitigation Measure 2.15-1.	Less than Significant

SECTION 1
Project Description

1.1 Introduction

The Pacific Gas and Electric Company (PG&E), in its California Public Utilities Commission (CPUC) application (A.04-11-011), filed on November 17, 2004[1], seeks a Permit to Construct (PTC) approximately 7.23 miles of 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to CPUC General Order (GO) 131-D. The application includes the Proponents Environmental Assessment (PG&E PEA, 2004) prepared by EDAW pursuant to Rules 17.1 and 17.3 of CPUC's Rules of Practice and Procedure. PG&E, who currently owns a single-circuit 115 kV electric transmission system in the Petaluma–Napa–Sonoma area of the San Francisco Bay Area Region, requests to construct a second 115 kV transmission circuit within its existing single-circuit 115 kV transmission line route between Lakeville Substation (at the eastern edge of the City of Petaluma) and Sonoma Substation (at the southern edge of the City of Sonoma). This second 115 kV transmission line would be installed on a rebuilt version of PG&E's existing single-circuit 115 kV transmission line, thus co-locating the two circuits on a single set of poles. The final 3,060-foot length at the eastern end of the new 115 kV transmission line would be installed underground. The proposed project would also include modifications to both the Lakeville and Sonoma Substations. Under the GO 131-D, approval of this project must comply with the California Environmental Quality Act (CEQA).

Under CEQA, the CPUC must prepare an "Initial Study" for discretionary projects such as the proposed project to determine whether the project may have a significant adverse effect on the environment. If an Initial Study prepared for a project indicates that such an impact could occur, the CPUC would be required to prepare and Environmental Impact Report (EIR). If an Initial Study does not reveal substantial evidence of such an effect, or if the potential effect can be reduced to a level of insignificance through project revisions, a Negative Declaration can be adopted (Public Resources Code, Division 13, Section 21080(c)(1)).

A Mitigated Negative Declaration (MND) may be adopted when "the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as

[1] Note that PG&E also filed an amendment to the November 17, 2004 Application to reflect a revision to the project plan.

revised, may have a significant effect on the environment" (Public Resources Code, Division 13, Section 21064.5).

Based on the assessment of the Initial Study prepared for the Lakeville-Sonoma 115 kV Transmission Line Project, this Mitigated Negative Declaration has been prepared.

1.2 Project Objectives

PG&E's objectives of the Lakeville-Sonoma 115 kV Transmission Line Project as stated in the Proponent's Environmental Assessment (PG&E PEA, 2-7), are as follows:

- Transmission system reliability – ensure that the Napa and Sonoma County area transmission system continues to meet planning standards and criteria established by the California Independent System Operator (CAISO) and North American Electric Reliability Council (NERC) to ensure the safety and reliability of the transmission system.

- Electric demand – ensure that the electric system includes adequate capacity to safely and reliably serve the Sonoma and Napa County area.

- CAISO Board of Governors' June 24, 2004 Resolution – implement the June 24, 2004 CAISO Board of Governors' resolution approving the Lakeville-Sonoma 115 kV Transmission Line Project for addition to the CAISO-controlled grid, consistent with the CAISO Tariff as adopted by the Federal Energy Regulatory Commission (FERC) pursuant to the Federal Power Act.

As part of the CAISO's annual stakeholder process, reliability problems within the Sonoma and Napa areas were identified beginning in 2006. The Ten-Year Expansion Plan for PG&E identified that a long-term need existed to reinforce the transmission system in the area to reliably serve the future load that is expected to occur over the next ten years. As a result, PG&E's 2003 Ten-Year Transmission Expansion Plan identified alternatives to adequately address the long-term load serving needs for this area and identified the Lakeville-Sonoma 115 kV Transmission Line Project as the preferred alternative to address this reliability need.

The need for the project is primarily related to inadequate transmission line capacity between the Fulton, Pueblo, and Sonoma 115 kV substation during times when the existing Lakeville-Sonoma 115 kV line is out of service. Because the Pueblo 115 kV station is closer to Lakeville, most of the power, approximately 90%, needed to serve the Napa and Sonoma areas flows from the Lakeville substation with the balance being served from the Fulton substation. When the Lakeville-Sonoma 115 kV line is out of service, the balance of the load must be served from the Fulton substation. Planning studies have shown that by 2006, the transmission system between Fulton, Pueblo, and Sonoma will no longer be adequate to reliably serve the load in this area; therefore, additional transmission is needed to assure continued satisfaction of the CAISO's established Planning Standards.

Installing a second 115 kV line from the Lakeville Substation to Sonoma Substation would allow PG&E to meet its objectives and ensure the safe and reliable delivery of electricity to customers during most system disturbance (PG&E PEA, 2-10). A second circuit between Lakeville and Sonoma Substations would increase the reliability of the system and mitigate the low voltage and overloading problem by providing another source of electrical power to the Sonoma and Napa area. Therefore, even if the existing line fails, the new line would ensure that there is an adequate continuous path for power flow from a strong source such as Lakeville Substation. Maintaining this continuous path of electricity would prevent sudden voltage drops during contingency events.

Additionally a second Lakeville-Sonoma line would facilitate maintenance on the other line and associated equipment at either substation. When one line or its associated substation equipment requires maintenance and must be taken out of service, the other line would remain in service and available to serve load (PG&E PEA, 2-11).

Alternatives

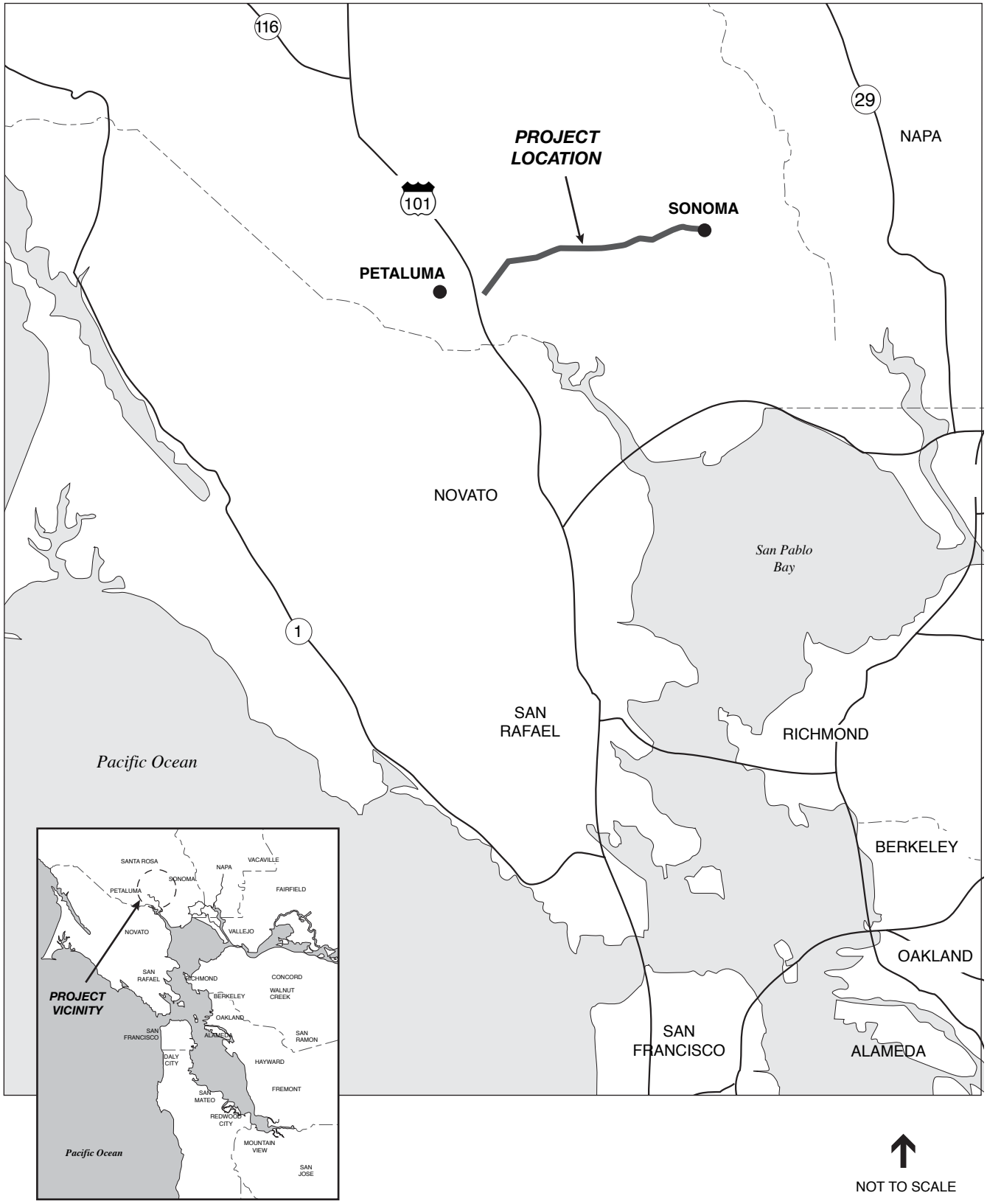
CEQA does not require that a MND include an alternatives analysis because the Initial Study concludes that, with mitigation, there are no significant impacts resulting from the proposed project. ~~The CPUC believes that the Proposed Project with adoption of a mitigation measure to underground the portion of the transmission line between Leveroni Road from about Fifth Street West to the Sonoma Substation would pose fewer overall environmental impacts.~~ Pursuant to Section IX.B.1.c of CPUC's General Order 131-D, PG&E's Application did consider four routes in addition to the Proposed Project and presented an explanation of the advantages and disadvantages of each routes in their PEA. Refer to **Appendix A** for more detailed descriptions and comparisons of the routes described above; as well as an additional two routes not analyzed by PG&E.

1.3 Project Location

The Proposed Project is located in southern Sonoma County between the City of Petaluma and the City of Sonoma, California. The proposed project route traverses an existing PG&E transmission line corridor paralleling county roads, travels through open space, over the Sonoma Mountains, into the vineyards, ranches and agricultural lands of the Sonoma Valley, paralleling city roads into the City of Sonoma (**Figure 1-1**).

1.4 Existing System

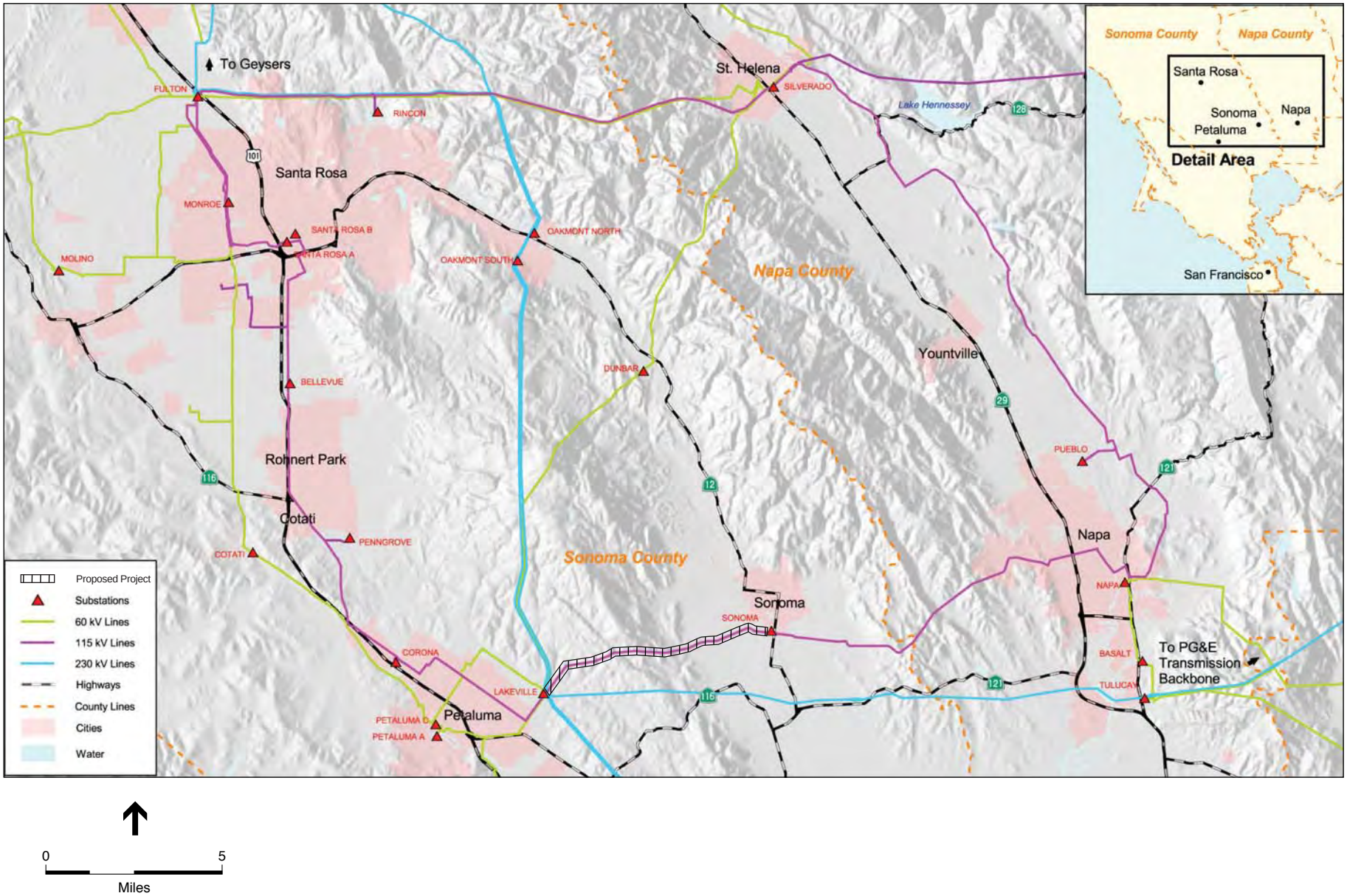
PG&E currently serves the Napa and Sonoma County areas by a system of substations and electrical power transmission lines (**Figure 1-2**); as well as an extensive network of local distribution lines throughout the region. These distribution lines, not shown in **Figure 1-2**, generally follow city streets and back property lines carrying lower voltage electricity from the substations to PG&E residential and commercial customers.



SOURCE: ESA (2005)

Lakeville-Sonoma 115 kV Transmission Line Project / 204202 ■

Figure 1-1
Project Location



SOURCE: EDAW (2004)

Figure 1-2
Existing Regional Electric System

Electric power is currently delivered to substations in the project area at 60 kV, 115 kV and 230 kV. Power is then converted to lower voltages for distribution to customers through overhead or underground distribution lines. The local distribution system, typically at 12 and 21 kV, is further stepped down to 120 V by individual neighborhood transformers for customer use.

1.4.1 Existing Substations

PG&E relies on five distribution substations to serve its electric customers in the cities of Sonoma and Napa, and surrounding areas: Sonoma, Pueblo, Basalt, Napa, and Tulucay Substations (**Figure 1-2**). The Sonoma and Pueblo Substations are connected to PG&E's 115 kV transmission network and serve about 60 percent of the customers in this area. While the Basalt, Napa, and Tulucay Substations are connected to PG&E's 60 kV transmission network and serve the remaining customers. These two transmission systems are operated independent of each other.

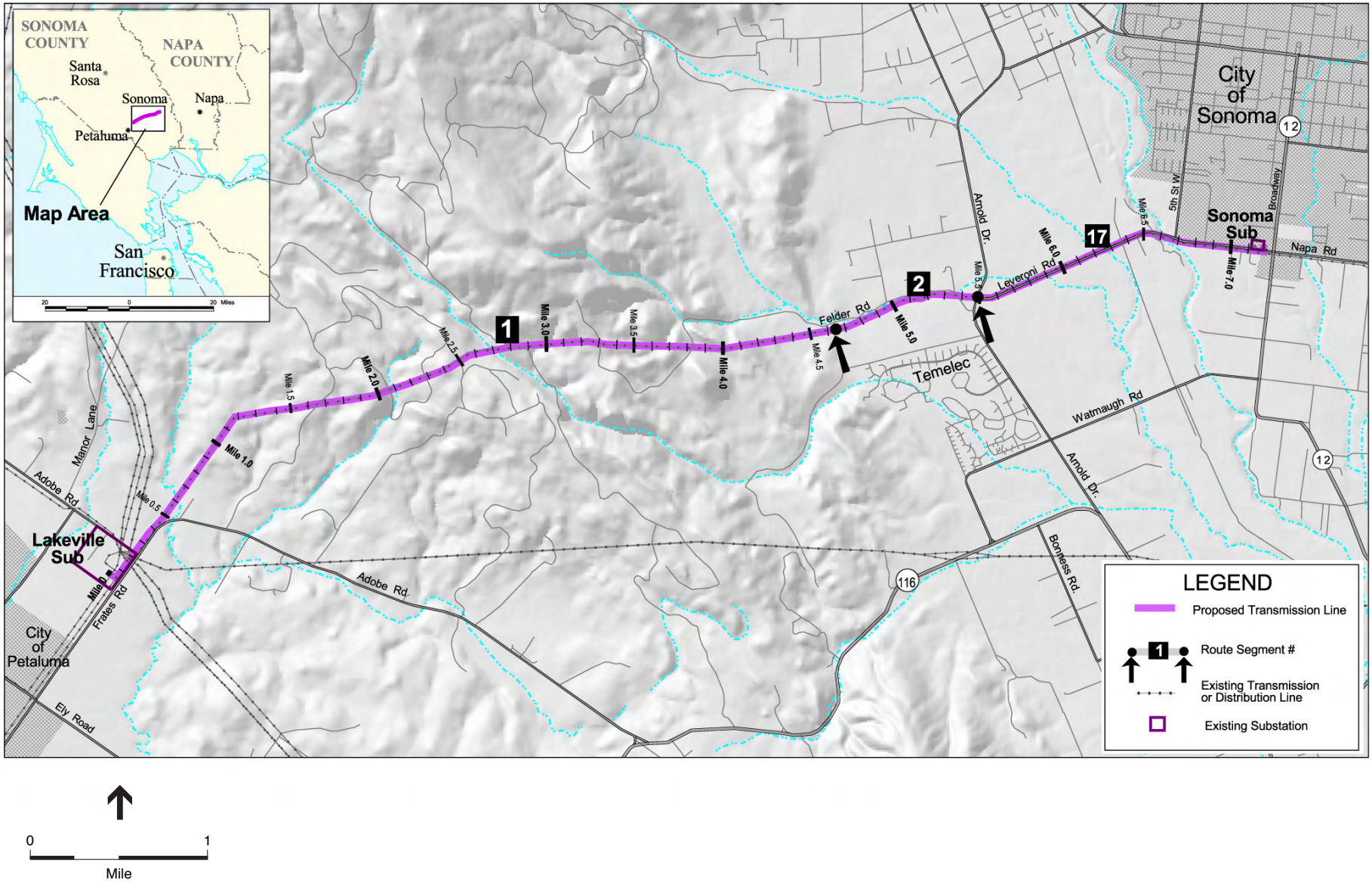
1.4.2 Existing 115 kV Transmission Facilities

In the existing 115 kV system, the Sonoma and Pueblo Substations are tied in a loop configuration to the Lakeville and Fulton Substations by the Fulton–Pueblo, Sonoma–Pueblo, and Lakeville–Sonoma 115 kV lines.

As shown in **Figure 1-2**, the Fulton–Pueblo 115 kV line runs from northern Santa Rosa eastward to St. Helena and then turns south toward the City of Napa. This line serves the Sonoma and Pueblo Substation and in the event of an outage on the Fulton–Fulton Junction 115 kV line, the line serves as a back up for the Rincon and Silverado Substation. The Fulton–Pueblo and the Fulton–Fulton Junction 115 kV lines share the same transmission towers from the Fulton Substation to St. Helena. The Sonoma–Pueblo 115 kV line runs from the Pueblo Substation southward to downtown Napa and then westward to downtown Sonoma. The Lakeville–Sonoma 115 kV line runs from the Lakeville Substation eastward to Sonoma Substation.

1.5 PG&E's Proposed Project Description

Figure 1-3 shows the location and alignment of Proposed Project. Retaining the segmentation of the alignment as delineated in the PEA, the Proposed Project consists of: Segment 1, Segment 2, and Segment 17. As shown in **Figure 1-3**, the transmission line begins at the Lakeville Substation, parallels Adobe Road for approximately 1.2 miles, and then passes northeast through vineyards and ranch lands for approximately 3.6 miles. The line roughly parallels Felder Road for approximately 0.8 miles from the junction of Felder Road and Felder Creek east to the junction of Felder Road and Leveroni Road where it continues, approximately 1.7 miles, following Leveroni Road to the Sonoma Substation. Note that this double-circuit transmission line generally would follow the same alignment as the existing single-circuit line.



SOURCE: EDAW (2004)

Figure 1-3
Proposed Project

1.6 Project Components

A summary of the key components of the proposed Lakeville–Sonoma 115 kV Transmission Line Project is provided **Table 1-1** with a more detailed discussion by component to follow.

TABLE 1-1
SUMMARY OF PROJECT COMPONENTS

115 kV Transmission Line
• Replace the existing single-circuit 115 kV transmission line with a double-circuit 115 kV line from the Lakeville Substation to the Sonoma Substation • Existing transmission, distribution and telecommunication lines would be transferred to the new poles. • Voltage of new circuit: 115 kV alternating current • Pole Type: tubular steel poles (TSP) that are self weathering (these poles typically oxidize to a "natural" reddish-brown color) and wood poles • Pole Height: generally 50 to 100 feet • Span between Poles: approximately 200 to 1,370 feet • During construction, existing land access and helicopters would be used to minimize environmental impacts • 3,060 feet of single circuit 115 kV transmission line installed underground between poles 108a and the Sonoma Substation
Lakeville Substation
• Modification of existing Lakeville substation yard on PG&E property. Existing landscape along Frates Road would provide screening. • Installation of facilities to support a 115 kV line position. One new TSP to be located inside the substation.
Sonoma Substation
• Installation of facilities to support a 115 kV line position. One TSP would replace an existing wood pole inside the substation. Installation of additional landscaping along Leveroni Road.

1.6.1 Transmission Line

PG&E proposes to replace the existing single-circuit wood pole line with a rebuilt double-circuit line on a combination of tubular steel poles (TSPs) and wood poles for approximately 7.23 miles (**Table 1-2**). For safety purposes, wood poles would be used along Leveroni Road as steel poles could cause induction problems next to an existing transmission gas line in that area. Additionally, TSPs would be located a bit farther to the west of the existing wood poles along Adobe Road to avoid potential conflicts with an existing transmission gas line. Overall, the new transmission line would require approximately 17 ~~27~~ fewer poles than the existing line because the taller tubular steel poles allow for greater spans (distance) between poles, which reduces the total number of poles needed to support the existing and new circuits.

The route alignment, approximate pole locations, and likely pole types with tentative locations of staging areas, helicopter landing zones, pull sites, and access roads are shown in **Figure 1-4(a)** through **Figure 1-4(d)**.

TABLE 1-2
115 kV TRANSMISSION LINE CONSTRUCTION

Segment	Existing Lines	Proposed Construction	Miles	Segment Miles
1	Wood Pole Single-circuit w/ Distribution Under	TSP Double-circuit w/ Distribution Under	0.70	4.64
	Wood Pole Single-circuit	TSP Double-circuit	0.92	
	Wood Pole Single-circuit w/ Distribution Under	TSP Double-circuit w/ Distribution Under	0.22	
	Wood Pole Single-circuit	TSP Double-circuit	2.44	
	Wood Pole Single-circuit w/ Distribution Under	TSP Double-circuit w/ Distribution Under	0.36	
2	Wood Pole Single-circuit	TSP Double-circuit	0.45	0.85
	Wood Pole Single-circuit w/ Distribution Under	TSP Double-circuit w/ Distribution Under	0.40	
17	Wood Pole Single-circuit w/ Distribution Under	TSP and Wood Poles Double-circuit w/ Distribution Under	~~1.74~~1.15	1.74
	Wood Pole Single-circuit w/ Distribution Under	Wood Pole Single-circuit w/ Distribution Under	0.59	
		Underground Single-circuit	0.59	
			Total Miles	7.23

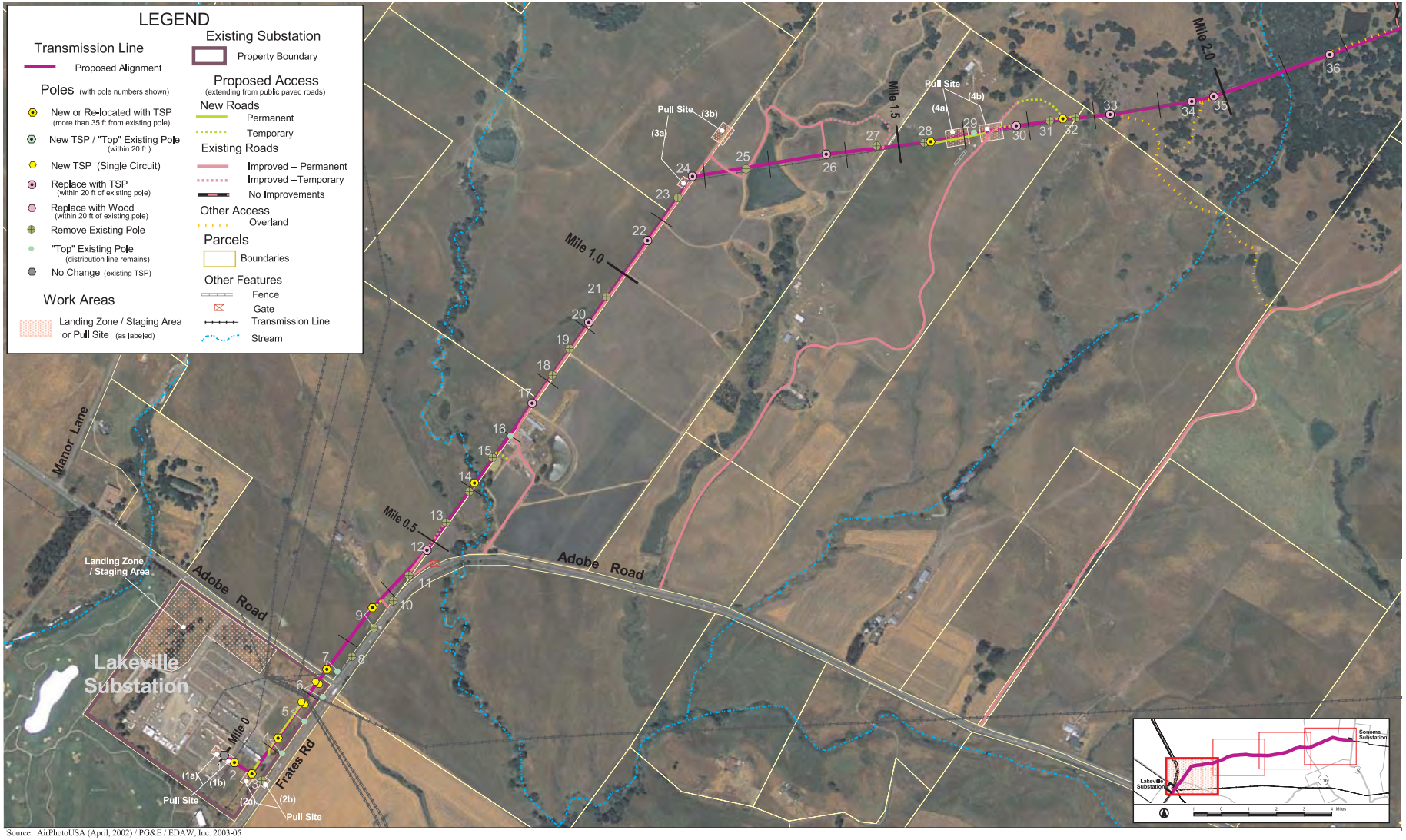
1.6.2 Poles

The transmission line would be supported by TSPs and wood poles, which would be approximately 2 to 3 feet in diameter and generally range from approximately 50 to 100 feet in height (**Figure 1-5**). **Table 1-3** provides a more detailed description of existing~~,~~ and approximate proposed~~,~~ and difference of pole heights plus their land use designations for the entire transmission line project. Span lengths between the poles would range from 200 to 1,370 feet, with average spans of 500 to 900 feet. The TSPs, which require less maintenance than wood poles, would be made of self-weathering steel, which oxidize to a natural-looking rust color within about one year.

For safety purposes, wood poles would be used along Leveroni Road as steel poles could cause induction problems next to an existing transmission gas line in that area.

Angle poles would be installed in concrete foundations to eliminate the need for wire down guys that would otherwise be needed to support an angle pole.

The existing single-circuit transmission line, which consists of 119 poles (118 wood and one TSP), would be replaced with a new double-circuit transmission line consisting of ~~90~~ 91 poles (26 ~~23~~ wood and 65 ~~67~~ TSPs). In order to support the additional circuit, the new poles would generally need to be larger and taller than the existing wood poles. Most of the new poles would be located within 20 feet of an existing pole location. Approximately eleven existing wood poles would be "topped" (i.e., shortened by removing the existing transmission lines and cut down to



Source: AirPhotoUSA (April, 2002) / PG&E / EDAW, Inc. 2003-05

Pole locations and construction sites are based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

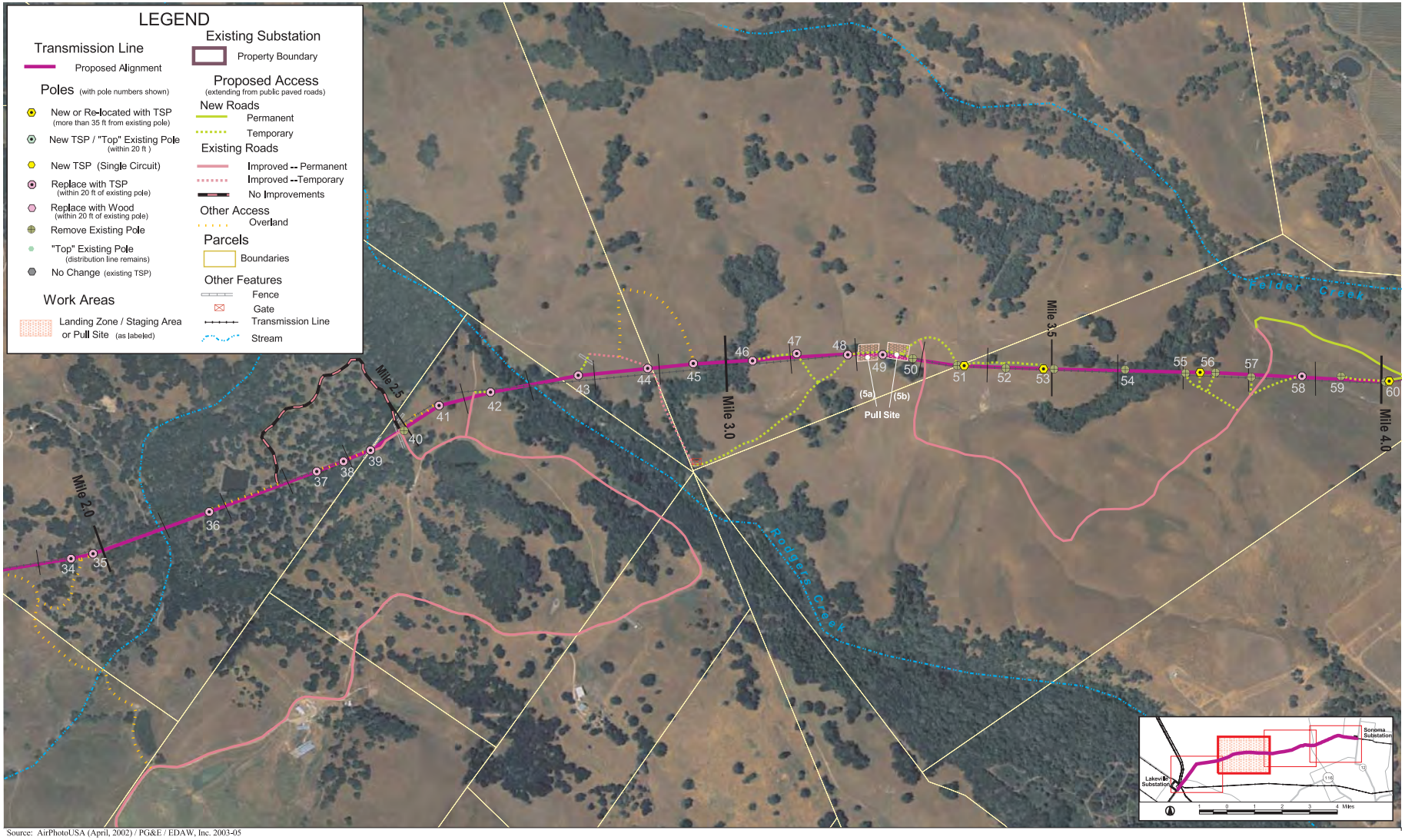
0 1000

Feet

SOURCE: AirPhotoUSA (April, 2002)/PG&E/EDAW, Inc. 2003-05

Figure 1-4(a)

Proposed Route (West)



Source: AirPhotoUSA (April, 2002) / PG&E / EDAW, Inc. 2003-05

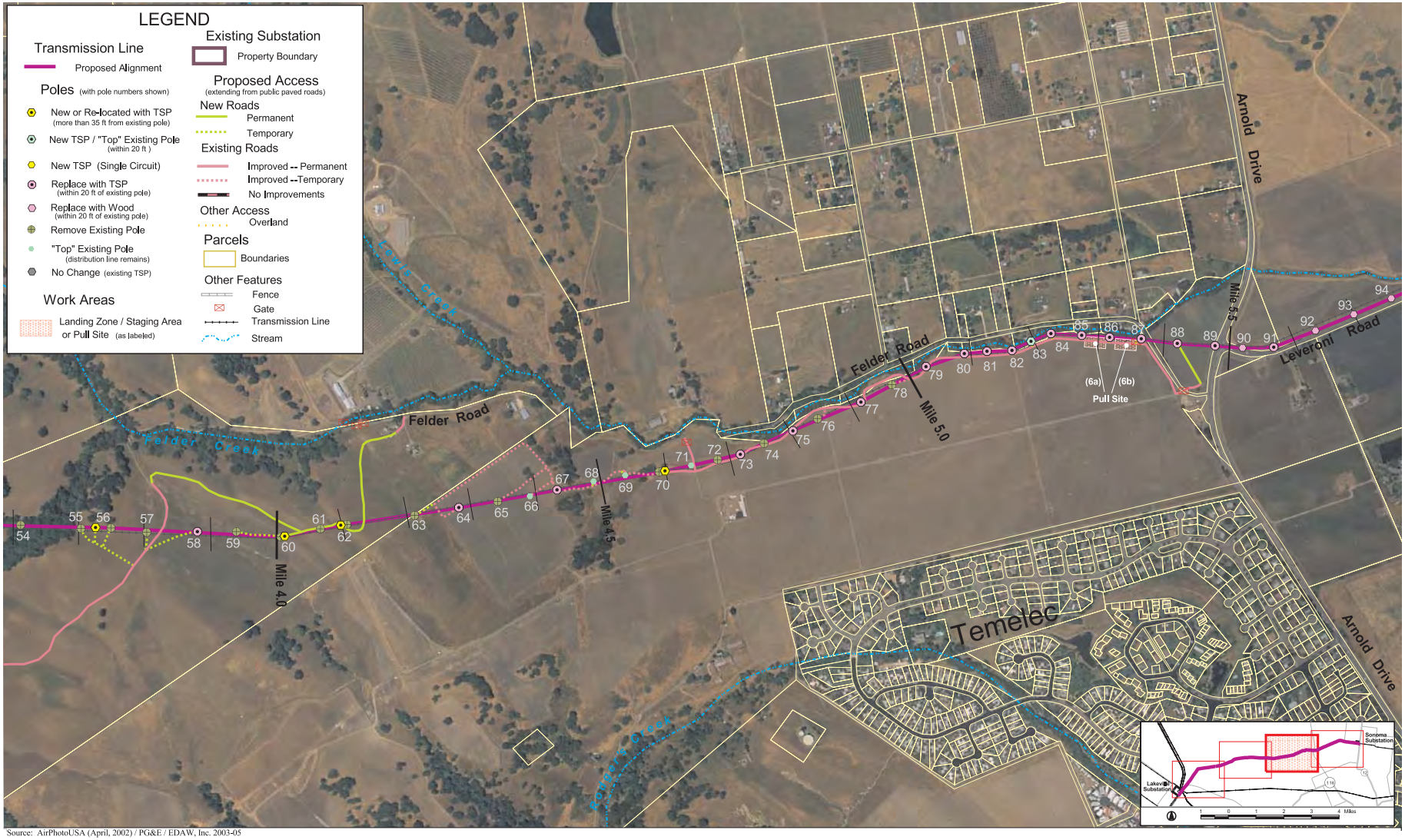
Pole locations and construction sites are based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

0 1000 Feet

SOURCE: AirPhotoUSA (April, 2002)/PG&E/EDAW, Inc. 2003-05

Figure 1-4(b)

Proposed Route (Mid-West)



Source: AirPhotoUSA (April, 2002) / PG&E / EDAW, Inc. 2003-05

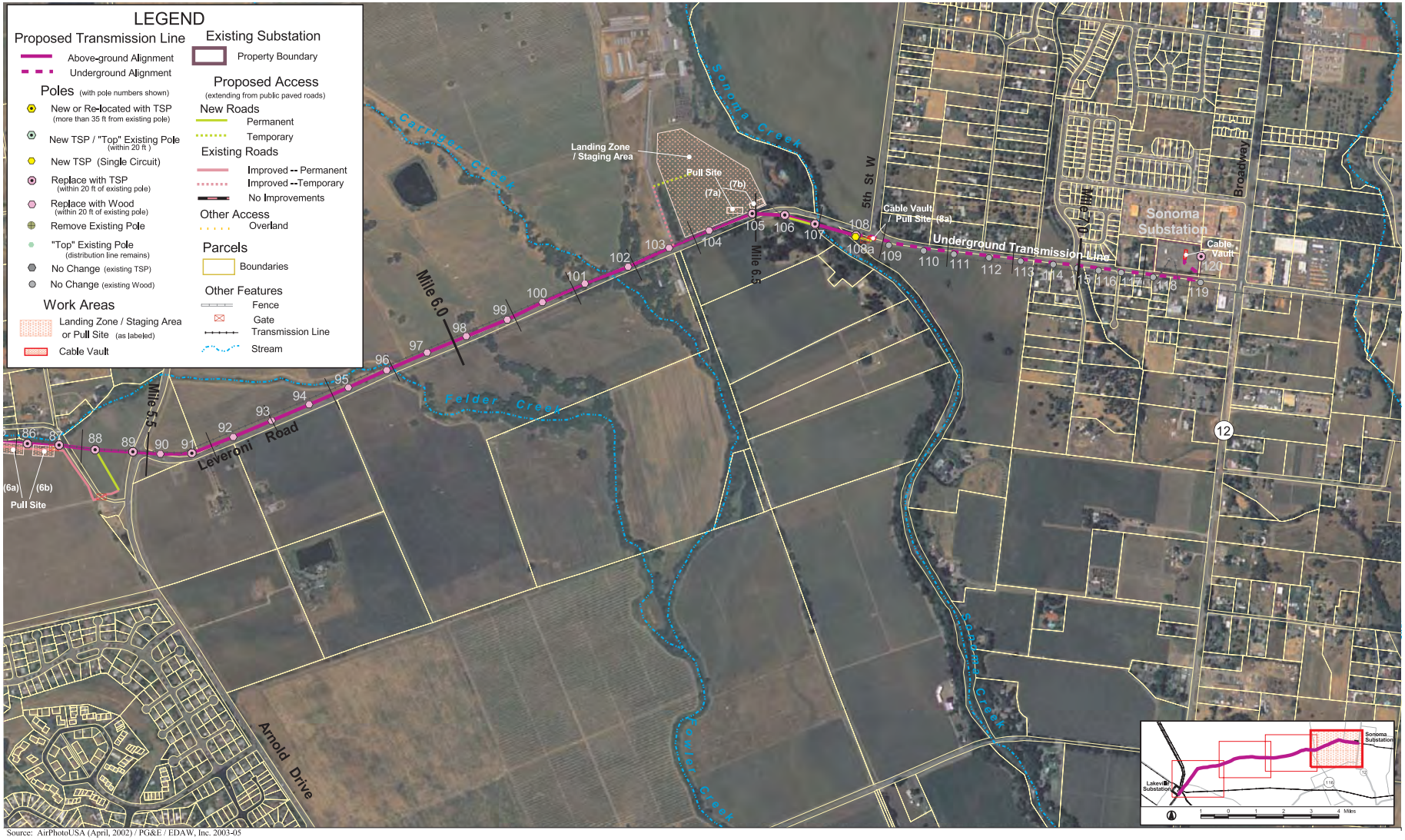
Pole locations and construction sites are based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

0 1000 Feet

SOURCE: AirPhotoUSA (April, 2002)/PG&E/EDAW, Inc. 2003-05

Figure 1-4(c)

Proposed Route (Mid-East)



Source: AirPhotoUSA (April, 2002) / PG&E / EDAW, Inc. 2003-05

Pole locations and construction sites are based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

0 1000

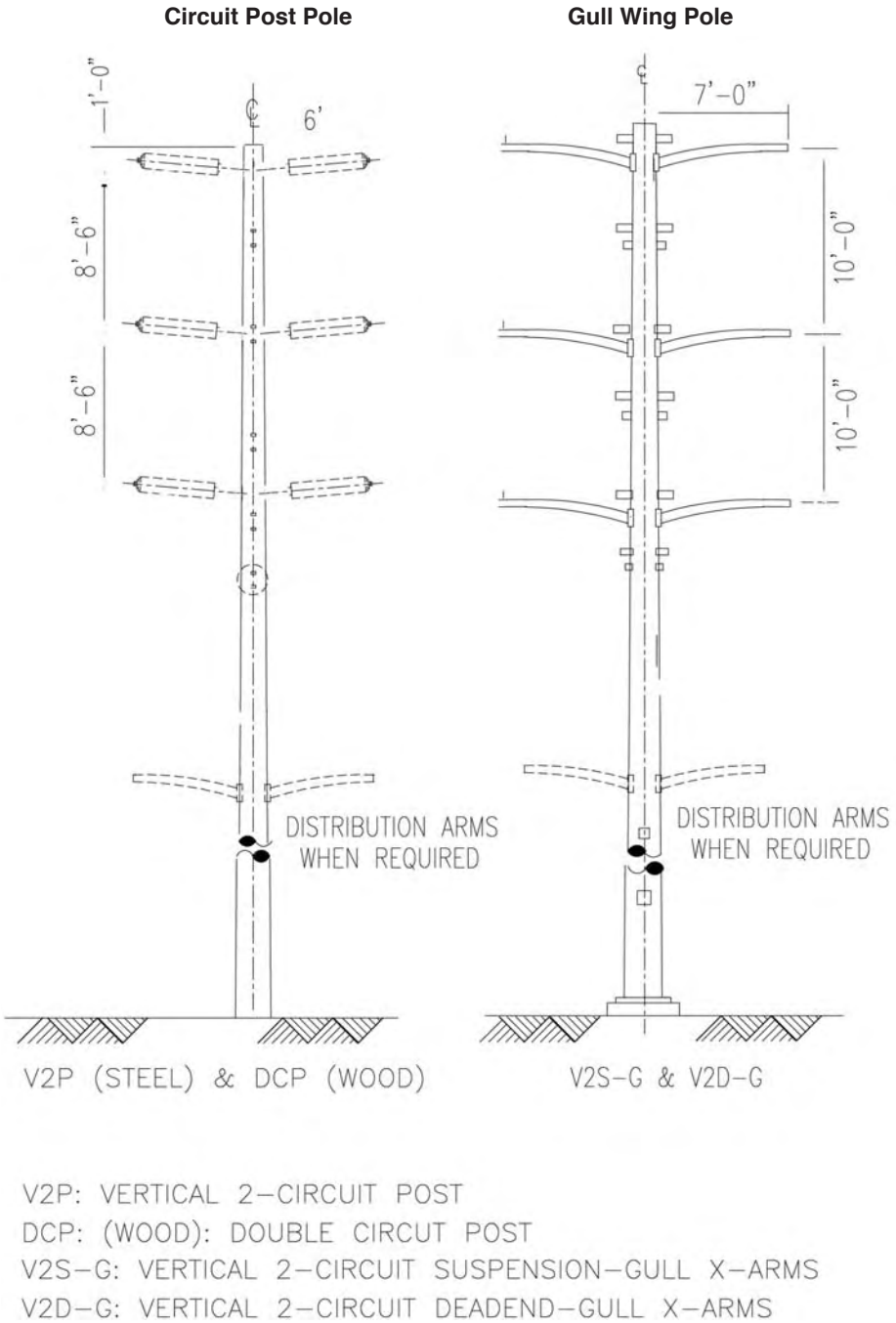
Feet

SOURCE: AirPhotoUSA (April, 2002)/PG&E/EDAW, Inc. 2003-05

Figure 1-4(d)

Proposed Route (East)

(revised February 2006 for Final MND)



This diagram is based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

SOURCE: EDAW (2004)

Figure 1-5
Typical Pole Designs

TABLE 1-3
EXISTING AND PROPOSED POLES AND EXISTING LAND USES

Existing Pole Number	Existing Pole Type	Proposed Pole Type	Existing Height (ft)	Approx. Proposed Height (ft)	Approx. Change in Height (ft)	Existing Land Use
1	TSP	No Change	60	60	0	Lakeville Substation
2	N/A	TSP	60	60	0	Lakeville Substation
3	Wood	TSP	65	65	0	Lakeville Substation
4	Wood[a]	TSP	50	65	15	Lakeville Substation
5	Wood[a]	TSP	42	45	3	Lakeville Substation
5a	N/A	TSP	N/A	45	N/A	Lakeville Substation
6	Wood[a]	TSP	42	40	2	Lakeville Substation
6a	N/A	TSP	N/A	45	N/A	Lakeville Substation
7	Wood[a]	TSP	42	80	38	~~Irrigated vineyard~~ Orchard
8	Wood	Eliminate	47	N/A	Eliminate	~~Irrigated vineyard~~ Orchard
9	Wood	TSP	55	85	30	~~Irrigated vineyard~~ Orchard
10	Wood	Eliminate	46	N/A	Eliminate	~~Irrigated vineyard~~ Orchard
11	Wood	Eliminate	51	N/A	Eliminate	Irrigated vineyard
12	Wood	TSP	44	80	36	Irrigated vineyard
13	Wood	Eliminate	52	N/A	Eliminate	Irrigated vineyard
14	Wood	TSP	50	85	35	Irrigated vineyard
15	Wood	Eliminate	46	N/A	Eliminate	Irrigated vineyard
16	Wood	Old Pole Topped ~~Eliminate~~	44	N/A	Old Pole Topped ~~Eliminate~~	Irrigated vineyard
17	Wood	TSP	44	90	46	Irrigated vineyard
18	Wood	Eliminate	48	N/A	Eliminate	Irrigated vineyard
19	Wood	Eliminate	42	N/A	Eliminate	Irrigated vineyard
20	Wood	TSP	43	80	37	Irrigated vineyard
21	Wood	Eliminate	51	N/A	Eliminate	Irrigated vineyard
22	Wood	TSP	44	60	16	Irrigated vineyard
23	Wood	Eliminate	44	N/A	Eliminate	Irrigated vineyard
24	Wood	TSP	62	80	18	Irrigated vineyard
25	Wood	Eliminate	54	N/A	Eliminate	Irrigated vineyard without residence
26	Wood	TSP	50	85	35	Irrigated vineyard without residence
27	Wood	Eliminate	47	N/A	Eliminate	Irrigated vineyard without residence
28	Wood	TSP	53	90	37	Pasture with residence
29	Wood	Old Pole Topped ~~Eliminate~~	43	N/A	Old Pole Topped ~~Eliminate~~	Pasture with residence
30	Wood	TSP	50	85	35	Pasture with residence
31	Wood	Eliminate	45	N/A	Eliminate	Pasture with residence
32	Wood	TSP	52	55	3	Pasture with residence
33	Wood	TPS	45	60	15	Open space with residence
34	Wood	TSP	50	50	0	Open space with residence
35	Wood	TSP	50	60	10	Open space with residence
36	Wood	TSP	53	60	7	Open space with residence

TABLE 1-3 (continued)
EXISTING AND PROPOSED POLES AND EXISTING LAND USES

Existing Pole Number	Existing Pole Type	Proposed Pole Type	Existing Height (ft)	Approx. Proposed Height (ft)	Approx. Change in Height (ft)	Existing Land Use
37	Wood	TSP	48	60	12	Open space with residence
38	Wood	TSP	50	60	10	Open space with residence
39	Wood	TSP	60	65	5	Open space with residence
40	Wood	Eliminate	50	N/A	Eliminate	Open space
41	Wood	TSP	54	60	6	Open space
42	Wood	TSP	47	60	13	Open space
43	Wood	TSP	51	60	9	Pasture
44	Wood	TSP	51	55	4	Pasture
45	Wood	TSP	56	50	-6	Pasture
46	Wood	TSP	46	50	4	Pasture
47	Wood	TSP	56	55	-1	Pasture
48	Wood	TSP	60	55	-5	Pasture
49	Wood	TSP	56	65	9	Pasture
50	Wood	Eliminate	51	N/A	Eliminate	Pasture
51	Wood	TSP	52	70	18	Pasture
52	Wood	Eliminate	56	N/A	Eliminate	Pasture with residence
53	Wood	TSP	54	90	36	Pasture with residence
54	Wood	Eliminate	52	N/A	Eliminate	Pasture with residence
55	Wood	Eliminate	53	N/A	Eliminate	Pasture with residence
56	Wood	TSP	55	75	20	Pasture with residence
57	Wood	Eliminate	53	N/A	Eliminate	Pasture with residence
58	Wood	TSP	54	75	21	Pasture with residence
59	Wood	Eliminate	57	N/A	Eliminate	Pasture with residence
60	Wood	TSP	55	65	10	Pasture with residence
61	Wood	Eliminate	48	N/A	Eliminate	Pasture with residence
62	Wood	TSP	57	60	3	Pasture with residence
63	Wood	Eliminate	58	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
64	Wood	TSP	60	80	20	Irrigated vineyard/primarily premium varietals with residence
65	Wood	Eliminate	52	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
66	Wood	Old Pole Topped ~~Eliminate~~	54	N/A	Old Pole Topped ~~Eliminate~~	Irrigated vineyard/primarily premium varietals with residence
67	Wood	TSP	52	80	28	Irrigated vineyard/primarily premium varietals with residence
68	Wood	Old Pole Topped ~~Eliminate~~	62	N/A	Old Pole Topped ~~Eliminate~~	Irrigated vineyard/primarily premium varietals with residence
69	Wood	Old Pole Topped ~~Eliminate~~	47	N/A	Old Pole Topped ~~Eliminate~~	Irrigated vineyard/primarily premium varietals with residence
70	Wood	TSP	52	75	23	Irrigated vineyard/primarily premium varietals with residence

TABLE 1-3 (continued)
EXISTING AND PROPOSED POLES AND EXISTING LAND USES

Existing Pole Number	Existing Pole Type	Proposed Pole Type	Existing Height (ft)	Approx. Proposed Height (ft)	Approx. Change in Height (ft)	Existing Land Use
71	Wood	Old Pole Topped ~~Eliminate~~	47	N/A	Old Pole Topped ~~Eliminate~~	Irrigated vineyard/primarily premium varietals with residence
72	Wood	Eliminate	54	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
73	Wood	TSP	55	70	15	Irrigated vineyard/primarily premium varietals with residence
74	Wood	Eliminate	47	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
75	Wood	TSP	51	60	9	Irrigated vineyard/primarily premium varietals with residence
76	Wood	Eliminate	51	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
77	Wood	TSP	57	75	18	Irrigated vineyard/primarily premium varietals with residence
78	Wood	Eliminate	54	N/A	Eliminate	Irrigated vineyard/primarily premium varietals with residence
79	Wood	TSP	61	65	4	Irrigated vineyard/primarily premium varietals with residence
80	Wood	TSP[b]	56	~~65~~ 75	~~9~~ 19	Irrigated vineyard/primarily premium varietals with residence
81	Wood	TSP[b]	50	~~65~~ 75	~~15~~ 25	Irrigated vineyard/primarily premium varietals with residence
82	Wood	TSP[b]	56	~~65~~ 75	~~9~~ 19	Irrigated vineyard/primarily premium varietals with residence
83	Wood[a]	TSP[b]	51	~~65~~ 75	~~14~~ 24	Irrigated vineyard/primarily premium varietals with residence
84	Wood	TSP[b]	60	~~65~~ 75	~~5~~ 15	Irrigated vineyard/primarily premium varietals with residence
85	Wood	TSP[b]	51	~~70~~ 75	~~19~~ 24	Irrigated vineyard/primarily premium varietals with residence
86	Wood	TSP[b]	54	~~70~~ 75	~~16~~ 21	Irrigated vineyard/primarily premium varietals with residence
87	Wood	TSP[b]	57	~~70~~ 75	~~13~~ 18	Irrigated vineyard/primarily premium varietals with residence
88	Wood	TSP	56	~~60~~ 65	~~4~~ 9	Irrigated vineyard
89	Wood	TSP	58	65	7	Irrigated vineyard
90	Wood	Wood	60	65	5	Irrigated vineyard
91	Wood	TSP	65	70	5	Irrigated vineyard
92	Wood	Wood	57	75	18	Irrigated vineyard/primarily premium varietals with residence
93	Wood	Wood	60	75	15	Irrigated vineyard/primarily premium varietals with residence
94	Wood	Wood	60	75	15	Irrigated vineyard/primarily premium varietals with residence
95	Wood	Wood	62	75	13	Irrigated vineyard/primarily premium varietals with residence

TABLE 1-3 (continued)
EXISTING AND PROPOSED POLES AND EXISTING LAND USES

Existing Pole Number	Existing Pole Type	Proposed Pole Type	Existing Height (ft)	Approx. Proposed Height (ft)	Approx. Change in Height (ft)	Existing Land Use
96	Wood	Wood	62	75	13	Irrigated vineyard/primarily premium varietals with residence
97	Wood	Wood	60	75	15	Irrigated vineyard/primarily premium varietals with residence
98	Wood	Wood	50	75	25	Irrigated vineyard/primarily premium varietals with residence
99	Wood	Wood	60	75	15	Irrigated vineyard/primarily premium varietals with residence
100	Wood	Wood	59	75	16	Irrigated vineyard/primarily premium varietals with residence
101	Wood	Wood	59	75	16	Irrigated vineyard/primarily premium varietals with residence
102	Wood	Wood	61	75	14	Irrigated vineyard/primarily premium varietals with residence
103	Wood	Wood	60	75	15	Irrigated vineyard/primarily premium varietals with residence
104	Wood	Wood	58	75	17	Irrigated vineyard/primarily premium varietals with residence
105	Wood	TSP	58	75	17	Irrigated vineyard/primarily premium varietals with residence
106	Wood	TSP	62	75	13	Irrigated vineyard/primarily premium varietals with residence
107	Wood	TSP	66	75	9	Irrigated vineyard/primarily premium varietals with residence
108	Wood	Wood	63	75	12	Irrigated vineyard/primarily premium varietals with residence
108a	N/A	TSP	N/A	75	N/A	Irrigated vineyard/primarily premium varietals with residence
109	Wood	Wood ~~TSP~~	58	58 ~~85~~	0 ~~27~~	Irrigated vineyard/primarily premium varietals with residence
110	Wood	Wood	59	59 ~~85~~	0 ~~26~~	Irrigated vineyard/primarily premium varietals with residence
111	Wood	Wood	58	58 ~~85~~	0 ~~27~~	Irrigated vineyard/primarily premium varietals with residence
112	Wood	Wood	59	59 ~~85~~	0 ~~26~~	Irrigated vineyard/primarily premium varietals with residence
113	Wood	Wood	57	57 ~~85~~	0 ~~28~~	Irrigated vineyard/primarily premium varietals with residence
114	Wood	Wood	62	62 ~~85~~	0 ~~23~~	Residence
115	Wood	Wood	52	52 ~~85~~	0 ~~33~~	Residence
116	Wood	Wood	52	52 ~~85~~	0 ~~33~~	Residence
117	Wood	Wood	53	53 ~~85~~	0 ~~32~~	Residence
118	Wood	Wood ~~TSP~~	61	61 ~~85~~	0 ~~24~~	Residence
119	Wood ~~TSP~~	Wood ~~TSP~~	65	65 ~~85~~	0 ~~20~~	Residence
120	Wood	TSP	65	75	10	Sonoma Substation

a ~~Proposed construction of 2 poles at this location~~ The existing wooden pole would be topped and left in place.
~~b Prpopsed construction of 2 poles at this location~~
b~~c~~ Poles include a 10' height increase based on Field Management Plan

the level of the lower distribution lines) allowing the existing distribution lines to remain. One (1) existing TSP inside the Lakeville Substation would remain and two additional TSPs would ~~will~~ be installed along the fence line.

1.6.3 Substation Modification

The Proposed Project includes modifying and adding some equipment at the existing PG&E Lakeville and Sonoma Substations.

1.6.3.1 Lakeville Substation Modifications

The Proposed Project would require modification of the Lakeville Substation, to accommodate installation of some new equipment including: galvanized structures, circuit breaker, air switches, aluminum bus, control room, control/protection equipment, insulators, and some limited additional lighting near Frates Road. The dead end structures for the bus extension would be no more than 40 feet high while the other bus support structures would be 9 feet high. One new 60-foot-high tubular steel pole would be located inside the substation. All of the new installation would be contained within the land owned by PG&E. Additionally, as shown in **Figure 1-6**, an existing chain link fence would be moved approximately 80 feet closer to Frates Road from its existing location on the southeast side of the substation.

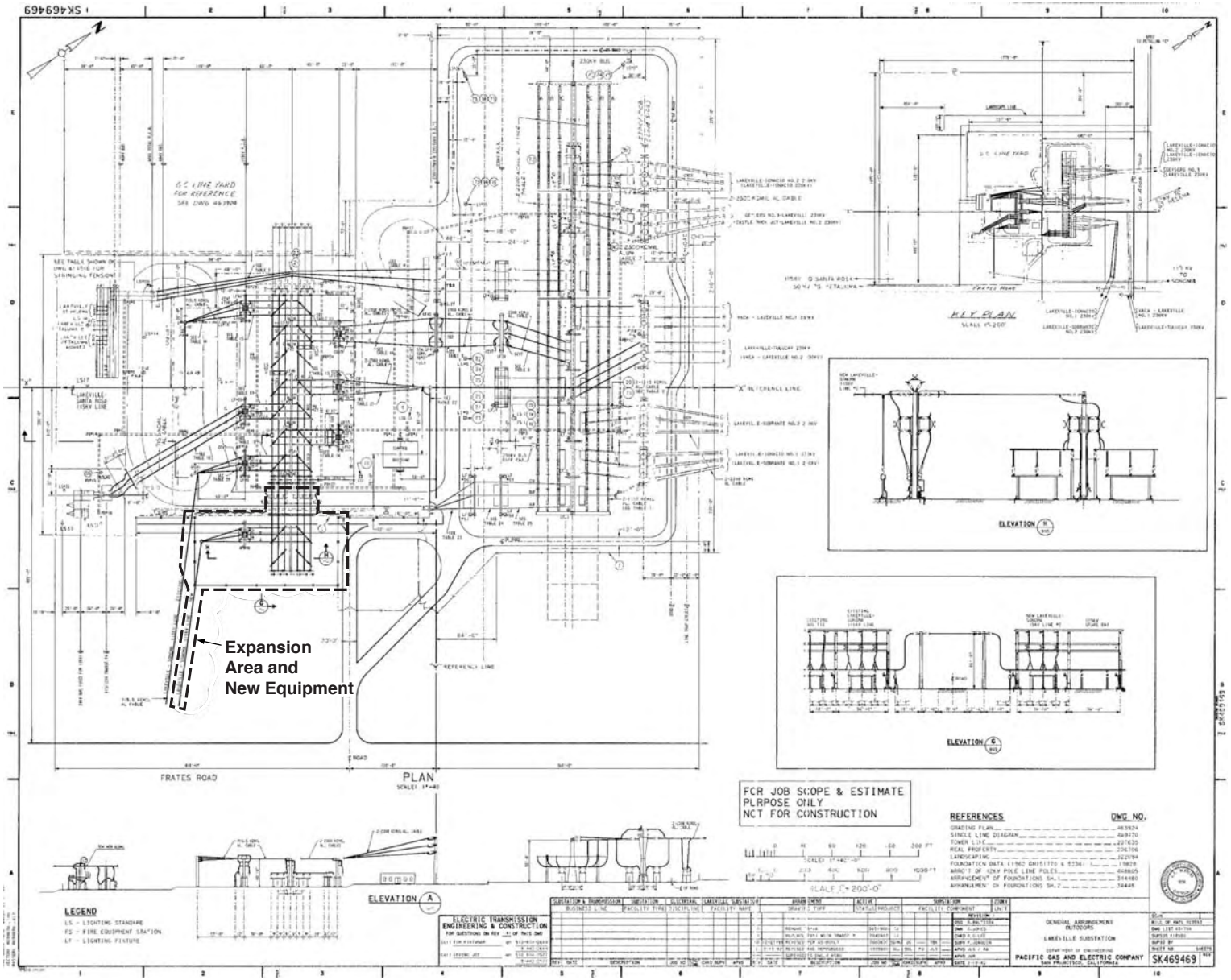
1.6.3.2 Sonoma Substation Modifications

At the Sonoma Substation, additional equipment would be installed within the existing ~~fenceline~~ property line, as shown in **Figure 1-7**. This would include installation of a 115 kV line position and bus modification to include galvanized steel, 115 kV circuit breakers, 115 kV air switches, surge arrestors, aluminum bus, and a relay protection. The existing control room would be extended to provide for the additional batteries required for the new equipment. And, some additional lighting would be required for periodic use when personnel are on-site for activities such as inspections and maintenance.

The dead end structure would be no more than 45 feet high while the other bus support structures would be 9 feet high. An existing 70-foot single-circuit wood pole would be replaced by an approximately 75-foot high tubular steel pole; while a second existing wood pole would be moved a few feet. Low maintenance landscaping and irrigation would be added along Leveroni Road.

1.7 Right-of-Way Requirements

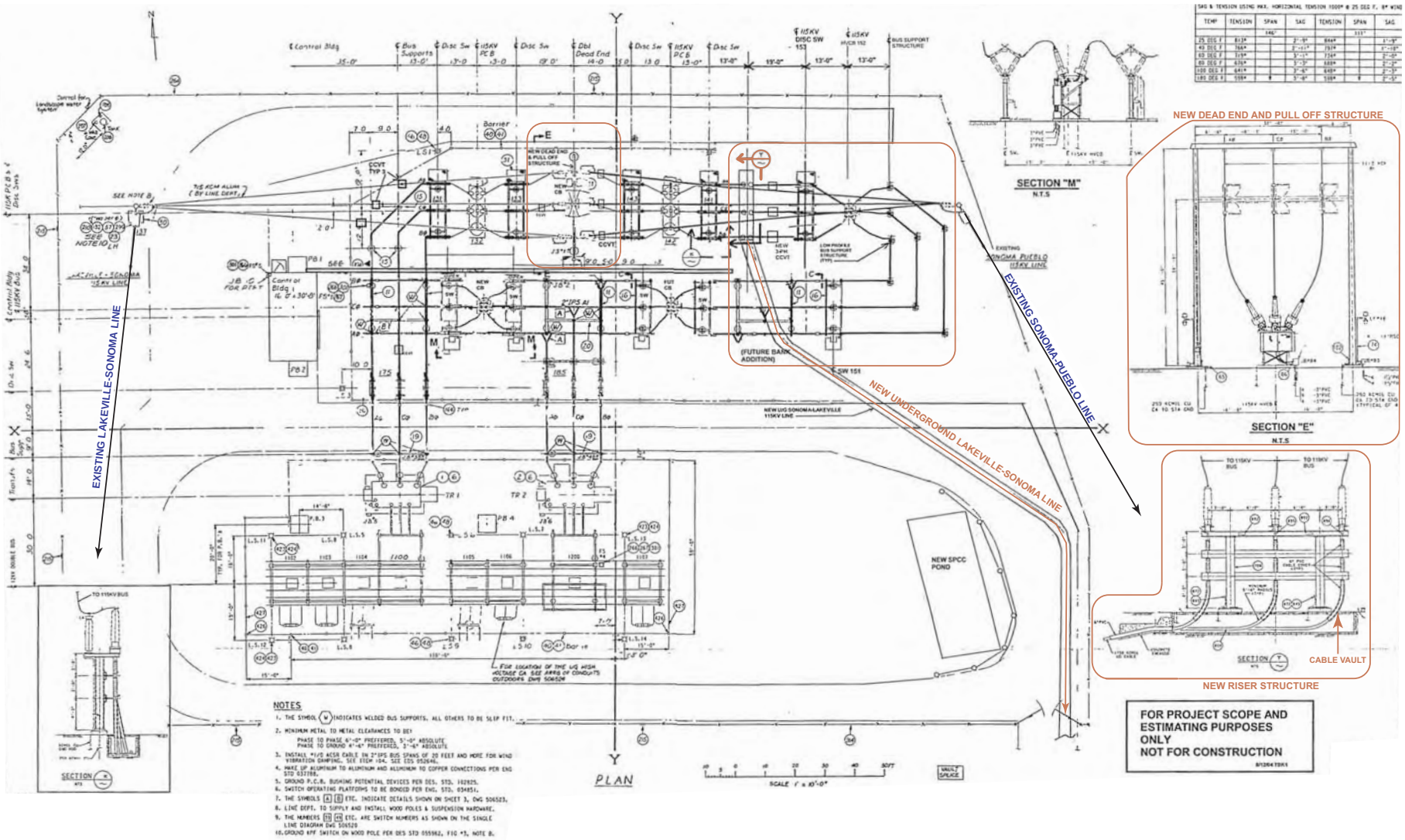
PG&E currently owns right-of-way (ROW) easements along segments 1, 2, and 17, as there is an existing single-circuit line along these segments (**Figure 1-3**). However, the addition of a second 115 kV circuit may require PG&E to adjust easements to account for slight deviations from the existing alignment, or acquire expanded easements as needed to accommodate taller poles depending on the length of spans between poles and CPUC safety requirements or to secure other



This diagram is based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

SOURCE: EDAW (2004)

Figure 1-6
Lakeville Substation Modifications



This diagram is based on preliminary engineering, which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction.

SOURCE: EDAW; PG&E

Figure 1-7

Sonoma Substation Modifications

(revised February 2006 for Final MND)

adjustments to the easements depending on the terms of the affected easements. Along Felder Creek (see **Figure 1-4(c)**), it may necessary from approximately Pole 73 to Pole 87 for individual poles to be set back further from the creek due to engineering issues regarding construction of a double circuit transmission line as well as to avoid impact to riparian habitat and aesthetics. If additional ROW or changes to existing easements is necessary, PG&E ~~will~~ would acquire additional ROW from the appropriate owner either through negotiation or condemnation.

1.8 Construction

This section describes construction methods to be used along the 115 kV transmission line route and at Lakeville and Sonoma Substations.

1.8.1 Transmission Line Construction

Construction of the transmission line would include installation of new tubular steel poles, installation of wood poles, removal of existing wood poles and conductor (transmission line wires), topping of some existing wood poles, installation / removal of safety structures at road crossings, and stringing of new conductor for the 115 kV circuits. The existing 115 kV conductor would be removed and replaced with ~~the same~~ non-specular 477 ACSS conductor type (aluminum with a steel core) to limit reflection of light and visibility. In addition, construction would require the acquisition and preparation of ROW as required for the 115 kV transmission line; establishment of work areas, staging areas, pull and tension sites; and access to pole sites and pull sites along the transmission line route.

1.8.1.1 Line Staging Areas

Prior to transmission line construction, two staging areas of no more than 10 acres each would be prepared to provide space for materials delivery, storage, and preparation, equipment storage, crew parking, and offices prior to installation. These staging areas, which would also be used as helicopter landing areas, would be located at the Lakeville Substation (**Figure 1-4(a)**) and off of Leveroni Road near the Sonoma Substation (**Figure 1-4(d)**).

Once the ~~two large staging areas are~~ eastern staging area is leased by PG&E, the appropriate grading[2], electrical, traffic control, and other permits would be obtained for potential leveling, ingress/egress, drainage, fencing, temporary construction postings, electrical service, and any other pertinent activities; however, PG&E does not expect to require grading of either staging area. If construction activities take place during the winter, PG&E would install a rock surface in the yards where heavy traffic is expected. PG&E would secure the areas with fences and locked gates, and contract security would be provided. The site layouts would be approved by the project's environmental monitor, and work crew activities would follow all PG&E environmental guidelines include applicant proposed mitigation measures delineated below in Section 1.9.4.

[2] Grading is defined as "to level or smooth to a desired or horizontal gradient". Grading for the Proposed Project would be done in accordance with applicable city and/or county regulations.

Additionally, the eastern staging area would be set back at least 50 feet from Sonoma Creek to avoid impacts to riparian habitat.

1.8.1.2 Pull and Tension Sites

In order to replace or install a length of conductor, a temporary pull site is needed at one end and a temporary tension site is needed at the other. The distance between the pull and tension sites would vary, ranging from approximately 0.5 miles to 2.1 miles. Depending on the existing terrain for the activity and whether the site would be a pull or a tension site, these sites generally vary in size though typically a 200- by 200-foot area is sufficient. A gravel pad would be installed over fabric (likely geotextiles comprised of UV stabilized polypropylene slit film) at each site, and sites would be cleaned up and restored to preconstruction condition after construction. Pull sites would require a puller, crew truck, and aerial lift truck, while tension sites would require a tensioner, a crew truck, a reel dolly, an aerial lift, and a truck to move the reel dolly. Removal of the old conductor and replacement of the conductor reel is carried out within the staging area.

1.8.1.3 Access Roads

Construction crews would use existing roads along most of the transmission line corridor to access pole sites; these include paved roads, ranch and vineyard roads, and fire access roads. In areas where existing roads are not available, new access roads would be needed. The different types of access roads and improvements needed are shown on **Figure 1-4(a)** through **Figure 1-4(d)**. They fall into six categories:

1. new permanent road;
2. new temporary road;
3. existing road that would have permanent improvements;
4. existing road that would have temporary improvements, and
5. existing paved road (no improvements needed) (not shown in color on map); and
6. overland access.

New permanent access roads would be approximately 15 feet wide, may be groomed or graded with approximately 4 to 5 inches of rock road base installed and permanently left in place. The rock road base would be compacted with a heavy roller to provide all-weather access. About 0.94 miles of new permanent access roads [see green lines on **Figure 1-4(a)** through **Figure 1-4(d)**] would be constructed (approximately 1.72 acres) within the Lakeville Substation (i.e., between Poles 3, 4, and 5); between Poles 28 and 29, Poles 106 and 107, Poles 108 and 109; off of Felder Road to access Poles 60, 61, and 62, between Pole 60 and 61 traversing cross country to an existing road that accesses Pole 57, near the intersection of Leveroni Road and Arnold Drive to access Pole 88. All new access roads would be gated and locked at fence lines and would have a "No Trespassing" sign posted at their entrance from a public roadway. Note: no new permanent or new temporary (discussed below) access roads would be constructed on the Moon Ranch or ~~Pristkert~~ Pritzker properties.

Temporary access roads would be approximately 15 feet wide, may be groomed or graded with approximately 4 to 5 inches of rock road base installed over a fabric base. The rock and fabric would be removed after the project and the area would be restored. Approximately 1.47 miles of new temporary access roads [see green dashed lines on **Figure 1-4(a)** through **Figure 1-4(d)**] would be cleared (approximately 2.67 acres) and then restored to their previous condition after construction. These temporary access roads would be located off of Pole 15, 43, 47, 48, 50, 51, 55, 56, 57, 58, 63; between Pole 31 and 32, Pole 48 and 50, Pole 51 and 53, Pole 59 and 60; and within the eastern landing zone/staging area.

Some existing unpaved roads would have permanent improvements. These roads would be approximately 15 feet wide, may be groomed or graded with up to 4 to 5 inches of rock road base installed on over the existing road base, depending on conditions and permanently left in place. The rock road base would be compacted with a heavy roller to provide all-weather access. Water bars would be installed at 50-foot intervals (or greater, depending on slope and conditions) where there is an incline of 10 degrees or more. In addition, these roads would be sloped to allow natural run-off. Approximately 6.6 miles of existing road would have permanent improvements [see pink lines on **Figure 1-4(a)** through **Figure 1-4(d)**] (approximately 12.10 acres). These roads are located off of Pole 11; between Pole 11 and Pole 12, off of Adobe Road traversing to Pole 16 then over the project alignment to Pole 26; off of Adobe Road over a number of farms to Poles 29, 40 and 42; in open space providing access between Poles 50 and 57; and along the project alignment between Poles 70 and 87.

Some existing unpaved roads would have temporary improvements. These roads would be approximately 15 feet wide, may be groomed or graded with approximately 4 to 5 inches of rock road base installed over a fabric base. The rock and fabric would be removed after the project and the area would be restored. Approximately 1.33 miles of existing road would have temporary improvements [see pink dashed lines on **Figure 1-4(a)** through **Figure 1-4(d)**] (approximately 2.42 acres). These existing roads that would have temporary improvements would be located by Pull Site 3b, off Poles 27, 29, 44, 64, 65, 66, 67, 78, 103; and between Poles 12 and 13 and 67 and 70.

Some existing dirt road would not receive any improvements and would be used in there current conditions. These areas ~~will~~ would be restored to pre-construction conditions if impacts occur. Approximately .41 miles of existing road would be used for access (approximately .75 acres) [see pink and black dashed lines on **Figure 1-4(c)**]. The existing road that would not receive any improvement would be located off of the transmission line route between Pole 36 and 37 and ending near Pole 40.

Some areas would be accessed overland (i.e., where access route would not receive preparation or grooming). Overland travel would occur on approximately 1.14 miles (approximately 1.66 acres) of gently sloping grassy areas and rangeland without the preparation of a road [see yellow dashed lines on **Figure 1-4(a)** through **Figure 1-4(d)**]. These routes would be approximately 12 feet wide. Overland access would be used to access Poles 33, 34, 36, 37, 38, 39, 40 and 41 which are all located on Moon Ranch; as well as Pole 45.

Additionally, gates would be installed to provide access through existing fences; gate installation and/or replacement would be discussed with property owners in advance.

1.8.1.4 Helicopter Access

It is estimated that ~~H~~helicopter access would be used to install 23~~30~~ poles (Poles 14, 26, 33-39, 41-49, 51, 53, 56, 58~~,59~~ and ~~63~~64~~-66~~) in locations where overland access is not possible or difficult due to topography, vegetation, or to otherwise facilitate the project construction. Smaller helicopters would be used to remove and deliver poles, materials, equipment, concrete, soil, and workers to these pole locations and to other locations where access is difficult or the project schedule requires it. These smaller helicopters would briefly touch down and quickly take off from the landing zones requiring an approximate area of 100 by 100 feet for clearance. The larger helicopters, which would be used to set heavy poles, are not expected to hover or land near any of the pole locations requiring helicopter installation. **Figures 1-4(a)** through **1-4(d)** show temporary helicopter landing zones that would be used by the smaller helicopters to drop off construction equipment and workers and the staging areas at the Lakeville Substation and near Leveroni Road which would be used for helicopter landing zones to pick up and drop off crew and materials, as well as to stage. Note, refueling would be performed at the Petaluma Airport, not a part of this project site. As with other construction sites, landing zones would incorporate standard dust control measures.

1.8.1.5 Vegetation Clearance

Following construction, tree trimming and removal, and clearing of vegetation around transmission poles would be performed by outside contractors and, per contract specifications, would follow proper guidelines [e.g., CPUC's General Order 95, Public Resources Code Sec. 4293 (pertaining to removal of hazardous trees that could fall on the line), PG&E's Transmission Right-of-Way Vegetation Management Program and Transmission Routine Patrol Standard (PG&E 2003), and the International Society of Arboriculture's pruning guidelines and the ANSI A300 Pruning Standards].

Vegetation clearing also would be performed in a manner to meet the following goals:

- prevent spread of the Sudden Oak Death (SOD) pathogen
- retain the low-growing brush as much as possible, but to remove trees that could grow and physically contact the conductor
- maintain a minimum of 15 feet of clearance between vegetation and conductors (i.e., transmission line wire) as required for safety and to minimize tree-related outages
- achieve at least 3-4 years of clearance before the next trim by removing fast growing trees or trim vegetation back farther than the minimum required
- clear flammable fuels (e.g., vegetation) during fire season at least 10 feet in each direction around wood poles as required under Public Resources Code Sec. 4292

1.8.1.6 Pole Removal, Top Removal, and Installation

~~Project construction would involve removal of 118 existing wood poles, topping of 11 wood poles, and installation of 67 new TSPs and 23 new wood poles for a total of 90 poles.~~

Wood Pole Removal

The wood poles that need to be replaced or eliminated would be removed by a line crew, which would access each pole site with a line truck and trailer or a boom truck. Existing wood poles would be loosened from the ground with a hydraulic jack, then removed from their holes using the line truck, helicopter, or boom truck, and transported from the site on the trailer or boom truck. If the hole would not be reused, a backhoe and dump truck would backfill the hole with imported gravel. The top roughly12 inches would be backfilled with soil removed from project construction activities (e.g., pole excavations) and stockpiled at the staging areas. The stockpile would be covered to prevent silt from flowing into nearby drainages or creeks. The surface would be seeded with appropriate revegetation seed mix. Approximately ~~30~~35 poles would require removal by helicopter.

Top Removal

Top removal or “topping” involves the removal of the transmission portion of an existing pole while retaining the height necessary to carry existing distribution lines. The tops of some wood poles need to be removed so they do not interfere with transmission lines that would be suspended by higher poles on either side. These wood poles cannot be removed entirely because they are needed to hold up the lower distribution lines in some areas where the span between transmission poles is too great (and the distribution line would hang too low to the ground without the existing wood pole).

Poles to be topped would be accessed by a pole crew with a line truck and trailer or a boom truck. The line truck or boom truck would be used to hold the top of the pole in place, while a chainsaw would be used to cut the pole. Once cut, the top section would be placed on the trailer or boom truck for removal and disposal. The remaining pole would continue to serve as a distribution pole.

Some poles are difficult to access and would require special techniques. The hardware and insulators would be removed from the top and lowered to the ground with a hoist. Then small sections of the pole would be cut and lowered in the same fashion to the ground. The cut pieces would be carried out by the crew, flown out by helicopter or hauled out on a quad runner if access is available.

Pole Installation

Installation of TSP generally involves these steps: staking the pole location, flagging the work area, installing silt fencing (if required), preparing crane pad (if required), excavating the hole, installing forms, rebar, and anchor bolts, pouring concrete, removing forms, placing gravel around and grooming the base area, installing the new pole, removing old conductor from the wood pole and stringing the new conductor to the TSP, removing the old wood pole, and

transporting excess soil and materials off-site for disposal. Installation of a wood pole involves these steps: staking the pole location, flagging the work area, excavating, installing the pole, backfilling, transferring wire and equipment, removing the old pole and backfilling. The distinction regarding the construction method for pole installation is that TSP poles require a foundation while wood poles are directly buried in the ground.

On average, an approximate 50-foot radius work area around each pole would be required. Some work areas may require the removal of vegetation and installation of silt fencing (e.g., during the wet season). Work areas around transmission poles generally would not require grading or surfacing.

Poles supporting straight spans are directly embedded into the soil (wood only). Wood poles may be embedded to a depth of approximately 7 to 12 feet below grade. All tubular steel poles would have concrete pier foundations approximately 5 to 7 feet in diameter and 15 to 30 feet deep. All angle poles would also have concrete pier foundations, which eliminate the need for wire down guys. This decreases the damage potential to the pole by eliminating the opportunity for contacts with the guys during agriculture and farming operations, and can decrease bird strikes.

Equipment used to drill and excavate holes for both wood and tubular steel poles would include a hole auger, backhoe, dump truck, and crew truck. This equipment would be transported to all the pole locations via existing paved and dirt roads and over land where roads do not exist. A hole auger consists of an auger mounted on a heavy truck chassis or piece of track equipment and would be used to drill holes.

A boom truck consisting of a small crane mounted on a flatbed truck would be used to haul foundation forms, anchor bolts, rebar, and pole structures to the TSP locations. The boom truck would also be used to place foundation forms, anchor bolts, and rebar in place prior to pouring of concrete for the foundation, and also to remove the forms following completion of the foundation.

A concrete truck consisting of a four-wheel drive mixer capable of delivering 10 yards of concrete would be used to deliver and pour concrete for the tubular steel pole foundations. Concrete trucks would not be washed out at pole locations; cleaning pits would be established at various locations throughout the project to minimize time between the concrete pour and truck clean out. These pits would include dike walls and tarping which would allow washed materials to be properly contained and disposed of. The backhoe would be used to load excavated soils and materials into a dump truck for off-site disposal, to place gravel around the TSP foundation after formwork has been removed, and to groom the area immediately surrounding all pole installations.

A crane would be used to place steel poles on the foundations. The line truck is used to place the wood poles in the excavated hole and to remove the old wood pole. Aerial lift trucks are used to install/transfer/remove conductors. Lastly, a crew truck would be used to transport the crew, their hand tools, and other minor materials to and from pole locations; as well as to minimize the number of vehicles accessing each site. **Table 1-4** shows a summary of pole installation and associated disturbance area estimates.

TABLE 1-4
SUMMARY OF TYPICAL POLE INSTALLATION METRICS

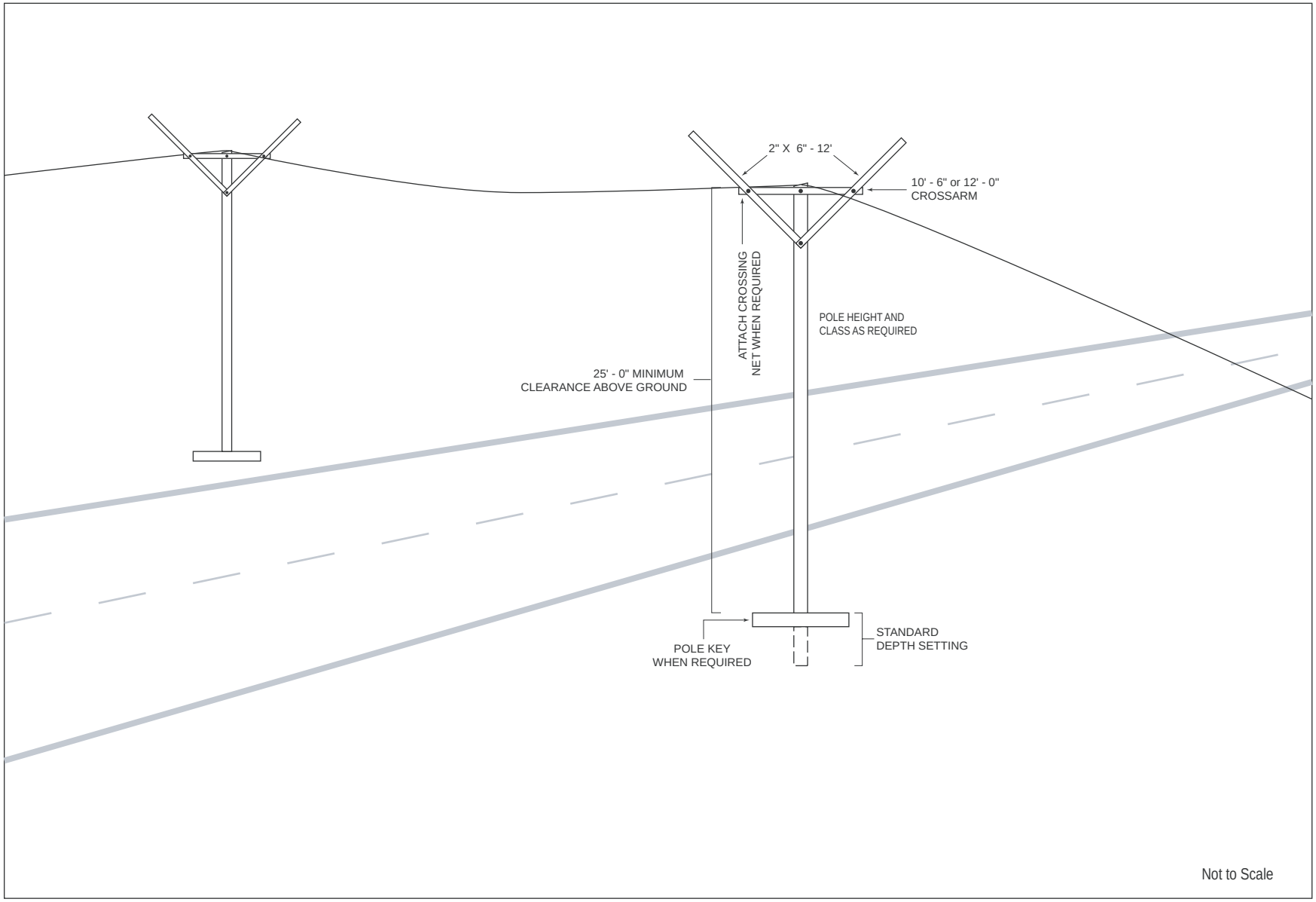
	Double-circuit 115 kV TSP (approximate metrics)
Foundation Diameter	5 to 7 feet
Foundation Depth	15 to 30 feet
Average Work Area around Pole (e.g., for removal, topping, new pole installation)	50-foot radius
Permanent Footprint per Pole	20 sq. feet
Number of Poles in Double-circuit 115 kV Transmission Line	~~90~~ 91
Total Permanent Footprint for 91 ~~90~~ Poles in Double-circuit 115 kV Transmission Line	Approximately 0.~~041~~ 037 acres
Number of Existing Wood Poles that would be Topped (and carry distribution line)	11
Total Permanent Footprint for 11 Topped Poles	Approximately 0.0050 acres

1.8.1.7 Helicopter Pole Installation

Installation of approximately ~~30~~23 TSPs would require the use of a helicopter and special construction techniques. Typically, an auger would be walked into the site by the pole crew, accompanied by the environmental monitor. Some locations would require transporting e~~E~~xcavated soils, foundation forms, concrete, TSPs, ~~and~~ or miscellaneous tools and materials ~~would all be transported in or out~~ by helicopter. The crew would drive on existing roads to a nearby location, park, and walk the remainder of the way to some sites. There may also be helicopter transportation of some construction workers to remote pole sites.

1.8.1.8 Conductor Installation

All of the old conductors would be removed and new conductors installed. Prior to stringing conductors, temporary clearance structures would be installed at 11 road crossings and other locations where the new conductors could otherwise accidentally come into contact with electrical or communication facilities, other power lines, and/or vehicular traffic during installation. The temporary structures would be installed across Adobe Road, the Lakeville Substation access, Felder Road, Arnold Road, Leveroni Road (3), Harris Road, Palmer Avenue, David Street, and Birch Road. PG&E and/or its contractors would provide traffic control where necessary during installation and removal of these temporary clearance structures. These structures consist of a wood pole with a frame at the top that resembles a “Y”, which is placed on each side of the road or power line being crossed (see **Figure 1-8**). Foundations and grading are not required. Installation and removal of clearance structures is similar to that of wood poles, though less excavation is required. These structures prevent the conductor from being lowered or falling into traffic or onto another power line. Where distribution lines are involved, netting is installed between the two Y-frame structures and guy wires are installed at each structure. After the new conductor is installed, the temporary structures ~~will~~ would be removed.



SOURCE: EDAW (2004)

Figure 1-8
Y-Frame Crossing Structure

Replacement of Existing Conductor

In order to replace an existing conductor with a new conductor, the existing conductor would first be detached from its support structure and temporarily lifted. Rollers would then be installed at the conductor's attachment point, and the conductor would be placed onto the rollers. Installation of rollers and detachment of the existing conductor would typically require one aerial lift.

Once rollers are in place for the entire section of conductor being replaced, the existing conductor would be pulled out of place. A cable would be attached to the existing conductor, which would then be used to pull the new conductor into place. Removal of the existing conductor and installation of the new conductor would require the establishment of pull and tension sites. Equipment at the pull sites would pull the conductor onto a reel, where it would be collected for salvage; equipment at the tension site would feed new conductor along the rollers previously installed at each structure, while also maintaining tension in the line so that it does not sag to the ground. Once the new conductor is in place, rollers would be removed and the new conductor would be attached to the structures.

Installation of New Conductor

Prior to the installation of a new conductor, rollers would be installed at vacant positions on new structures using one helicopter lift. The helicopter would then be used to install a pulling (sock) line in the rollers. Once installed, the sock line would be used to pull the new conductor into place. When the conductor has been pulled through the rollers, an aerial lift would typically be used to remove the rollers and attach the conductor to the structures.

1.8.1.9 Cleanup and Post-Construction Restoration

Crews would be required to maintain clean work areas as they proceed along the line and would be instructed that no debris would be left behind at any stage of the project. The cleanup and restoration process would include reseeding disturbed areas to restore the landscape. Where needed, a spring-tooth machine with seed spreader would be used to decompact soil and reseed equipment disturbance areas as approved by property owners. In some cases, and again based on preference of property owners, the land may be left alone for nature to take its course.

Once the cleanup has been completed, the work areas would be inspected on foot with the specific property owners to make sure that their concerns have been addressed. When all construction is completed, there would be a final walk down of the work areas with the crews and the biological monitor to ensure that proper cleanup and landscape restoration has been carried out. The final walk down would include access roads, pull sites, landing zones, staging areas, and pole locations.

1.8.1.10 Underground Construction

Undergrounding the new second 115 kV circuit transmission line between Poles 108a and the Sonoma Substation includes:

- Existing distribution, transmission and communication lines within this section (poles 109 to 119) would remain unchanged.
- The installation of 3,060 feet of single-circuit 115 kV transmission line underground along Leveroni Road between 5th Street West and the Sonoma Substation. The underground trench would be approximately 2 feet wide by 5 feet deep.
- Dry-bore horizontal directional drilling under Fryer Creek (near pole 115) at a depth of approximately 5 feet below the bottom of the existing concrete channel/culvert, with temporary access pits located outside the concrete channel of the creek
- The total volume of soil to be excavated along this section is estimated to be roughly 1,133 cubic yards.
- The 115 kV cables would be installed in concrete-encased conduit ductbank.
- The installation of two terminal cable vaults: 1) one within Leveroni Road at 5th Street West within 200 feet of the riser structure at pole 108a, and 2) the other in the Sonoma Substation (*See* **Figure 1-4d**).
- Thermal backfill (a mixture of sand, concrete, and fly ash poured around the conduit to carry heat away from the conductor) would be placed in trenches.
- For installation of the underground trench 95 percent would be within the public right-of-way (ROW). New ROW would be required for 150 feet from the western-most riser (pole 108a).
- Street light loop repairs would be required[3]

Construction activities required for this installation include:

- Estimated 3-month construction schedule (two months to install underground conduits, vaults and risers; one month to install cable, splice and tie in at risers).
- Traffic controls in place for three months (one lane service for all three months during construction).
- Dust control.
- Excavated dirt would be hauled from the site as removed.
- Road would be covered and released for traffic each night.
- The expected crew size would vary between 6 to 15 people (during excavation and infrastructure installation and five people during final termination installation.

1.8.2 Substation Modifications and Construction

Construction at the Lakeville and Sonoma Substations would be performed completely on PG&E property. Materials and equipment would be stored on PG&E property. Each substation work crew would use a mobile office and tool van, both of which would be located within the existing substation yards. Traffic control would be provided if necessary but is not anticipated.

1.8.3 Construction Workforce and Equipment

Project construction would require an excavation crew, a light duty helicopter crew, a heavy duty helicopter crew, a pole crew, line crew, substation crew, and environmental monitor. Including

[3] PG&E has indicated that when trenching to install conduit, it is easier and less expensive to cut through existing electrical loops for traffic lights and street lighting, install the conduit, and then repair them afterwards.

both PG&E and contracted construction personnel, the total number of construction crew members for the proposed project is roughly estimated to require 70 to 80 crew members. It is expected that construction crews would work concurrently; however, which crews depends upon the timing of project approval and other factors. PG&E expects that the underground and substation crews would be working independently at the same time that the pole line and pole crew would be working elsewhere. The following provides a more detailed description of these various construction crews.

Pole Line Crew

Wood pole replacement

The proposed wood pole work along Leveroni requires taking the transmission and distribution lines out of service and therefore would need to be timed accordingly. A crew of approximately six people would typically be required to replace one wood pole. Replacement consists of installation, transfer of wire and removal of old wood poles. The crew would generally work Monday through Thursday framing and preparing for the replacement. On Friday, three additional crews would be brought on board to replace four poles in a given day. Therefore, PG&E and/or its contractors would typically work with approximately six people Monday through Thursday and approximately 24 people on Friday. This is expected to occur for approximately four weeks in a row.

Conductor installation

A line crew of approximately 16 people would install conductor over an approximate six month period. A three member helicopter crew would be used to install the new circuit wire and would require approximately 10 days (80 hours). There would also be approximately 15 days (120 hours) where the helicopter would be used to transport people and materials for the conductor installation.

Pole Crew

Tubular steel pole foundation work

Pole crews would typically be made up of 6 members. One pole crew ~~will~~ would install a typical foundation in about two days. There are several foundations that ~~will~~ would require extra work to install due to accessibility issues. These more difficult foundations would typically be worked by a separate 6-person crew. The difficult poles ~~will~~ would also require the support of a 2 person helicopter crew. This foundation work would generally take place over a 5-6 month period.

Tubular steel pole installation work

Some structures can be installed without a clearance and ~~will~~ would be set with a crane (typically a 6-member tower crew and 3-member contract crane crew working about ~~1 ½-2 weeks~~ 4 to 5 hours per structure). The two underground riser structures ~~will~~ would be installed with a crane to support the summer underground installation (6-member tower crew working with a 6-member

line crew and a 3-member contract crane crew working for about two days). For the remaining structures, one pole crew ~~will~~ would typically install one structure per day. There would typically be a 6-member line crew on site to transfer the wire from the old wood pole to the new steel structure and then remove the old wood pole. A contract crane or sky crane would typically be used to set these poles. A 3-member crane crew would typically be used to set some of the structures and an 8-member sky crane crew would be used to set others. The typical total crew size for these activities would be 15 to 20 persons.

Excavation Crew

There would typically be an excavation contractor building the needed storage areas, installing storm water prevention measures, and constructing the access roads and pull sites working through approximately five months. The contractor would typically be running approximately 6 people for this activity. This same contractor would perform the cleanup after all work is complete.

Underground Installation Crew

This crew would need about 2 months for installation of the infrastructure (working approximately 15 people), 2 weeks to pull the cable (working approximately 10 people) and three weeks for the final terminations (working approximately 5 people). Under this schedule, the cable installation and terminations would overlap approximately one week. The overall project would need approximately 3 months for the installation from start to completion.

Substation Crew

There ~~will~~ would be work at both the Lakeville and Sonoma Substations. The grading work at the Lakeville Substation would typically be completed by a contractor with an 8-member crew; no grading work would need to be performed at the Sonoma Substation. Foundation work would typically be done by a contractor with a 6-member crew at both locations. There would typically be a 9-member station crew working at each location.

Table 1-5 describes the roles of each crew and **Table 1-6** shows equipment expected to be used during project construction.

1.8.4 Construction Schedule

Table 1-7 provides a summary of PG&E's proposed construction schedule for the Lakeville-Sonoma 115 kV Transmission Line Project. The construction period for the transmission line would be expected to last approximately 19 months, while construction at each substation would be expected to take approximately 14 months. Weekend work would be required since the electrical capacity of the area is generally lower on weekends; therefore, there would be less risk associated with clearances to perform the transmission line work.

TABLE 1-5
CREWS EXPECTED TO BE USED DURING PROJECT CONSTRUCTION

Crew	Roles	Average Number of Workers
Excavation	The excavation crew would be a contract crew to PG&E responsible for development of the staging areas, access roads, and pull sites. In addition, the excavation crew would perform construction clean up activities.	6
Underground Installation	The underground installation crew (either a PG&E or contract crew) responsible for trenching, infrastructure installation, cable pulling and splicing, and paving.	6-15
Light-Duty Helicopter	The light-duty helicopter crew would be a contract crew to PG&E responsible for FAA permits, the helicopter (including maintenance and refueling), transporting work crews and materials to pole sites, and removal and installation of the sock line, as needed.	3
Heavy-Duty Helicopter	The heavy-duty helicopter crew would be a contract crew to PG&E responsible for FAA permits, the helicopter (including maintenance and refueling), transporting new poles to pole sites, and installation of poles using sky crane, as needed.	3
Pole	The pole crew (either a PG&E or contract crew) would be responsible for the excavation contractor, the heavy-duty helicopter contractor, the light-duty helicopter contractor, the development of pole-related staging areas, installation of steel pole foundations, and installation of transmission line steel poles.	6-15
Line	The line crew (either a PG&E or contract crew) would be responsible for managing an excavation crew and a light-duty helicopter crew, development of line-related staging areas, establishment of pull and tension sites, installation of rollers and crossbeams, contract removal/installation of the sock line, replacement of wood poles, and installation of new conductor.	16
Substation	The substation crew (either a PG&E or contract crew) would be responsible for all substation site activity, including installation of on-site telecommunications.	9
Environmental and Biological Monitors	The environmental monitor would be a contractor to PG&E and be responsible for inspection of all project construction activity, including inspection of work sites prior to the start of construction activity, monitoring of activities and cleanup, preparing and submitting CPUC compliance reports, and otherwise ensuring compliance with the CPUC Permit to Construct. If warranted, a qualified biological monitor would be utilized in areas with sensitive biological resources.	Varies depending on the number of crews deployed

1.9 Operation and Maintenance

1.9.1 General System Monitoring and Control

Substation and transmission line monitoring and control devices would be installed as part of the new circuit breakers (three at Sonoma Substation and 1 at the Lakeville Substation) per PG&E Design Standards and connected to the existing telecommunication and protection schemes at the substations. The transmission systems at these two substations are monitored 24 hours a day, 7 days a week by System Operators at the Fulton Substation.

1.9.2 Facility Inspection

Regular inspection of transmission lines, instrumentation, and control and support systems is critical for safe, efficient, and economical operation of electric transmission facilities. Early

TABLE 1-6
EQUIPMENT EXPECTED TO BE USED DURING PROJECT CONSTRUCTION

Type of Equipment	Use
• Aerial Lifts	• Remove old conductor and install new
• Backhoe	• Excavate foundations, spoil removal, backfill
• Boom Truck	• Erect structures, lift and transport heavy construction items
• Concrete Mixer Truck	• Haul concrete, placement of duct bank concrete and FTB
• Crane	• Erect structures, load cable reels, lift cable up riser pole, unload and set splice vaults
• Crew-cab Truck/Pick-ups	
• Dump Truck	• Transport personnel, tools, removal of trenching spoils and materials
• Equipment/Tool Vans	• Haul material
• Grooming/Grading Equipment:	• Tool storage
– dozer	• Road construction (staging, pull sites):
– water truck	– move/compact soils
– grader	– compaction and dust control
– rock transport	– to properly pitch road for run-off
– roller	– deliver road base for access roads, staging areas and pull sites
– paving equipment	– road, surface compaction, resurfacing of streets
• Helicopters (light and heavy duty)	• Erect poles, install sock line, haul materials, equipment, and people
• Hole Auger/Truck Auger	• Excavate holes
• Hydraulic Jack	• Remove wood poles
• Line Truck and Trailer	• Haul conductor, poles, equipment, materials, and people, and to install pole/conductor
	• Store material/tools
• Materials Storage Units	• Supervision and clerical office
• Mobile Offices	• Install conductor
• Puller, Reel Dolly	• Install and move conductor
• Tensioner	• Install conductor
• Splice Trailer or Van	• Splicing equipment, tools, work bench
• Baker Tank	• De-watering
• Jack and Bore equipment	• Dry-boring under concrete channel/culvert of Fryer Creek
• Excavator track hoe	• Trenching, splice vault excavations, bore pits

TABLE 1-7
PROPOSED PROJECT CONSTRUCTION SCHEDULE

Permit To Construct decision adopted and effective	No later than March 1, 2006
Acquisition of required permits	November 2005 – April 2007
Right-of-way / property acquisition	January 2006 – November 2006
Final engineering completed	November 2005 – April 1, 2006
Construction begins	April 1, 2006
Transmission line construction	April 1, 2006 – May 1, 2007
Substation construction	August 1, 2006 – May 1, 2007
Project operational	May 1, 2007
Clean up	April 1, 2007 – June 30, 2007

identification of items needing maintenance, repair, or replacement would ensure continued safe operation of the project and continued reliable service to the Napa–Sonoma area. PG&E proposes to continue to use their "Overhead Line Inspection Guideline", which is currently implemented for the existing Lakeville-Sonoma 115 kV Transmission line, for the inspection process for this project (PG&E 1998).

The process involves three types of inspections: aerial inspection, ground inspection, and climbing. The frequency of inspection would vary depending on factors such as the age of the system, pole type, vegetation conditions, and other factors. For this project, PG&E "troublemen" would inspect all structures from the ground annually for corrosion, misalignment, deterioration, foundation failures and signs of vandalism. Ground inspection would occur on selected lines to check the condition of hardware, insulators, and conductors. Inspection would include checking conductors and fixtures for corrosion, breaks, broken insulators, and failing splices. In instances where a disturbance is detected by the relays, the troublemen would be dispatched to determine the issues. Annually or bi-annually, the troublemen would climb up the poles to check the insulators. The first climbing steps or pegs are located approximately 10 to 12 feet above the ground to deter unauthorized structure access from the ground.

PG&E proposes to conduct inspections by driving to the poles in a pick-up truck where feasible. Troublemen would use an All-Terrain Vehicle (ATV) or go by foot where needed to minimize surface disturbance and in certain areas where access is difficult. Aerial inspection using helicopters may be conducted annually using infrared technology. Any specific access requirements that may result from ROW negotiations with property owners would be documented and provided to the troublemen with instructions to comply with these access requirements during inspection and maintenance.

1.9.3 Maintenance Procedures

Maintenance of the transmission line would occur on an as-needed basis, when the troublemen discover something needing repair or in response to an emergency situation. The tubular steel poles used for this project generally require less maintenance than wood poles. Specific access requirements that may result from ROW negotiations with property owners would be documented and provided to the transmission line troublemen with instructions to comply with these access requirements during inspection and maintenance.

During inspections, PG&E troublemen would also document vegetation conditions. Where needed, vegetation inspections may be conducted more frequently. To maintain appropriate clearance under the transmission line, vegetation removal would be performed on a regular basis.

Maintenance at the substations is not expected to be much different with the equipment additions. Currently, maintenance on the equipment is performed as needed (generally once every 6-7 years). Addition of the new transmission line and substation modifications is not expected to result in the need for any additional new employees for operation and/or maintenance.

Maintenance of the underground segment including inspection of the two cable vaults would be conducted on an as-needed basis.

1.9.4 Applicant's Proposed Mitigation Measures

The following summarizes mitigation measures proposed by PG&E within their PEA that are incorporated as part of the Proposed Project:

- An ongoing environmental education program for construction crews would be conducted before beginning the site work and during construction activities. Sessions would include information about the Federal and State Endangered Species Acts, the consequences of noncompliance with these acts, identification of special-status species and wetland habitats (including waterways), and review of mitigation requirement.

- Vehicles would be restricted to established roadways and identified access routes.

- A biological monitor would be on site during any construction activity near sensitive habitat to ensure implementation of, and compliance with, mitigation measures. The monitor would have the authority to stop activities and determine alternative work practices in consultation with construction personnel, if construction activities are likely to impact special-status species or other sensitive biological resources.

- If special-status species are located prior to or during work activities, construction personnel would contact the biological monitor. If the monitor determines that project activities may adversely affect the species, the monitor would consult with the United States Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and/or California Department of Fish and Game (DFG) regarding appropriate avoidance and mitigation measures.

- Photo documentation of preconstruction habitat conditions would occur at all construction locations within sensitive habitat prior to the start of work, as well as immediately after construction activities.

- Trash, dumping, firearms, open fires, hunting, and pets would be prohibited in the project area.

1.10 Electric and Magnetic Fields Summary

1.10.1 Electric and Magnetic Fields

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from transmission lines, this document provides information regarding EMF associated with electric utility facilities and the potential effects of the Proposed Project related to public health and safety. Potential health effects from exposure to ***electric fields*** from transmission lines (effect produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that

surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc. Therefore, the majority of the following information related to EMF focuses primarily on exposure to ***magnetic fields*** (invisible fields created by moving charges) from transmission lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because [1] there is no agreement among scientists that EMF does create a potential health risk, and [2] there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decision makers. Additional information on electric and magnetic fields generated by transmission lines is presented in **Appendix B**.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. Most recently the International Agency for Research on Cancer (IARC) and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen.

Presently, there are no applicable regulations related to EMF levels from power lines. However, the California Public Utilities Commission has implemented a decision (D.93-11-013) requiring utilities to incorporate “low-cost” or “no-cost” measures for managing EMF from power lines up to approximately 4 percent of total project cost. Using the 4 percent benchmark, PG&E has incorporated low-cost and no-cost measures to reduce magnetic field levels along the transmission corridor.

1.10.2 EMF and the Proposed Project

PG&E has prepared a Field Management Plan that provides EMF information regarding the Proposed Project. The Field Management Plan includes a brief introduction to EMF characteristics, scientific research related to possible health effects, and public policy activities. In addition, the Field Management Plan identifies PG&E’s guidelines and general methods for managing EMF for new electrical facilities.

PG&E’s Field Management Plan for the Proposed Project provides modeling of the magnetic field levels for both the existing power lines and the proposed lines and substations associated with the project. As part of the Proposed Project, PG&E “…will incorporate “no cost” and “low cost” magnetic field reduction steps [for] proposed transmission and substation facilities...” Potential measures to reduce magnetic field exposure “…will be consistent with PG&E’s Transmission and Substation EMF Design Guidelines.” The design guidelines provide for all of the following potential proactive EMF reduction measures:

- Increase distance from conductors and equipment;
- Reduce conductor spacing;
- Minimize current; and
- Optimize phase configuration.

With the exception of the final 3,060 feet at the Sonoma Substation end of the transmission line, PG&E proposes to use cross phasing circuits in a double circuit transmission line as a field cancellation technique, where the phases from one circuit in a multi-circuit line are used to reduce the fields from another circuit, thereby reducing the total magnetic field strength. In addition, because EMF levels decrease as the distance from the conductors increases, as part of the project, the height of the conductors would be raised by ten feet adjacent to residential areas along Felder and Leveroni Roads as a "low-cost" field reduction measure. **Figure 1-9** shows EMF levels for the overhead transmission line with and without EMF reduction measures.

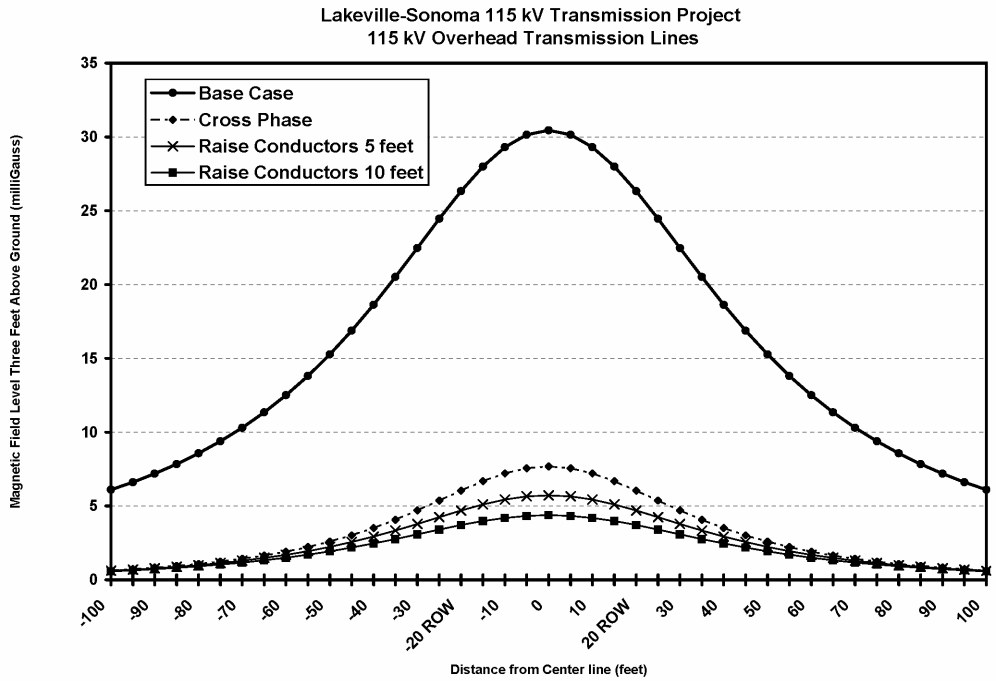
For the underground single 115 kV circuit section between poles 108 and 119, PG&E's analysis of EMF levels (*See* Appendix B) from the underground circuit at the proposed depth of 5 feet indicated that application of several "no cost" and "low cost" magnetic field reduction measures would be consistent with PG&E's Transmission and Substation EMF Design Guidelines. For this underground portion, PG&E would implement the following measures as part of the project:

1. ***Triangular Configuration -*** The proposed duct bank would include three solid dielectric cables, with each cable installed in separate conduits and carrying different phases of the three-phase circuit. In lieu of arranging the three cables in the same horizontal or vertical plane, PG&E would place the three cables in a triangular distribution within the duct bank, where one cable would be located above or below the other two cables. This no-cost measure could reduce field levels by as much as 35 percent[4].

2. ***Strategic Line Placement -*** EMF levels decrease as the distance from the conductors increases. One method of achieving this for the underground duct bank would be to strategically place the conductors in the right of way to maximize the distance to residences. While consideration must be given to existing underground utility locations, PG&E has proposed to strategically locate the duct bank as a no-cost measure to minimize EMF exposure.

3. ***Lowering Depth of the Trench -*** Lowering the trench depth of the underground conductors has the same effect on EMF levels as increasing the height of an overhead system. PG&E evaluated the effect on EMF levels considering lowering the trench depth by 5 feet. According to PG&E, the additional 5 foot depth of the trench would result in a 17.5 percent reduction in magnetic field. With the 5 foot increase in depth the total amount of material excavated would be approximately 2,266 cubic yards of dirt.

[4] This 35 percent figure includes the effect of lowering the trench depth by 5 additional feet.



PG&E's Lakeville-Sonoma 115 kV Transmission Line Project. 204202

SOURCES: PG&E (2004); PG&E (2005)

Figure 1-9

Estimated EMF Levels with and without EMF Reduction Measures

1.11 Required Permits and Approvals

The California Public Utilities Commission (CPUC) is the lead agency for the Lakeville–Sonoma 115 kV Transmission Line Project under the California Environmental Quality Act (CEQA). PG&E would also obtain permits, approvals, and licenses as needed from, and would participate in reviews and consultations as needed with, federal, state, and local agencies as shown in **Table 1-8**.

TABLE 1-8
SUMMARY OF PERMIT REQUIREMENTS

Agency	Permits	Jurisdiction/Purpose
Federal Agencies		
U.S. Army Corps of Engineers	Nationwide or Individual Permit (Section 404 of the Clean Water Act), if required.	Waters of the United States, including wetlands
U.S. Fish and Wildlife Service (USFWS)	Section 7 Consultation (through U.S. Army Corps of Engineers' review process), if required.	Consultation on federally-listed species; incidental take authorization (if required)
Federal Aviation Administration (FAA)	Lift Plan Permit	Helicopter Construction Plans
State Agencies		
California Public Utilities Commission (CPUC)	Permit to Construct	Overall project approval and CEQA review
California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region	National Pollutant Discharge Elimination System—General Construction Storm Water Permit	Permit applies to all construction projects that disturb more than 5 acres of land
	Section 401 Water Quality Certification (or waiver thereof)	Requests RWQCB's certification that the project is consistent with state water quality standards
	Storm Water Pollution Prevention Plan	
Caltrans / Sonoma County	Road Closures	Any road closure during construction, if required
California Department of Fish and Game (CDFG)	Endangered Species Consultation	Consultation on State-listed species; incidental take authorization (if required)
	Section 1600 Streambed Alteration Agreement	Alteration of any streambed or drainage channel (if required)
California Department of Transportation	Temporary Heliport Permits	To permit temporary helicopter operations during construction.
State Historic Preservation Officer (SHPO)	Section 106 of the NHPA Review (through U.S. Army Corps of Engineers' review process)	Cultural Resource Management Plan (if required)
Bay Area Air Quality Management District	Authority to Construct/Permit to Operate	All grading and construction activities, air emission reduction and monitoring
Local Agencies		
County of Sonoma and/or City of Sonoma	Road Encroachment Permit	Permit to install 115 kV facilities in Frates and Leveroni Road right-of-way
	Grading Permit	Access road on Felder Property
	Building Permit	Battery room in Sonoma Substation
~~Sonoma County Permit and Resource Management Department~~	~~Cultural resources consultation (through CEQA review process)~~	~~Cultural resources management plan (if required)~~
Sonoma County Transportation and Public Works Department	Traffic Control Plan	Plan to manage construction vehicles and equipment deliveries to and from the Adobe Road staging area.

References – Project Description

California Independent System Operator (CAISO), 2004. *Approval of the Lakeville-Sonoma 115 kV Transmission Line Project*, June 18, 2004.

Pacific Gas and Electric Company (PG&E), 2005. *Amendment to the Application of Pacific Gas and Electric Company, a California corporation, for a Permit to Construct the Lakeville-Sonoma 115 kV Transmission Line Project Pursuant to General Order 31-D, Application No. 04-11-011*, April 12, 2005.

Pacific Gas and Electric Company (PG&E), 2005. *Supplement to the Proponent's Environmental Assessment Addressing Minor Revision to Project Plans: Pole Locations Adjustments Within and Adjacent to Sonoma County Agricultural Preservation and Open Space District*, April 12, 2005.

Pacific Gas and Electric Company (PG&E), 2004. *Application of Pacific Gas and Electric Company, a California Corporation, for a Permit to Construct the Lakeville-Sonoma 115 kV Transmission Line Project Pursuant to General Order 31-D*, November 17, 2004.

Pacific Gas and Electric Company (PG&E), 2004. *Proponent's Environmental Assessment, Lakeville-Sonoma 115 kV Transmission Line Project*, November 2004. *Prepared by EDAW.*

SECTION 2
Environmental Checklist and Discussion

1. Project Title:	PG&E's Lakeville-Sonoma 115 kV Transmission Line Project (Application No. 04-11-011)
2. Lead Agency Name and Address:	California Public Utilities Commission Energy Division 505 Van Ness Avenue, 4th Floor San Francisco, CA 94102-3298
3. Contact Person and Phone Number:	Dorris Lam (415) 703-5284
4. Project Location:	Southern Sonoma County to the east of the City of Petaluma to the City of Sonoma, California.
5. Project Sponsor's Name and Address:	Pacific Gas and Electric Company 77 Beale Street, P.O. Box 77000 San Francisco, CA 94177-0001
6. General Plan Designation:	Public/Quasi Public (County), Land Extensive Agriculture (County), Land Intensive Agriculture (County), Rural Residential (County), Limited Commercial (County), Gateway Commercial (City)
7. Zoning:	Public Facilities (County), Land Extensive Agriculture (County), Land Intensive Agriculture (County), Agriculture and Residential (County), Rural Residential (County), Neighborhood Commercial (County), and Gateway Commercial (City)

8. Description of Project:

The Pacific Gas and Electric Company (PG&E), in its California Public Utilities Commission (CPUC) application (A.04-11-011), seeks a Permit to Construct (PTC) approximately 7.23 miles

of 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to General Order (GO) 131-D. PG&E currently owns a single-circuit 115 kV electric transmission system in the Petaluma–Napa–Sonoma area of the San Francisco Bay Area Region. To address low voltage and overloading problems in the area, PG&E proposes to install a second 115 kV transmission circuit onto its existing single-circuit 115 kV transmission line route between Lakeville Substation (at the eastern edge of the City of Petaluma) and Sonoma Substation (at the southern edge of the City of Sonoma). The second 115kV transmission line would be installed on a rebuilt version of PG&E's existing single-circuit 115 kV transmission line, thus co-locating the two circuits on a single set of poles. The final 3,060-foot length of the new circuit between approximately Fifth Street West and the Sonoma Substation would be installed underground. The proposed project would also include modifications to both the Lakeville and Sonoma Substations.

9. Surrounding Land Uses and Setting:

The approximately 7.23-mile transmission line is located aboveground in southern Sonoma County, California, and primarily follows established roads and open space between the cities of Petaluma and Sonoma. The land uses traversed by the transmission line are primarily characterized as open space; however, potions of the transmission line traverse rural and urban thoroughfares.

10. Other public agencies whose approval is required:

As a result of the Proposed Project, construction of an approximately 7.23 miles of 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations and future operations of the transmission line by PG&E, the following permits and approvals would be required:

- U.S. Army Corps of Engineers: Section 404 Permit
- U.S. Fish and Wildlife Service: Section 7 Consultation
- Federal Aviation Administration: Lift Plan Permit
- California Regional Water Quality Control Board, San Francisco Bay Region: National Pollutant Discharge Elimination System—General Construction Storm Water Permit and Section 401 Water Quality Certification (or waiver thereof)
- Caltrans/Sonoma County: Road Closures
- California Department of Fish and Game: Section 1600 Streambed Alteration Agreement and Endangered Species Act Consultation
- California Department of Transportation, Temporary Heliport Permits
- State Historic Preservation Officer: Section 106 Review

- Bay Area Air Quality Management District: Authority to Construct/Permit to Operate
- Sonoma County and/or Sonoma City: Road Encroachment Permit, Grading Permit, Building Permit
- Sonoma County Transportation and Public Works Department: Traffic Control Plan
- ~~Sonoma County Permit and Resource Management Department: Cultural Resources Consultation~~

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that would be potentially significant without mitigation incorporated.

☒ Aesthetics	☒ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology / Soils
☒ Hazards & Hazardous Materials	☐ Hydrology / Water Quality	~~☒~~☐ Land Use / Planning
☐ Mineral Resources	☒ Noise	☐ Population / Housing
☒ Public Services	☒ Recreation	☒ Transportation / Traffic
☒ Utilities / Service Systems	☒ Mandatory Findings of Significance	

Evaluation of Environmental Impacts

1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one

or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less-than-significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures, which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significant.

2.1 Land Use and Planning *(see Section 2.9 for Aesthetics)*

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
1.	**LAND USE AND PLANNING — Would the project:**				
a)	Physically divide an established community?	☐	☐	☒	☐
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	~~☒~~ ☐	~~☐~~ ☒	☐
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

2.1.1 Setting

Introduction

The Lakeville Substation and the majority of the proposed transmission line route are within unincorporated Sonoma County. The Sonoma Substation is within the City of Sonoma's jurisdiction. In addition, a portion of the transmission line is located within or overhanging Leveroni Road, a City of Sonoma street right-of-way.

Existing Land Uses

Regional

Sonoma County is located approximately 40 miles north of San Francisco and encompasses over one million acres of land and water. Open space and agricultural lands account for a great majority of Sonoma County acreage. As noted in **Table 2.1-1**, there are a wide range of land uses in Sonoma County; however, it is most well known for its agriculture and vineyards. Most of the transmission line route travels across the coastal hills of Sonoma County.

The eastern portion of the proposed transmission line route and the Sonoma Substation are within the city of Sonoma, a small historic community that encompasses approximately 2.2 square miles. Much of the land in Sonoma is used for residential purposes. Residential uses account for about 50 percent of all land in both the city and sphere of influence[1]. Only 125 acres of land in the city and sphere of influence is vacant. The vast majority of residences in the City of Sonoma are located in the downtown core (north of Leveroni Road).

Local

Table 2.1-2 provides a summary of existing land uses in the vicinity of the Lakeville and Sonoma Substations and of parcels through which the transmission line would cross.

[1] The sphere of influence is the probable ultimate and physical boundaries and service area of the City as determined by the Sonoma County Local Agency Formation Commission.

TABLE 2.1-1
LAND USE

Type of Use	% of Total
Commercial & Industrial	4.4
Residential	21.7
Agricultural [a]	65.0
Recreational	0.6
Government	7.0
Other	1.3

[a] Includes active and inactive agricultural lands, agricultural preserves, and open space contracts.

SOURCE: PG&E PEA (2004)

Lakeville Substation

The Lakeville Substation parcel is an approximately 5-acre site located to the east and north of the Adobe Creek Golf Course, to the west of agricultural land, and to the south of open space. Public access to the Substation is not allowed for security and public safety purposes.

Segment 1: 4.64 Miles

The terrain crossed by Segment 1 is rural, consisting mainly of the coastal hills of the Sonoma Mountains. Segment 1 traverses agriculture (vineyard) and open space land uses (see **Figure 2.1-1** and **Table 2.1-2**). Vineyards are at the beginning and at the end of the segment located between mileposts 0.4 – 1.5 and 4.2 – 4.6, respectively. Adobe Road is paralleled by the transmission line for approximately 0.3 miles. As noted on **Table 2.1-2**, the transmission line would cross rural residential parcels. The nearest residential structure to the transmission line is located immediately to the south of milepost 0.7. Segment 1 would be located within the existing PG&E right-of-way except for Poles 7 through 12, which in order to avoid an existing transmission gas pipeline, would be located outside of the existing PG&E right-of-way.

Segment 2: 0.85 Miles

Segment 2 is located on east-facing, sloping vineyard land. Segment 2 crosses agricultural and rural residential land uses. This segment is located west of Arnold Drive in a vineyard that is on flat land for 0.6 miles and on the east sloping hillside for 0.25 miles. Approximately 0.6 miles of Segment 2 are paralleled by Felder Road, south of Felder Creek. Several residences are located north of Segment 2, off of Felder Road, less than 100 feet from the proposed transmission line. Segment 2 traverses one rural residential property immediately west of the intersection of Arnold Drive and Leveroni Road; the closest residential structure on this parcel is approximately 350 feet from the transmission line. The Temelec senior-living residential subdivision is located to the south of Segment 2 (across a vineyard) at distances between 1,130 feet and 1,660 feet from the transmission line. Segment 2 would be located within the existing PG&E right-of-way except for some poles along Felder Creek.

TABLE 2.1-2
EXISTING LAND USES AND GENERAL PLAN AND ZONING DESIGNATIONS

Map ID[a]	APN	Use	General Plan Land Use Designation	Zoning	Overlay Combining Zone District
Segment 1					
1	017-140-010	Lakeville Substation	Public/Quasi Public	**PF**	SR
2	017-130-008	Irrigated vineyard	LEA 70	**LEA**	VOH; B6
3	017-110-009	Irrigated vineyard	LEA 60	**LEA**	VOH
4	017-110-010	Irrigated vineyard	LEA 60	**LEA**	SR
5	017-120-001	Irrigated vineyard with residence	LEA 60	**LEA**	Z; B6
6	017-120-003	Pasture with residence	LEA 60	**LEA**	SR; B6
7	017-120-011	Pasture	LEA 60	**LEA**	Z; B6
8	017-100-~~007~~024	Open space with residence	LEA 60	**LEA**	SR; Z; B6
9	017-100-009	Open space	LEA 60	**LEA**	Z; B6; G
10	017-100-006	Pasture	LEA 60	**LEA**	B6; G
11	142-011-004	Pasture	LEA 100	**LEA**	Z; B6
12	142-011-005	Pasture with residence	LEA 100	**LEA**	G; BR
13	142-031-015	Irrigated vineyard/primarily premium varietals	LEA 100	**LEA**	VOH; BR
Segment 2					
13	142-031-015 (continued)	Irrigated vineyard/primarily premium varietals	LEA 100	**LEA**	VOH; BR
14	142-032-006	Irrigated vineyard	Rural Residential	**AR**	B6; VOH; SR; BR
Segment 17					
15	142-032-007	Irrigated vineyard	LIA 20	**LIA**	B6
16	128-011-006	Irrigated vineyard/primarily premium varietals with residence	LIA 40	**LIA**	HD; Z; VOH; SR; B6
17	128-301-024	Irrigated vineyard/primarily premium varietals with residence	LIA 20	**LIA**	B6; SR; BR
18	128-012-002	Irrigated vineyard/primarily premium varietals	LIA 20	**LIA**	Z; F2; B6
19	128-311-060	Residence	Rural Residential	**AR**	VOH
20	128-311-039	Residence	Rural Residential	**AR**	VOH
21	128-311-010	Residence	Rural Residential	**AR**	VOH
22	128-311-057	Residence	Rural Residential	**RR**	VOH
23	128-311-056	Residence	Rural Residential	**RR**	VOH
24	128-311-043	Residence	Rural Residential	**RR**	VOH
25	128-311-044	Residence	Rural Residential	**RR**	VOH
26	128-311-065	Residence	Rural Residential	**RR**	VOH
27	128-311-008	Residence	Rural Residential	**RR**	VOH
28	128-311-045	Residence	Limited Commercial/ Gateway Commercial[b]	**C1 / C-G**[b]	VOH; SR
29	128-251-009	Sonoma Substation	Gateway Commercial	**C-G**	

PF = Public Facilities
AR = Agriculture and Residential
RR = Rural Residential
C1 = Neighborhood Commercial
C-G = Gateway Commercial
SR = Scenic Resources
LEA = Land Extensive Agriculture

VOH = Valley Oak Habitat
B6 = Combining District
Z = Second Unit Exclusion
G = Geologic Hazard
BR = Biotic Resource
HD = Historic Combining District
F2 = Floodplain
LIA = Land Intensive Agriculture

a See **Figure 2.1-2**.
b This parcel is within the jurisdiction of Sonoma County but is within the City of Sonoma's sphere of influence. The parcel is zoned C1 by Sonoma County and C-G by the City of Sonoma and is designated as *Limited Commercial* by the Sonoma County General Plan and *Gateway Commercial* by the City of Sonoma General Plan.

SOURCES: Sonoma County (2005); Sonoma County PRMD (1989) and (2004); City of Sonoma (1995) and (2003); ESA (2005)

Segment 17: 1.74 Miles

Land uses adjacent to Segment 17 include agricultural, open space, and residential. Almost all of Segment 17 is located within Sonoma County. City of Sonoma land is located to the north of Leveroni Road, crossed by the transmission line only where it enters the Sonoma Substation. For the western portion of Segment 17 (west of Sonoma Creek), the nearest residence to the transmission line is approximately 350 feet to the south, at milepost 5.6. East of Sonoma Creek, the proposed transmission line is bordered by more heavily-developed residential land. East of Sonoma Creek (mile 6.7 – 6.95), vineyards are located to the south of Leveroni Road and residences are located to the north. East of mile 7.0, there are residences to both the north and south of Leveroni Road. ~~Segment 17 would be located within the existing PG&E right-of-way, along Leveroni Road.~~

Sonoma Substation

The Sonoma Substation occupies a 1.8-acre footprint. The land uses that surround the Sonoma Substation include residential (single-family and apartments) to the north, west, and south, as well as commercial (a hotel) to the east.

2.1.2 Applicable Land Use Plans and Policies

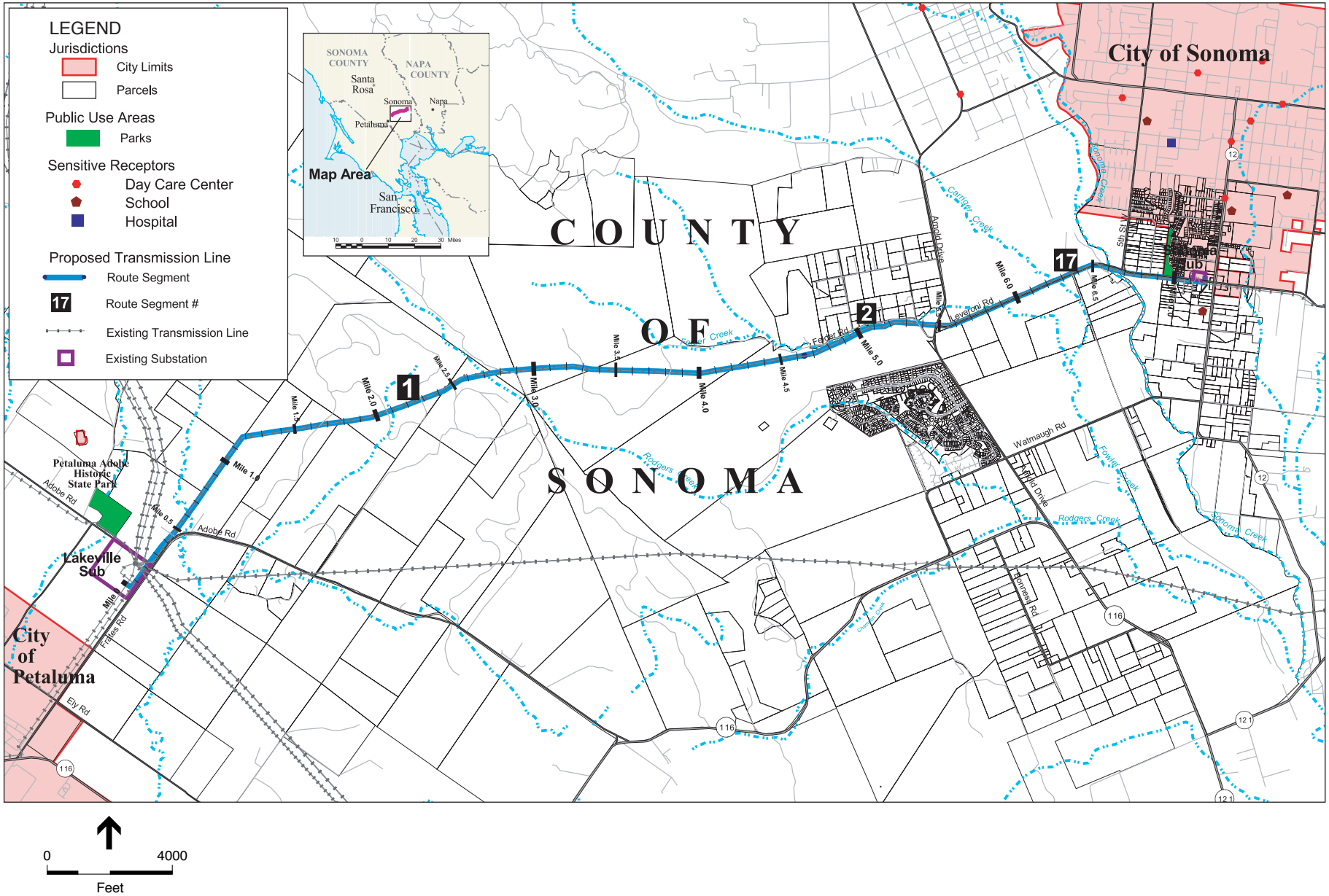
California Public Utilities Commission General Order No. 131-D

The California Public Utilities Commission (CPUC) has sole and exclusive jurisdiction over the siting and design of the project because it authorizes the construction and maintenance of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires “the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits” (CPUC, 1994). Non-discretionary local permits include permits that would not require approval from a local decision-making body such as a planning commission or city council.

1989 Sonoma County General Plan

Nearly all of the 7.23-mile transmission line would traverse Sonoma County land (see **Figure 2.1-1**). The 1989 Sonoma County General Plan is the County’s long-range planning document, of which the broad purpose is to express policies which will guide decisions on future growth, development, and conservation of resources through 2005 in a manner consistent with the goals and quality of life desired by the county's residents. The County is currently conducting a General Plan Update which will guide development through 2020; however, since this new 2020 General plan has not yet been adopted, this analysis is based on the 1989 Sonoma County General Plan.

As identified in **Table 2.1-2**, the project area is currently designated by the General Plan for *Public / Quasi Public*, *Rural Residential*, *Land Extensive Agriculture*, and *Limited Commercial uses*. The *Public / Quasi Public* land use designation includes sites which serve the community or public need and are owned or operated by government agencies, non profit entities, or public



SOURCE: EDAW (2004)

Lakeville-Sonoma 115 kV Transmission Line Project / 204202 ■

Figure 2.1-1
Project Area General Plan
Land Use and Zoning Designations

utilities. Permitted uses include schools, churches, libraries, governmental administration centers, fire stations, cemeteries, airports, hospitals, sewage treatment plants, waste disposal sites, and other approved public uses. The *Rural Residential* land use designation provides for very low density residential development on lands which have few, if any, urban services but which have access to county maintained roads. Primary permitted uses include detached single family homes. Secondary permitted uses include attached dwellings, farming, small-scale animal husbandry, home occupations, small scale home care and group care facilities, public and private schools and churches, and other uses incidental to and compatible with the primary use. The purpose of the *Land Extensive Agriculture* land use designation is to enhance and protect lands capable of and generally used for the production of food, fiber, and plant materials. Soil and climate conditions typically result in relatively low production per acre of land. The objective in land extensive agricultural areas is to establish and maintain densities and parcel sizes which are conducive to continued agricultural production. Permitted uses in the *Land Extensive Agriculture* designation include agricultural production, agricultural processing, agricultural services, visitor serving uses (such as tasting rooms and bed and breakfast inns), agricultural employee housing, other resource uses (such as surface mining operations), and other uses (such as schools, churches, and granges). The *General Commercial* designation provides sites for intense commercial uses which serve a mix of business activities and the residential and business community as a whole rather than a local neighborhood. These uses provide for comparison shopping and services which are ordinarily obtained on an occasional rather than daily basis. This category is also intended to provide opportunities for a mix of residential and commercial use in urban service areas. All commercial uses except regional shopping centers are allowed in this designation. The *Limited Commercial* designation allows a smaller range of commercial uses and may be applied to areas either outside or inside urban service areas. In rural community areas, this category may limit commercial uses to retail and service uses which are local-serving. **Figure 2.1-2** shows existing General Plan land use designations of the parcels through which the Proposed Project would cross.

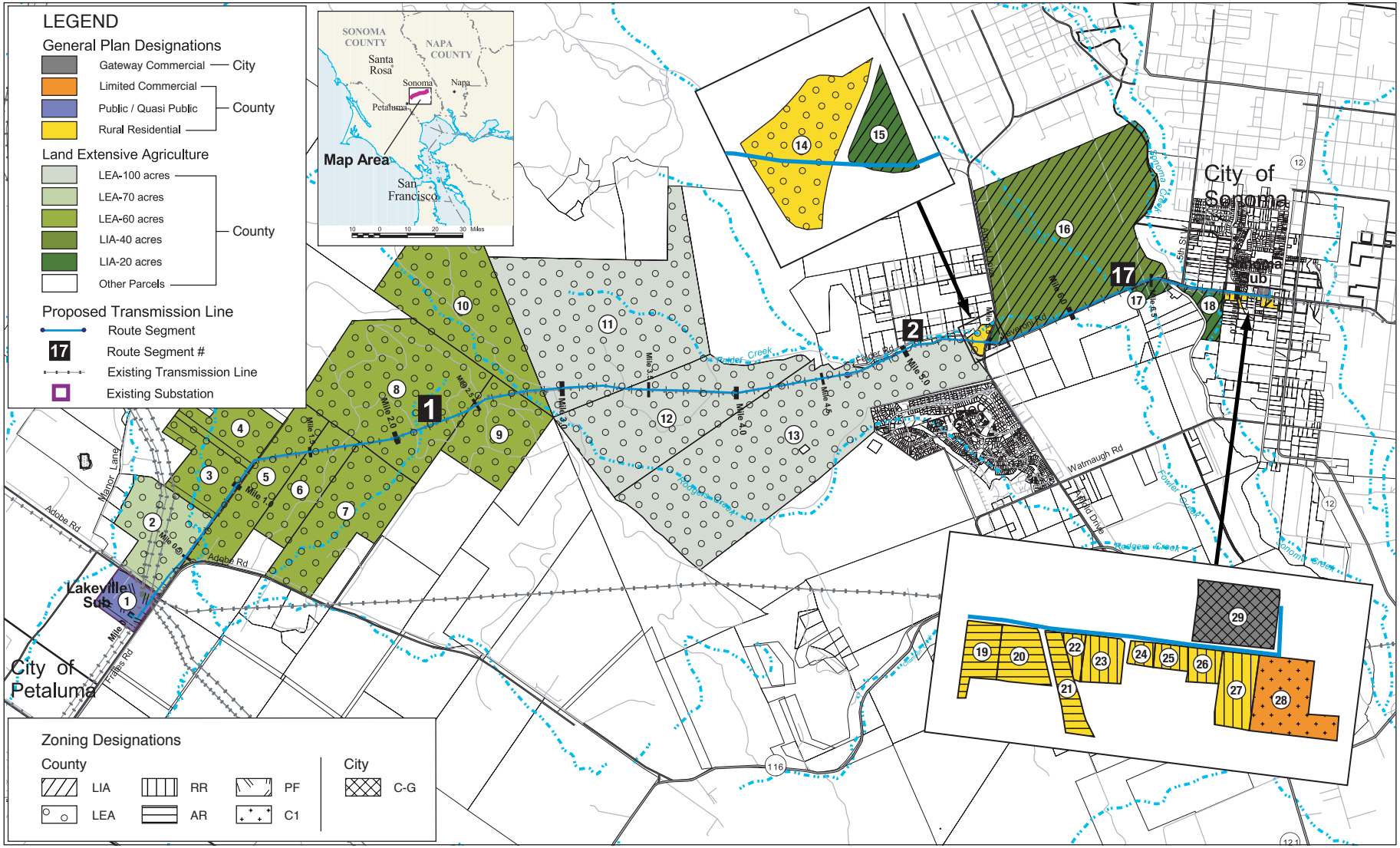
The Land Use and Public Facilities Elements of the General Plan include the following goals, objectives, and policies that are applicable to the Proposed Project:

- Objective LU-9.1: Accomplish development on lands with important biotic resources and scenic features in a manner which preserves or enhances these features.

- Goal PF-2: Assure that public utility sites are available to meet the future needs of Sonoma County residents.

- Objective PF-2.10: Locate and design public utility transmission, distribution and maintenance facilities to minimize adverse effects on natural and scenic resources.

- Objective PF-2s: Public utility facilities other than transmission line corridors may be designated as "public/quasi-public" on the land use map. Allow consideration for minor facilities in any land use category where they are compatible with the neighborhood character and preservation of natural and scenic resources.



SOURCES: Sonoma County PRMD (1989); Sonoma County Assessor (2005); City of Sonoma (2003); City of Sonoma (1995); and EDAW (2004)

Figure 2.1-2
Sonoma County General Plan
Land Use and Zoning Designations

- Objective PF-2t: Review proposals for new transmission lines or acquisition of easement for new transmission lines for consistency with general plan policies. Request, wherever feasible, that such facilities not be located within areas designated as community separators or biotic resource areas. Give priority to use of existing utility corridors over new corridors.

- Objective PF-2v: Consider requiring the under-grounding of new electrical transmission and distribution lines where appropriate in designated open space areas and in selected urban areas. Where feasible and under Public Utility Commission (PUC) rules, convert existing overhead lines to underground facilities in urban areas.

- Objective PF-2w: Encourage consolidation of multiple utility lines into common utility corridors wherever practicable (Sonoma County PRMD, 1989).

Sonoma County Zoning Ordinance

The Sonoma County Zoning Ordinance was adopted to promote and protect the public health, safety, peace, comfort, convenience, and general welfare. The Ordinance establishes various districts within the unincorporated territory of the county and designates lawful permitted uses, and uses which may be approved through the use permit process. County zoning districts provide more detailed regulations about the type of uses that can occur within Sonoma County land use designations.

The project crosses the following County zoning districts: Public Facilities (PF), Land Extensive Agriculture (LEA), Land Intensive Agriculture (LIA), Agriculture and Residential (AR), Rural Residential (RR), and Neighborhood Commercial (C1) (see **Figure 2.1-2** and **Table 2.1-2**).

The intent of the PF district is “to provide sites which serve the community or public need and to protect these sites from encroachment of incompatible uses.” Permitted uses include among other things, facilities for the production or generation of electrical energy by a special district; special district electrical substation facilities receiving less than 100,000 volts; special district facilities approved subject to Public Utilities Code Section 12808.5 (electrical transmissions and distribution lines). In addition, public utility buildings and public service or utility uses, including but not limited to, electrical substations receiving more than 100,000 volts are permitted with a use permit. The PF zone has a height limit of 35 feet for the main building and 15 feet for accessory buildings.

The LIA zone is intended to enhance and protect lands best suited for permanent agricultural use and capable of relatively high production per acre of land. Uses permitted in the LIA zone include raising farm animals, beekeeping, horticulture operations, agricultural support services, some residential uses, and farmworker housing. The LEA zone is intended to enhance and protect lands best suited for permanent agricultural use and capable of relatively low production per acre of land. Permitted uses in the LEA zone closely parallel permitted uses for the LIA zone. The AR zone provides lands for raising crops and farm animals in areas designated primarily for rural residential use and the RR zone seeks to preserve the rural character and amenities of those lands best utilized for low-density residential development. Rural residential uses are intended to take precedence over permitted agricultural uses in the RR zone. The purpose of the C1 zone is to

provide areas which permit various retail business, service, and professional activities in rural neighborhoods and within urban service areas. Permitted uses include neighborhood retail businesses, restaurants, banks, business offices, accessory buildings, day cares, community care facility, beekeeping, commercial telecommunication facilities, small wind energy systems, and other nonresidential uses as approved by the planning director (Sonoma County PRMD, 2004).

Sections 26-18-020(j) and 26-16-020(n) of the Zoning Ordinance states that minor public service uses or facilities are allowed within the RR and AR zones with a use permit; however, these sections except transmission lines from this provision (Sonoma County PRMD, 2004).

There are several overlay "combining" zone districts in the project area, including Valley Oak Habitat (VOH), Scenic Resources (SR), Geologic Hazard (G), Combining Districts (B), Second Unit Exclusion (Z), Floodplain (F2), Biotic Resource (BR), and Historic Combining District (HD). **Table 2.1-2** provides a list of parcels through which the proposed project would cross that are within overlay combining zone districts. Further details regarding these applicable combining zone districts are provided in **Table 2.1-3**.

City of Sonoma General Plan

The Sonoma Substation parcel at the east end of the route is located within the City of Sonoma (see **Figure 2.1-1**). It is adjacent to the "Four Corners" gateway into the City of Sonoma (i.e., the Broadway/Highway 12 & Leveroni/Napa Road intersection). In addition, a portion of Leveroni Road (0.05-mile east of Harrington Road to Broadway) is included within the City's boundary. The transmission line poles along this stretch of Leveroni Road are under a franchise agreement with the City of Sonoma, which allows PG&E the right to place transmission line in or overhanging the city street right-of-way.

The City of Sonoma 1995-2005 General Plan is intended to guide long-range planning which will guide decisions on future growth, development, and conservation of resources through 2005.

The Sonoma Substation is currently designated by the General Plan as *Gateway Commercial*. Additionally, the easternmost parcel through which the Proposed Project would cross is within the City of Sonoma's sphere of influence and is designated by the City of Sonoma General Plan as *Gateway Commercial*. In addition, the underground portion of the transmission line that would be located within the City of Sonoma's Leveroni Road right-of-way is adjacent to properties designated as *Park*, *Medium Density Residential*, and *Gateway Commercial*. The *Gateway Commercial* designation is applied to the Four Corners area and is intended to provide high-quality neighborhood- and visitor-serving office and retail development while implementing a coordinated design program for the area, in keeping with its status as a gateway to the community and in recognition of the need for buffering existing and planned residential development. Building heights are limited to 30 feet in the *Gateway Commercial* designation.

The Community Development Element of the City of Sonoma General Plan includes the following policies that are applicable to the Proposed Project:

TABLE 2.1-3
APPLICABLE OVERLAY COMBINING ZONE DISTRICTS

Overlay Combining Zone	Purpose
Valley Oak Habitat (VOH)	To protect and enhance valley oaks and valley oak woodlands and to implement the provisions of Section 5.1 of the general plan resource conservation element.
Scenic Resources (SR)	To preserve the visual character and scenic resources of lands in the county and to implement the provisions of Sections 2.1, 2.2 and 2.3 of the General Plan Open Space Element.
Geologic Hazard (G)	To reduce unnecessary exposure of people and property to risks of damage or injury from earthquakes, landslides and other geologic hazards in the Alquist-Priolo Special Studies Zone and to implement the provisions of Section 2.3 of the General Plan Public Safety Element.
Combining Districts (B)	To specify residential density and/or minimum parcel or lot size for a particular parcel, lot, or area.
Second Unit Exclusion (Z)	To provide for the exclusion of second units in the following areas: a) Areas where there is an inadequate supply of water for drinking or firefighting purposes; b) Areas where there are inadequate sewer services or danger of groundwater contamination; c) Areas where the addition of second units would contribute to existing traffic hazards or increase the burden on heavily impacted streets, roads or highways; and d) Areas where, because of topography, access or vegetation, there is a significant fire hazard.
Floodplain (F2)	To provide for the protection from hazards and damage from flood waters.
Biotic Resource (BR)	To protect biotic resource communities including critical habitat areas and riparian corridors for their habitat and environmental value and to implement the provisions of Sections 3.1 and 3.2 of the General Plan Open Space Element.
Historic Combining District (HD)	To protect those structures, sites, and areas that are remainders of past eras, events and persons important in local, state, or national history, or which provide significant examples of architectural styles of the past, or which are unique and irreplaceable assets to the County and its communities.

SOURCE: Sonoma County PRMD (2004)

- Policy 2: Utility extensions shall not occur outside the sphere of influence except in cases of a public health emergency or in conformance with a specific plan developed for Eighth Street East.

- Policy 10: Maintain active participation and, whenever possible, direct City representation on organizations such as the school district, the Sonoma County Transportation Authority, the Open Space District, the Local Area Formation Commission, the Waste Agency and other county-wide and regional bodies.

- Policy 26: The following locations shall be designated as gateways and shall be developed and improved with landscaping and other improvements to clearly mark the entrances to Sonoma:

  – Broadway/Leveroni/Napa Road (Four Corners)
  – Leveroni Road/Sonoma Creek. (City of Sonoma, 1995)

City of Sonoma Development Code

The City of Sonoma Development Code, which carries out the policies of the City of Sonoma General Plan by classifying and regulating the uses of land and structures within the City of Sonoma, contains the City's complete set of zoning and subdivision regulations. The Development Code is adopted to protect and to promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents, and businesses in the City. Development Code applies to all land uses, structures, subdivisions, and development within the City of Sonoma.

The Sonoma Substation parcel is currently zoned C-G – Gateway Commercial (City of Sonoma, 2003). The C-G zoning district is applied to the Four Corners and Verano Triangle areas, prominent commercial entrances into the City that require sensitive site design. The maximum residential density is 20 dwelling units per acre. The C-G zoning district is consistent with the *Gateway Commercial* land use designation of the General Plan. Allowable uses in the C-G district include recycling facilities, libraries and museums, accessory retail uses, art, antique, collectible, and gift sales, furniture, furnishings, and equipment stores; general retail; grocery stores; plant nurseries and garden supply stores, second hand stores, banks and financial services, child day care facilities, governmental and public facilities, personal services, and public utility equipment (City of Sonoma, 2003). The easternmost parcel through which the Proposed Project would be adjacent to within the City of Sonoma's sphere of influence is also zoned C-G.

Sonoma County Agricultural Preservation District

The Sonoma County Agricultural Preservation and Open Space District (~~Sonoma County~~ SCAPOSD) ~~is a farmland and open space preservation program. The intent of the APOSD is to further State policy on the preservation of open space and to implement the Open Space and Agricultural Resources Elements of the 1989 Sonoma County General Plan (Sonoma County APOSD, 2005)~~. is a public agency created pursuant to the California Public Resources Code Section 5500 *et seq.* Policies set forth in the 1989 Sonoma County General Plan's Agricultural Resources and Open Space Elements expressed the County's commitment to agriculture, the importance of maintaining distinct and identifiable communities, and a desire to protect its scenic and natural resources. The 1989 General Plan also included an implementation program that envisioned establishing an Open Space District to preserve farmland and open space areas by acquiring interests in lands from willing sellers.

The ~~Sonoma County~~ SCAPOSD currently holds a *Deed and Agreement Conveying a Conservation Easement and Assigning Development Rights* that applies to two parcels land. The larger of the two parcels that this deed applies to is currently owned by the Sonoma Mountain Institute, through which a portion of the transmission line would cross (pole numbers 33 through 39) (see **Figure 2.1-3**)[2]. The Sonoma Mountain Institute property (Assessor's Parcel Number 017-100-024) is located at 4080 Manor Road in Petaluma, California and comprises

[2] The other parcel that is covered by the same deed is under the Susannah Schroll Life Estate, et al (APN 017-100-023), totaling 7.8 acres. In total the Deed covers Assessor Parcel Numbers 017-100-023 and 017-100-024, which together comprise 381 acres.

Sonoma Mountain Institute Property

30-foot wide PG&E Existing Easement

Parcel Boundary

Poles to be replaced

0 2000

Feet

SOURCE: PG&E (2005)

Lakeville-Sonoma 115 kV Transmission Line Project / 204202 ■

Figure 2.1-3

Sonoma Mountain Institute Property and Existing PG&E Easement

approximately ~~380~~ 373 acres of land. The property is currently used for research demonstrations in connection with the purposes of the Sonoma Mountain Institute, which are to sustain, manage, restore, and rehabilitate open space and other property dedicated to conservation goals and objectives. The Sonoma Mountain Institute property currently has a conservation easement with the ~~Sonoma County~~ SCAPOSD that places approximately 211 of the 38~~0~~1 acres into a designation called *Forever Wild*, through which the Proposed Project would cross (Haley & Bilheimer, 2005). The stated purpose of the easement is "to preserve open space, natural, scenic and agricultural values of the Property and to prevent any uses of the Property that will significantly impair or interfere with those values" (~~Sonoma County~~ SCAPOSD, 1995).

2.1.3 Land Use Impacts and Mitigation Measures

a) Physically divide an established community: *less than significant impact*.

The substations and transmission line corridor are currently occupied by similar electrical transmission facilities (two substations and transmission line). Under the proposed project, PG&E would construct a new 115 kV transmission line on a rebuilt version of its existing single-circuit 115 kV transmission line, thus co-locating the two circuits onto a single set of poles. A 3,060-foot section of the new single circuit transmission line along Leveroni Road and into the Sonoma Substation would be placed underground.

The existing transmission line runs through or adjacent to several agricultural and residential areas along the public right-of-way through unincorporated areas of Sonoma County and within the City of Sonoma. Addition of an additional circuit to an existing transmission line, and undergrounding of the section along Leveroni Road, would not constitute a physical barrier to established or contemplated communities. Therefore, the Proposed Project would have a less than significant impact to the physical division of an established community because the transmission line uses an existing right-of-way and no new communities have developed on opposite sides of the line.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect: *less than significant impact ~~with mitigation incorporated~~*.

To determine the Proposed Project's consistency with applicable plans and polices, the following land use consistency analysis is provided. The CPUC has sole and exclusive jurisdiction over the siting and design of the Proposed Project. As discussed in the Setting, although the Proposed Project is exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires "the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits." This land use consistency analysis with these plans and policies is provided for informational purposes.

1989 Sonoma County General Plan

The Lakeville Substation site is currently designated by the Sonoma County General Plan as *Public / Quasi Public*. The Proposed Project includes modification of the substation yard with existing landscape along Frates Road to provide screening and installation of facilities to support a 115 kV line position. One new tubular steel pole would be located at the Substation. All proposed modifications and improvements to the existing Lakeville Substation would occur within the existing footprint of PG&E substation property. The substation is a site which serves the community or public need and is owned and operated by a public utility, which is consistent with the General Plan's intent for the *Public / Quasi Public*-designated land that the Lakeville Substation occupies.

The transmission line would traverse properties designated by the General Plan for *Land Extensive Agriculture* and *Rural Residential* uses as well as one parcel designated for *General Commercial* use. The Proposed Project would result in the installation of a new transmission line along the same route as PG&E's existing 115 kV transmission line. The new transmission line would not result in significant changes to the land uses of the parcels through which it traverses since an existing transmission line is currently located along the same corridor. In general, PG&E's easement, through which the Proposed Project would traverse, is a pre-existing, non-conforming use[3], that has been contemplated in the most recent adopted general plan. A continuation of that use (for the transmission line) would not be inconsistent with a general plan designation.

The Proposed Project would be consistent with General Plan Goal PF-2, which is to "[a]ssure that public utility sites are available to meet the future needs of Sonoma County residents." The Proposed Project would also generally be consistent with General Plan Objective LU-9.2, which states "[l]ocate and design public utility transmission, distribution and maintenance facilities to minimize adverse effects on natural and scenic resources." In addition, the Proposed Project would be almost wholly consistent with Objective PF-2t, which states "…[r]equest, wherever feasible, that such facilities [transmission lines] not be located within areas designated as community separators or biotic resource areas. Give priority to use of existing utility corridors over new corridors." While the transmission line would be located in an existing utility corridor and would not be located in an area designated as a community separator, there are four parcels (parcels 12, 13, 14, and 17 as shown on **Figure 2.1-2**) that are designated biotic resource areas. However, neither project construction nor project construction access would occur within any closer than 350 feet from the biotic resource area on parcel 12. Project construction would occur near designated biotic resource areas on parcels 13, 14, and 17. However, the project would still be consistent with this policy in that the project does use an existing corridor and, where feasible, has avoided biotic resource areas.

[3] A non-conforming use is a use that was legal at its commencement but subsequently forbidden by a change in the zoning ordinance.

Sonoma County Zoning Ordinance

The Lakeville Substation site is currently zoned PF (Public Facilities) and its existing use as a substation is consistent with the zoning designation with a use permit. As stated above, the Proposed Project includes modification of the substation yard and the addition of one new tubular steel pole. All proposed modifications and improvements at the existing Lakeville Substation would occur within the existing footprint of PG&E substation property. The PF zone has a height limit of 35 feet for the main building and 15 feet for accessory structures. The proposed modifications to the substation would include a dead end structure for the bus extension, which would be a maximum of 40 feet in height while the other bus support structures would be 9 feet high. Additionally, one new 60-foot high tubular steel pole would be located inside the substation. As neither the dead end structure nor the 60-foot high tubular steel pole would be encased in a building, the Proposed Project would not result in the addition of a main or accessory building that would exceed 35 feet in height.

The transmission line would traverse parcels zoned as LIA (Land Intensive Agriculture), LEA (Land Extensive Agriculture), AR (Agriculture and Residential), and RR (Rural Residential). None of these zoning districts is intended by the Zoning Ordinance to accommodate transmission lines. However, the transmission line would be constructed (and operated) within an existing easement owned by PG&E along an existing transmission line corridor. PG&E's easement, through which the Proposed Project would traverse, is a pre-existing, non-conforming use, which has been contemplated in the most recent revision to the Zoning Ordinance. A continuation of that use (for the transmission line) would not be inconsistent with the zoning designations.

City of Sonoma General Plan

The Sonoma Substation site is currently designated by the City of Sonoma General Plan as *Gateway Commercial*. The existing 115 kV single-circuit transmission line, distribution lines, and communication wires would remain above ground along Leveroni Road as these components are part of the existing transmission line and therefore, a part of existing conditions for purposes of this Mitigated Negative Declaration. As proposed, the Project would be entirely within or overhanging Leveroni Road under an existing agreement with the City of Sonoma for use of its right-of-way. However, to accommodate the underground portion of the new line from approximately Fifth street West to the Sonoma Substation, PG&E would need to acquire an additional right-of-way easement along about 150 feet of the transmission line corridor on the south side of Leveroni Road from about 150 feet west of Fifth Street West. PG&E would not be able to begin project construction until after ~~any and all~~ necessary easements or other legal authorizations have been acquired. The acquisition of these easements would not result in any additional land use impacts because their acquisition would not result in a physical change to the environment nor would it result in any conflicts with existing plans and policies adopted for the purpose of mitigating or avoiding an environmental effect. ~~The Project proposes a dead end structure that would be a maximum of 45 feet in height and other bus support structures that would be 9 feet high. An existing 70-foot single-circuit~~

~~wood pole would be replaced by an approximately 75-foot high tubular steel pole and a second existing wood pole would be moved a few feet. Low maintenance landscaping and irrigation would be added along Leveroni Road.~~ All proposed modifications and improvements to the existing Sonoma Substation would occur within the existing footprint of the PG&E substation property.

Consistent with the *Gateway Commercial* designation, landscaping at the substation along Leveroni Road would be installed in recognition of the need for buffering existing and planned residential development. This landscaping is also consistent with City of Sonoma General Plan Policy 26, which identifies the Four Corners area as a designated gateway to "be developed and improved with landscaping and other improvements to clearly mark the entrances to Sonoma." ~~However, under the Proposed Project, the existing single-circuit wood transmission poles would be replaced with new double-circuit wood and tubular steel poles that would be 15 to 30 feet taller than existing poles along Leveroni Road from Fifth Street West to the Sonoma Substation. This portion of the proposed new transmission line in the city of Sonoma along with the new 75-foot high tubular steel pole at the Sonoma Substation would be inconsistent with the purpose of the *Gateway Commercial* district as an area in keeping with its status as a gateway to the community~~

~~**Impact 2.1-1: The proposed substation improvements and a portion of the transmission line within the city of Sonoma from about Fifth Street West to the Sonoma Substation would be inconsistent with the City of Sonoma General Plan's intent for the *Gateway Commercial* designation. This would be a less than significant impact with implementation of Mitigation Measure 2.1-1.**~~

> ~~**Mitigation Measure 2.1-1:** PG&E shall install the new 115 kV single-circuit transmission line underground beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see **Figure 2.1-4**), where the circuit would emerge through a substation riser structure and terminate on a substation bus structure. Pole 108, which shall be configured to allow the new circuit to be transferred underground and the existing circuit to continue to the next existing pole, shall be the last overhead pole (a 75-foot tall tubular steel riser pole) of the proposed new transmission line. This underground portion of the new transmission line shall be designed and installed as described in Lakeville-Sonoma 115 kV Transmission Line Project Environmental Assessment Addressing Undergrounding 115 kV Transmission Line along Leveroni Road (between 5th Street West and Sonoma Substation) in the City of Sonoma (EDAW, 2005). **Figure 2.1-5** shows a typical cross section of an underground trench design.~~

~~With implementation of Mitigation Measure 2.1-1, the extra proposed 75-foot tubular steel pole on the Substation property would not be required. The existing 115 kV single-circuit transmission line, distribution lines, and communication wires would remain above ground along Leveroni Road as these components are part of the existing transmission line and therefore, a part of existing conditions for purposes of this Initial Study. As proposed, the Project would be entirely within or overhanging Leveroni Road under an existing agreement with the City of Sonoma for use of its right-of-way.~~

~~However, with implementation of Mitigation Measure 2.1-1, PG&E would need to acquire an additional right-of-way easement along about 150 feet of the transmission line corridor on the south side of Leveroni Road from about 150 feet west of Fifth Street West. PG&E would not be able to begin project construction until after any and all necessary easements have been acquired. The acquisition of these easements would not result in any additional land use impacts because their acquisition would not result in a physical change to the environment nor would it result in any conflicts with existing plans and policies adopted for the purpose of mitigating or avoiding an environmental effect.~~

Additionally, the City of Sonoma General Plan states that building heights are limited to 30 feet in the *Gateway Commercial* designation. ~~However, the Proposed Project would~~ At the Sonoma Substation, the undergrounded portion of the circuit would emerge through a substation riser structure and terminate on a substation bus structure approximately 9 feet in height. ~~add a dead end structure that would be a maximum of 45 feet in height.~~ As the ~~dead end~~ bus structure would not be encased in a building, the Proposed Project would not result in the addition of a building that would exceed 30 feet in height. Additionally, PG&E's easement, through which the Proposed Project would traverse, is a non-conforming or pre-existing use, that would have been contemplated in the City of Sonoma's latest adopted General Plan. A continuation of that use (for the transmission line) would not be inconsistent with the general plan.

~~**Significance after Mitigation:** Less than significant.~~

City of Sonoma Development Code

The Sonoma Substation site is currently zoned G-C (Gateway Commercial) and its existing use as a substation is consistent with the zoning designation, which permits public utility equipment. The Proposed Project, which includes modification of the substation yard ~~and the addition of one new tubular steel pole and these modifications~~, also appears to be consistent with the C-G zoning district~~, which allows public utility equipment~~. ~~Implementation of Mitigation Measure 2.1-1 would further ensure that any land use conflict impacts associated with the portion of the transmission line from about Fifth Street West to the Sonoma Substation would remain less than significant.~~

Sonoma County Agricultural Preservation and Open Space District Conservation Easement

A conservation easement is a private property interest in land that is negotiated between two private parties (in this case, Sonoma Mountain Institute and the Sonoma County APOSD). Therefore, the conservation easement is not an applicable land use plan, policy, or regulation adopted by an agency with jurisdiction over the project for the purpose of avoiding or mitigating an environmental effect. For this reason, the conservation easement is not relevant to, nor does it form the basis of a CEQA criteria or significance threshold. In any event, within the APOSD conservation easement, PG&E proposes to

construct the project across PG&E's existing access routes, within an existing PG&E easement granted by court order in 1902, without adding new roads and without adding gravel to existing roads. Helicopters would be used for work in hard to reach locations within the APOSD's easement (PG&E, 2005a). However, if change to the easement or adjustments to the easement terms were necessary to accommodate PG&E's project, then PG&E would have to secure such alterations to the easement through negotiation or condemnation. Again, this topic relates to a private interest in real property and not to a potential land use impact to the physical environment, and thus, is not further pursued in this Initial Study.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan: *no impact.*

As discussed in Section 2.4, *Biological Resources*, the proposed project would not conflict with any applicable government-adopted habitat conservation plan or natural community conservation plan. Therefore, the Proposed Project would not result in any conflicts with an adopted habitat conservation plan or natural community conservation plan.

References – Land Use and Planning

California Public Utilities Commission (CPUC), 1994. *General Order No. 131-D*, adopted June 8, 1994, modified August 11, 1995.

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Sonoma County Agricultural Preservation and Open Space District (~~Sonoma County~~ SCAPOSD), http://www.sonoma-county.org/opensp/district/about.asp, accessed May 13, 2005.

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Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

2.2 Agriculture Resources

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
2.	**AGRICULTURE RESOURCES –** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the proposed project:**				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☒	☐	☐

This section provides a description of local agricultural resources on parcels through which the Proposed Project would traverse and within the project vicinity. A general overview of applicable State and County regulations is also provided. The impact analysis evaluates the project's potential to adversely affect existing agricultural resources and mitigation is identified, where appropriate, to reduce these project impacts.

2.2.1 Setting

Existing Agriculture Resources Overview

About 65 percent of the acreage in Sonoma County is used for agriculture. In 2003, Sonoma County earned approximately $512 million in the production of agricultural goods, a decrease of about $53 million from 2002 (Sonoma County, 2004). Fruits/tree nuts/berries and nurseries/greenhouses were the top commodities in Sonoma County, producing approximately $366 million and $56.6 million, respectively, in 2002 (USDA, 2002).

The Proposed Project would traverse several parcels that are currently irrigated vineyards and pastures (see **Table 2.1-2** in Section 2.1, *Land Use and Planning*).

Important Farmland

To characterize the environmental baseline for agricultural resources, Important Farmland Maps produced by the Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) were reviewed. Important Farmland maps show categories of Prime Farmland,

Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance (if adopted by the county), Grazing Land, Urban and Built-up Land, Other Land, and Water. Prime Farmland and Farmland of Statewide Importance map categories are based on qualifying soil types, as determined by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), as well as current land use. These map categories are defined by the Department of Conservation's FMMP as follows:

- Prime Farmland: Land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods.

- Farmland of Statewide Importance: Land that is similar to *Prime Farmland* but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

- Unique Farmland: Land of lesser quality soils used for the production of specific high economic value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops include oranges, olives, avocados, rice, grapes, and cut flowers.

- Farmland of Local Importance: Land of importance to the local agricultural economy, as determined by each county's board of supervisors and local advisory committees. Examples include dairies, dryland farming, aquaculture, and uncultivated areas with soils qualifying for *Prime Farmland* and *Farmland of Statewide Importance*.

- Grazing Land: Land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.

- Urban and Built-up Land: Land used for residential, industrial, commercial, construction, institutional, public administrative purpose, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are also included in this category.

- Other Land: Land which is not included in any of the other mapping categories. Common examples include low-density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres.

- Water: Water areas with an extent of at least 40 acres.

Table 2.2-1 shows the acres of farmland in Sonoma County, as well as the amount of recent farmland conversions.

TABLE 2.2-1
FARMLAND CONVERSION FROM 2000–2002 IN SONOMA COUNTY

	Total Acres Inventoried		2000–2002 Acreage Changes		
Land Use Category	**2000**	**2002**	**Acres Lost**	**Acres Gained**	**Net Change**
Prime Farmland	37,035	36,377	3,227	2,569	-658
Farmland of Statewide Importance	18,921	19,747	1,966	2,792	826
Unique Farmland	30,289	31,173	4,218	5,102	884
Farmland of Local Importance	87,661	74,851	16,300	3,490	-12,810
Grazing Land	173,906	16,2148	25,711	13,953	-11,598
Agricultural Land Subtotal	**606,630**	**583,274**	**40,138**	**16,782**	**-23,356**

SOURCE: California Department of Conservation (2002)

The Proposed Project would traverse through parcels that contain soils classified as *Prime Farmland*, *Farmland of Statewide Importance*, or *Unique Farmland*. The Project would cross designated *Prime Farmland* on parcels 2, 3, and 13 through 19 (see **Figure 2.1-2**); designated *Farmland of Statewide Importance* on parcels 3, 4, 5, and 13; and designated *Unique Farmland* on parcels and 3, 5, 13. The Sonoma and Lakeville Substations are designated as *Urban and Built Land* (FMMP, 1984-2004).

Williamson Act Contracts

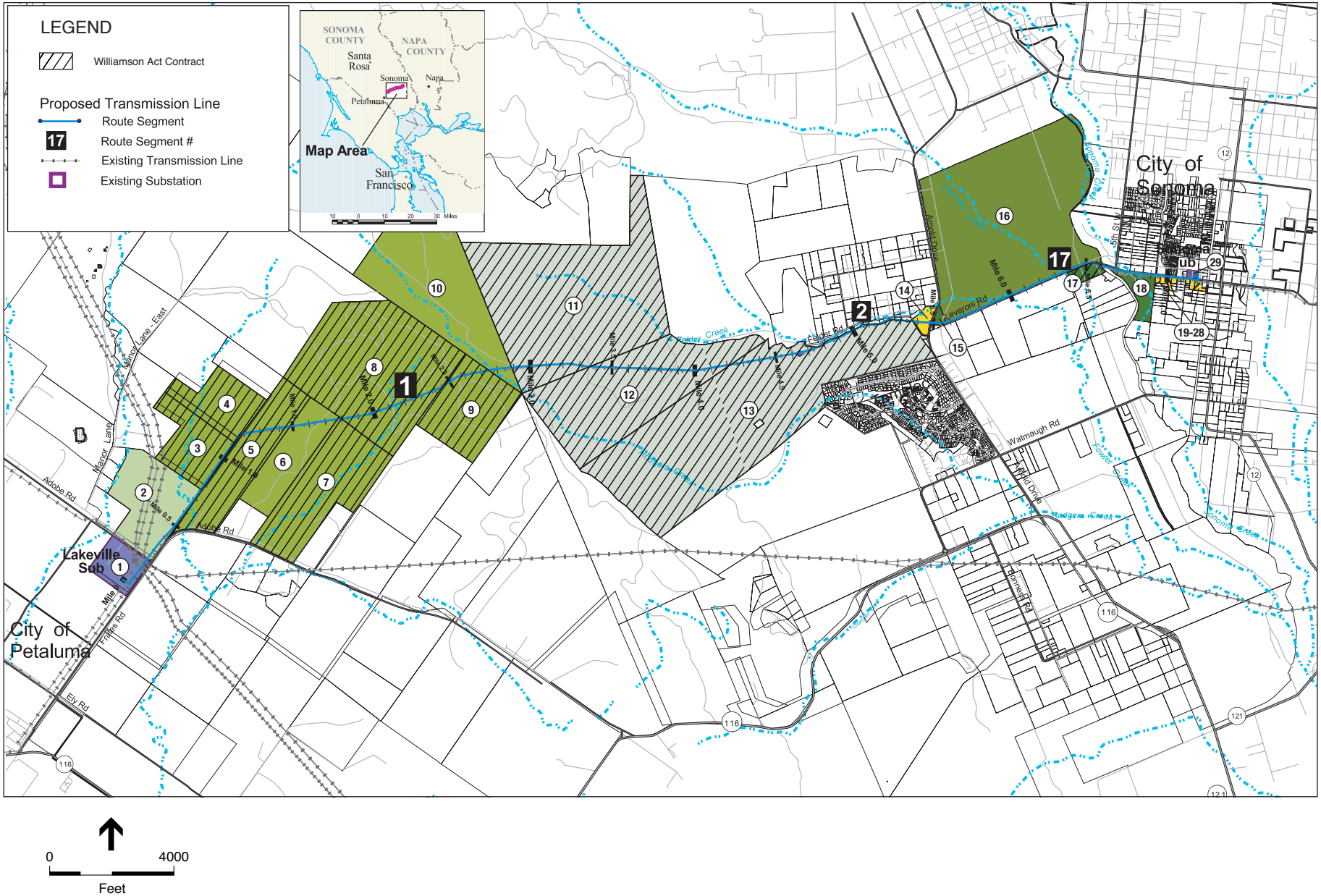
Williamson Act contracts are a tool often used by local governments to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses (see Regulatory Context below for more specific details). Approximately 30 percent of the land acreage in Sonoma County is currently in a Williamson Act contract (CSAC, 2005). In addition, **Figure 2.2-1** shows parcels through which the Proposed Project would traverse that are currently in a Williamson Act contract.

2.2.2 Regulatory Context

State

California Farmland Mapping and Monitoring Program (Non-regulatory)

The California Department of Conservation, under the Division of Land Resource Protection, has set up the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the state's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use.



SOURCES: Sonoma County (2005) and EDAW (2004)

Figure 2.2-1
Williamson Act Contracts

The FMMP maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years (Department of Conservation, 2005).

The FMMP is an informational service only and does not have regulatory jurisdiction over local land use decisions. Three categories of farmland: [1] Prime Farmland, [2] Farmland of Statewide Importance, and, [3] Unique Farmland, are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact.

California Land Conservation Act of 1965 (Williamson Act) (Non-regulatory)

The California Land Conservation Act of 1965 (Williamson Act) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. Its intent is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. The vehicle for these agreements is a rolling term 10 year contract (i.e., unless either party files a "notice of nonrenewal" the contract is automatically renewed annually for an additional year). Several parcels within the project area are currently under Williamson Act contract (see **Figure 2.2-1**).

Local

Sonoma County Agricultural Preservation and Open Space District (Non-regulatory)

The Sonoma County Agricultural Preservation and Open Space District (~~Sonoma County~~ SCAPOSD) ~~permanently preserves the diverse agricultural, natural resource and scenic open space lands of Sonoma County for future generations. To this end, the District conserves greenbelts between cities, farmland, biological resources, wildlife habitat, and land for public recreation. The intent of the District is to further State policy on the preservation of open space and to implement the Open Space and Agricultural Resources Elements of the 1989 Sonoma County General Plan. The principal focus of the program is to acquire conservation easements, but the District may acquire fee rights in property where the project is in conformity with the Expenditure Plan (APOSD, 2005).~~ is a public agency created pursuant to the California Public Resources Code Section 5500 et seq. Policies set forth in the 1989 Sonoma County General Plan's Agricultural Resources and Open Space Elements expressed the County's commitment to agriculture, the importance of maintaining distinct and identifiable communities, and a desire to protect its scenic and natural resources. The 1989 General Plan also included an implementation program that envisioned establishing an Open Space District to preserve farmland and open space areas by acquiring interests in lands from willing sellers.

In November 1980, the Sonoma County voters approved Measure A, which created the Agricultural Preservation and Open Space District, and Measure C, which funded the program

with a 1/4 percent sales tax. An independent 5-member Open Space Authority levies the tax and administers the revenue pursuant to the voter approved Expenditure Plan.

Categories of land for preservation such as community separators, critical habitat areas, agricultural lands, scenic landscapes, riparian corridors, biotic areas, and other open space projects are described in the Expenditure Plan. The District's acquisition program furthers State policy on the preservation of open space and implements the Agricultural Resources and Open Space Elements of the 1989 Sonoma County General Plan (Puente, 2006).

Sonoma County General Plan

The Sonoma County General Plan Agricultural Resources Element defines agriculture as an industry which produces and processes food, fiber, and plant materials. The purpose of the Element is to establish policies to insure the stability and productivity of the County's agricultural lands and industries. The Element is intended to provide clear guidelines for decisions in agricultural areas. It is also intended to express policies, programs and measures that promote and protect the current and future needs of the agricultural industry. Policies expressed in the Agricultural Resources Element are intended to apply only to lands designated within the three agricultural land use categories. The Agricultural Resources Element and Land Use Element include the following goals, objectives, and policies that are applicable to the Proposed Project:

- Policy AR-4e: Enforce provisions of existing state nuisance law (California Code Sub-section 3482.5 [the Right to Farm Act]).
- Goal LU-8: Protect lands currently in agricultural production and lands with soils and other characteristics which make them potentially suitable for agricultural use. Retain large parcel sizes and avoid incompatible non-agricultural uses.
- Objective LU-8.1: Avoid conversion of lands currently used for agricultural production to non-agricultural use.
- Objective LU-8.2: Retain large parcels in agricultural production areas and avoid new parcels less than 20 acres in the Land Intensive Agriculture category.
- Objective LU-8.3: Agricultural lands not currently used for farming but which have soils or other characteristics which make them suitable for farming shall not be developed in a way that would preclude future agricultural use. (Sonoma County PRMD, 1989)

Sonoma County Zoning Ordinance

The project crosses the following agricultural-related zoning districts: Land Extensive Agriculture (LEA), Land Intensive Agriculture (LIA), and Agriculture and Residential (AR) (see **Figure 2.1-2** and **Table 2.1-2**). See Section 2.1, *Land Use and Planning* for descriptions of these zoning designations.

2.2.3 Agriculture Resources Impacts and Mitigation Measures

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use: *less than significant with mitigation incorporation*.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use: *less than significant with mitigation incorporation*.

Substations

The Lakeville and Sonoma Substations are located on parcels that are not designated by the Farmland Mapping and Monitoring Program (FMMP) as *Prime Farmland*, *Farmland of Statewide Importance*, or *Unique Farmland*; rather both parcels are designated by the FMMP as *Urban and Built Land*. Modifications to the substations, which would occur within the existing ~~boundary and fence~~ property lines of the substations, would not result in the conversion of *Prime Farmland, Unique Farmland, or Farmland of Statewide Importance* or any other changes in the existing environment that could result in conversion of Farmland to non-agricultural use.

Transmission Line

As discussed in the Setting, the project would cross: designated *Prime Farmland* on parcels 2, 3, and 13 through 19 (see **Figure 2.1-2**); designated *Farmland of Statewide Importance* on parcels 3, 4, 5, and 13; and designated *Unique Farmland* on parcels and 3, 5, 13 (FMMP, 1984-2004).

Project construction would involve temporary construction staging areas, pull sites, helicopter landing areas, crane pads, and new access roads, some of which would be located on agricultural land. In total, these temporary uses would occupy about 30 acres of agricultural land. In particular, **Table 2.2-2** lists the staging areas and new roads would occupy lands designated as *Prime Farmland*, *Farmland of Statewide Importance*, or *Unique Farmland*. The undergrounded portion of the transmission line would not result in any impacts to *Prime Farmland*, *Farmland of Statewide Importance*, and *Unique Farmland* because it would be located beneath the Leveroni Road right-of-way.

TABLE 2.2-2
NEW TEMPORARY STAGING AREAS AND ROADS

Temporary Construction Use	Location[a]	Farmland Designation
Pull Site 3a	Southern corner of Parcel 4	Farmland of Statewide Importance
Pull Site 3b	Parcels 4 and 5	Farmland of Statewide Importance
Pull Site 6a and 6b	Northeastern corner of Parcel 13	Prime Farmland and Farmland of Statewide Importance
Landing Zone / Staging Area; Pull Sites 7a and 7b; and new temporary road	Southeast portion of Parcel 16	Prime Farmland and Other Land
~~Pull Site 8a~~	~~Northern edge of Parcel 28~~	~~Urban Built Up Land~~
Pull Site 4a	Northern portion of Parcel 6	Grazing Land
Pull Site 4b	Northern portion of Parcel 6	Grazing Land
New temporary road	South corner of Parcel 10	Grazing Land
New temporary road and new permanent road	South corner of Parcel 11	Grazing Land
New temporary road	Northern portion of Parcel 12	Grazing Land
New temporary road	Northwestern edge of Parcel 13	Grazing Land

[a] Refer to Figures 1-4(a) through 1-4(d)

SOURCE: FMMP (1984-2004)

Impact 2.2-1: The Proposed Project would result in the temporary removal of farmland that is designated *Prime Farmland* and *Farmland of Statewide Importance*. In total, the construction staging areas, pull sites and crane pads, and new access roads would temporarily reduce the amount of land available for agricultural purposes by about 30 acres, about half of which would be on lands designated as *Prime Farmland* and *Farmland of Statewide Importance*. This would be a less than significant impact with implementation of Mitigation Measure 2.2-1.

> **Mitigation Measure 2.2-1:** PG&E shall preserve the topsoil beneath temporary construction activities areas (i.e., on staging areas, pull sites, and temporary access roads) on agricultural lands by laying fabric topped with a layer of gravel over the areas prior to their use. After construction activities are complete, PG&E shall remove the gravel and fabric and implement the measures specified in the SWPPP Plan which shall be prepared and submitted to the CPUC for approval prior to construction.

Significance after Mitigation: Less than Significant.

Similar to the existing transmission line, the project would occupy a small amount of prime agricultural land for the pole foundations and also for the new segments of permanent access roads. About 2.5 acres for new permanent dirt access roads and 0.03 acres for the new pole footings would be needed for the project. Of this amount, about 1/3 acre of additional land designated as *Prime Farmland*, *Unique Farmland* or *Farmland of Statewide Importance* would be permanently converted for the project,

mainly for the segments of permanent dirt access roads leading up to the poles (PG&E PEA, 2004). **Table 2.2-3** provides a summary of the permanent access roads that would be created as part of the Proposed Project and their relationship to impacts to designated farmland.

TABLE 2.2-3
NEW PERMANENT ROADS

Permanent New Use	Location[a]	Farmland Designation
New permanent road	North corner of Parcel 9	Grazing Land
New permanent road	Northern portion of Parcel 12	Grazing Land
New permanent road	Parcel 14	Prime Farmland
New permanent road	Northeast edge of Parcel 17	Prime Farmland
New permanent road	Northwest corner of Parcel 18	Prime Farmland

[a] Refer to Figures 1-4(a) through 1-4(d).

SOURCE: FMMP (1984-2004)

Impact 2.2-2: The installation of pole foundations and construction of new permanent access roads would result in the permanent conversion of approximately 0.33 acres of land designated as *Prime Farmland*, *Farmland of Statewide Importance*, and *Unique Farmland*. This would be a less than significant impact.

~~Mitigation Measure 2.1-1~~

~~As a result of the Land Use analysis (see Section 2.1), Mitigation Measure 2.1-1 would require the new 115 kV single-circuit transmission line to be undergrounded beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see **Figure 2.1-4**). The underground portion of the transmission line would be about 1/2 mile in length. To ensure that implementation of this mitigation measure would not result in any additional environmental impacts, this analysis as it pertains to impacts to agricultural resources is included below.~~

~~Implementation of Mitigation Measure 2.1-1 would not result in any additional impacts to *Prime Farmland*, *Farmland of Statewide Importance*, and *Unique Farmland* because the undergrounded portion of the transmission line would be located beneath the Leveroni Road right-of-way.~~

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract: *less than significant.*

Substations

The Lakeville and Sonoma Substations are located on parcels that are zoned Public Facilities (Sonoma County) and Gateway Commercial (City of Sonoma), respectively.

Neither substation site is located on a parcel that is under a Williamson Act contract. Therefore, modifications to the substations, which would occur within the existing ~~boundary and fence~~ property lines of the substations, would not result in any conflicts with existing zoning for agricultural use or a Williamson Act contract.

Transmission Line

The project would traverse nine parcels which are currently in Williamson Act contracts. Under the Williamson Act, these parcels are subject to an arrangement by the private landowners and Sonoma County to voluntarily restrict land to agricultural and compatible open-space uses. In total, an additional 1.84[1] acres of Williamson Act land would be used for pole foundations and permanent access roads. Government Code Section 51238(a)(1) states that "…the erection, construction, alteration, or maintenance of …electric… facilities are hereby determined to be compatible uses within any agricultural preserve." Government Code Section 51238(a)(2) further states that "[n]o land occupied by …electric…facilities shall be excluded from an agricultural preserve by reason of that use." Therefore, the placement of transmission poles and access roads as well as temporary pull sites and staging areas on land currently under Williamson Act contract would not remove the land from Williamson Act contract status nor would it conflict with the provisions of any of the Williamson Act contracts.

Additionally, the project would not conflict with existing zoning for agriculture use. The transmission line would traverse agriculturally-zoned parcels including parcels zoned Land Extensive Agriculture, Land Intensive Agriculture, and Agriculture and Residential. The transmission line would be constructed (and operated) within an existing easement owned by PG&E along an existing transmission line corridor. Additionally, agricultural uses could continue to occur beneath and adjacent to the transmission line. The undergrounded portion of the transmission line would not result in any conflicts with existing zoning for agricultural use, or a Williamson Act contract because it would be located beneath the Leveroni Road right-of-way, which is not zoned for agriculture or within a Williamson Act contract. Leveroni Road is a developed paved road, and therefore, any disturbance to Leveroni Road would not result in adverse impacts to agricultural resources.

~~*Mitigation Measure 2.1-1*~~

~~Implementation of Mitigation Measure 2.1-1 would not result in any additional conflicts with existing zoning for agricultural use, or a Williamson Act contract because the undergrounded portion of the transmission line would be located beneath the Leveroni Road right-of-way, which is not zoned for agriculture or within a Williamson Act contract. Leveroni Road is a developed paved road, and therefore, any disturbance to Leveroni Road would not result in adverse impacts to agricultural resources.~~

[1] The additional 1.84 acres is in addition to Williamson Act land that is already being used for the existing transmission line and existing access roads.

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2.3 Air Quality

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
3.	**AIR QUALITY** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

This section evaluates the project's potential to impact regional and local air quality from stationary and mobile sources of air emissions from construction activities and operational sources. This section is based on a review of existing documentation of air quality conditions in the region, air quality regulations from the U.S. Environmental Protection Agency (US EPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD).

2.3.1 Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants and consequently affect air quality.

Regional Topography, Meteorology, and Climate

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the air pollutants. The atmospheric pollution potential, as the term is used in this Initial Study, is independent of the location of emission sources and is instead a function of factors such as topography and meteorology.

The San Francisco Bay Area topography is characterized by complex terrain, consisting of coastal mountain ranges, bays, and inland valleys. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the Bay Area. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common during the summer.

The only major topography break in California's Coast Range occurs in the Bay Area, splitting into the western and eastern ranges; the San Francisco Bay lies between these two ranges. The gap in the western coast range is known as the Golden Gate and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the Bay Area and the Central Valley.

The climate of the San Francisco Bay Area, including the Sonoma and Petaluma Valleys, is a Mediterranean-type climate characterized by warm, dry summers, and mild, wet winters. The climate is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean off the West Coast. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, air emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates (i.e., sulfates and nitrates).

The Sonoma Valley is separated from the Napa Valley and from the Cotati and Petaluma Valleys by mountains. The Sonoma Valley is long and narrow; approximately five miles wide at its southern end and less than a mile wide at the northern end. The subregion that stretches from Santa Rosa to the San Pablo Bay is often considered as two different valleys: the Cotati Valley in the north and the Petaluma Valley in the south.

In the Sonoma Valley, the strongest up-valley winds occur in the afternoon during the summer and the strongest down-valley winds occur during clear, calm winter nights. Prevailing winds follow the axis of the valley, northwest/southeast, while some upslope flow during the day and down-slope flow during the night occurs near the base of the mountains. Summer average maximum temperatures are usually in the high-80s, and summer minimums are around 50 degrees. Winter maximums are in the high-50s to the mid-60s, with minimums ranging from the mid-30s to low-40s.

Petaluma's prevailing winds are from the northwest. When the ocean breeze is weak, strong winds from the east can predominate, carrying pollutants from the Central Valley and the Carquinez Strait. During these periods, up valley flows can carry the polluted air as far north as Santa Rosa. Petaluma's climate is similar to areas closer to the coast.

The air pollution potential of the Sonoma and Petaluma Valleys could be high if there were significant sources of pollution nearby. Prevailing winds can transport locally and non-locally generated pollutants northward into the narrow valleys, which often traps and concentrates the pollutants under stable conditions. The local upslope and down-slope flows set up by the surrounding mountains can also recirculate pollutants. However, local sources of air pollution are

minor. With the exception of some processing of agricultural goods, such as wine and cheese manufacturing, there is little industry in these valleys. Increases in motor vehicle emissions and wood smoke emissions from stoves and fireplaces may increase pollution as the valleys grow in population and as a tourist destination.

Existing Air Quality

BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria pollutants. Existing levels of air quality in the project area can generally be inferred from ambient air quality measurements conducted by BAAQMD at its monitoring stations. The major pollutants of concern in the San Francisco Bay Area, ozone, particulate matter equal to or less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and carbon monoxide (CO), are monitored at approximately twenty locations. Within Sonoma and Napa Counties, the BAAQMD operates two monitoring stations. For PM2.5, the monitoring station on Fifth Street in Santa Rosa was used, while the monitoring station on Jefferson Avenue in Napa was used for ozone, PM10, and CO.

Background ambient concentrations of pollutants are determined by pollutant emissions in a given area as well as wind patterns and meteorological conditions for that area. As a result, background concentrations can vary among different locations within an area. However, areas located close together and exposed to similar wind conditions can be expected to have similar background pollutant concentrations. **Table 2.3-1** shows a five-year (1999 – 2003) summary of maximum monitoring data collected from these stations, compared with California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS).

Sensitive Receptors

For the purposes of air quality and public health and safety, sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from dust and air pollutant concentrations, or other disruptions associated with project construction and/or operation. Sensitive receptor land uses generally include schools, day care centers, libraries, hospitals, residential care centers, parks, and churches. Some sensitive receptors are considered to be more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirmed are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

TABLE 2.3-1
AIR QUALITY DATA SUMMARY (1999–2003) FOR THE PROJECT AREA

Pollutant	Standard[a]	Monitoring Data by Year				
		1999	2000	2001	2002	2003
Ozone						
Highest 1 Hour Average (ppm)[b]		**0.115**	0.077	**0.099**	**0.116**	**0.105**
Days over State Standard	0.09	**4**	0	**1**	**1**	**2**
Days over National Standard	0.12	0	0	0	0	0
Highest 8 Hour Average (ppm)[b]		**0.09**	**0.063**	**0.078**	**0.082**	**0.083**
Days over National Standard	0.08	**1**	**8**	**7**	**1**	**2**
Carbon Monoxide						
Highest 1 Hour Average (ppm)[b]	20	5.5	4.7	5.7	4.2	4.7
Days over State Standard		0	0	0	0	0
Highest 8 Hour Average (ppm)[b]	9.0	4.24	2.80	3.00	2.36	2.49
Days over State Standard		0	0	0	0	0
Particulate Matter (PM2.5)						
Highest 24 Hour Average ($\mu g/m^3$)[b]	65	54.9	40.1	75.9	50.7	38.8
Days over National Standard		0	0	1	0	0
Annual Average ($\mu g/m^3$)[b]	12	--	10.3	10.8	10.5	8.8
Particulate Matter (PM10):						
Highest 24 Hour Average ($\mu g/m^3$)[b]	50	--	45.2	**96.1**	**69.9**	41.4
Days over State Standard			0	**3**	**4**	0
Annual Average ($\mu g/m^3$)[b]	30	18.6	16.3	24.0	25.4	20.6

a Generally, state standards are not to be exceeded and national standards are not to be exceeded more than once per year.
b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

NOTE: Values in **bold** are in excess of applicable standard. NA = Not Available.

SOURCE: CARB (2005a)

2.3.2 Regulatory Context

Air quality within the air basin is addressed through the efforts of various Federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The air pollutants of concern and agencies primarily responsible for improving the air quality within the air basin and the pertinent regulations are further discussed.

Criteria Air Pollutants

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal

Clean Air Act, the US EPA has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS or national standards) to protect public health and welfare. NAAQS have been established for ozone, CO, nitrogen dioxide (NO2), sulfur dioxide (SO2), PM10, PM2.5, and lead (Pb). These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.

To protect human health and the environment, the US EPA has set "primary" and "secondary" maximum ambient thresholds for all six criteria pollutants. Primary thresholds were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings.

The NAAQS are defined as the maximum acceptable concentration that may be reached, but not exceeded more than once per year. California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (CAAQS or state standards). **Table 2.3-2** presents both sets of ambient air quality standards (i.e., national and state) and provides a brief discussion of the related health effects and principal sources for each pollutant. California has also established state ambient air quality standards for sulfates, hydrogen sulfide, and vinyl chloride; however, air emissions of these pollutants are not expected under the project and thus, there is no further mention of these pollutants in this Initial Study.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide

Carbon monoxide is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low

TABLE 2.3-2
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 Hour 8 Hour	0.09 ppm 0.07 ppm	0.12 ppm 0.08 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide	1 Hour 8 Hour	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide	1 Hour Annual	0.25 ppm –	– 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	1 Hour 3 Hour 24 Hour Annual	0.25 ppm – 0.04 ppm –	– 0.5 ppm 0.14 ppm 0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM10)	24 Hour Annual	50 $\mu g/m^3$ 20 $\mu g/m^3$	150 $\mu g/m^3$ 50 $\mu g/m^3$	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
Fine Particulate Matter (PM2.5)	24 Hour Annual	– 12 $\mu g/m^3$	65 $\mu g/m^3$ 15 $\mu g/m^3$	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, SO2, and organics.
Lead	Monthly Quarterly	1.5 $\mu g/m^3$ –	– 1.5 $\mu g/m^3$	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

SOURCE: BAAQMD (2004)

air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Particulate Matter

Particulate matter, PM10 and PM2.5, represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

Other Criteria Pollutants

Sulfur dioxide is a combustion product of sulfur or sulfur-containing fuels such as coal, which are restricted in the Bay Area. SO2 is also a precursor to the formation of atmospheric sulfate, particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. The Bay Area is in attainment status with both federal and state SO2 standards and is not further evaluated in this analysis.

Ambient lead concentrations meet both the federal and state standards in the Bay Area and the project area. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. As the project would not introduce any new sources of lead emissions, lead emissions are not required to be quantified by the BAAQMD and are not further evaluated in this analysis.

Regulatory Agencies

US EPA is responsible for implementing the myriad programs established under the federal Clean Air Act, such as establishing and reviewing the NAAQS and judging the adequacy of State Implementation Plans (SIPs), but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

The CARB is responsible for establishing and reviewing the state standards, compiling the California SIP, securing approval of that plan from US EPA, and identifying toxic air contaminants. CARB also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles, and oversees the activities of California’s air quality management districts, which are organized at the County or regional level. County or regional air quality management districts are primarily responsible for regulating stationary

sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act.

The regional air quality plans prepared by Air Quality Management Districts and Air Pollution Control Districts throughout the state are compiled by the CARB to form the SIP. The local air districts also have the responsibility and authority to adopt transportation control and emission reduction programs for indirect and area-wide emission sources.

BAAQMD is the regional agency with jurisdiction over the nine-county region located in the San Francisco Bay Area Air Basin. Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), county transportation agencies, cities and counties, and various non-governmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

The BAAQMD is responsible for bringing and/or maintaining air quality in the Air Basin within Federal and State air quality standards. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the Air Basin and to develop and implement strategies to attain the applicable Federal and State standards.

In December 1999, the BAAQMD adopted its *CEQA Guidelines – Assessing the Air Quality Impacts of Projects and Plans*, as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The *BAAQMD CEQA Guidelines* is an advisory document and local jurisdictions are not required to utilize the methodology outlined therein. The document describes the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. This Initial Study was prepared following the recommendations of the *BAAQMD CEQA Guidelines*.

Air Quality Plans and Policies

Regional

As required by the federal Clean Air Act and the California Clean Air Act, air basins or portions thereof have been classified as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the standards have been achieved. Nonattainment areas are also required to prepare air quality plans that include strategies for achieving attainment.

The San Francisco Bay Area Air Basin is in attainment of both the NAAQS and the CAAQS for NO2, SO2, CO, and lead. The Bay Area Air Basin is nonattainment for ozone for both the NAAQS and CAAQS. The Bay Area Air Basin is nonattainment of the CAAQS for PM10 and PM2.5, but is in attainment of the NAAQS for PM10 and PM2.5. **Table 2.3-3** displays the Bay Area Air Basin’s current attainment status.

TABLE 2.3-3
ATTAINMENT STATUS OF THE BAY AREA FOR THE STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

		Attainment Status	
Pollutant	**Averaging Time**	**State Standards[a]**	**National Standards[b]**
Ozone	8 Hour	–	Unclassified/Nonattainment
	1 Hour	Nonattainment	Unclassified/Nonattainment
Carbon Monoxide	8 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Nitrogen Dioxide	Annual	–	Attainment
	1 Hour	Attainment	–
Sulfur Dioxide	Annual	–	Attainment
	24 Hour	Attainment	Attainment
	3 Hour	–	Attainment
	1 Hour	Attainment	–
Respirable Particulate Matter	Annual	Nonattainment[c]	Attainment
	24 Hour	Nonattainment[c]	Attainment
Fine Particulate Matter	Annual	Nonattainment[c]	Attainment
	24 Hour	–	Attainment
Lead	Quarter	–	Attainment
	Month	Attainment	–

[a] California standards for ozone, CO (except Lake Tahoe), SO2 (1-hour and 24-hour), NOx, and PM10 are values that are not to be exceeded.

[b] National standards other than for ozone, particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year.

[c] In June 2002, CARB established an 8-hour standard for ozone and annual and 24-hour standards for very fine PM2.5. Currently, the BAAQMD does not have sufficient monitoring data to determine attainment status.

SOURCE: BAAQMD (2004)

Air quality plans developed to meet federal requirements are referred to as SIPs. The federal Clean Air Act and the California Clean Air Act require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM10 standard). The following plans are to include strategies for attaining the standards:

- Ozone Attainment Plan for the 1-Hour National Ozone Standard (ABAG et al, 1999) developed to meet federal ozone air quality planning requirements; and
- Bay Area 2000 Clean Air Plan (BAAQMD, 2000), the most recent triennial update of the *1991 Clean Air Plan* developed to meet planning requirements related to the state ozone standard.

BAAQMD, the MTC, and ABAG have prepared a Bay Area 2001 Ozone Attainment Plan (ABAG et al, 2001). This Plan is a proposed revision to the Bay Area's plan to achieve the national ozone standard. The Plan is being prepared in response to US EPA's partial approval and partial disapproval of the Bay Area's 1999 Ozone Attainment Plan and finding of failure to attain the national standard for ozone. The revised plan was adopted by the Boards of the co-lead agencies at a public meeting on October 24, 2001. Subsequently, the Plan was approved by the CARB at a hearing on November 1, 200l. On November 30, 2001, CARB submitted the 2001 Plan to US EPA for approval as a revision to the California SIP. This Plan amends and supplements the 1999 Plan and demonstrates attainment of the national ozone standard by 2006.

The 2000 Bay Area Clean Air Plan, adopted by the BAAQMD in December of 2000, is a regional plan that addresses how the Bay Area, including the project area, will attain federal and state air quality standards. The plan states that major sources of emissions should install emission-control devices and that new sources must apply for air quality permits. In addition to the Clean Air Plan, the 2001 Ozone Attainment Plan identifies control measures the region should implement to improve air quality in the San Francisco Bay Area Air Basin.

Sonoma County

The Sonoma County General Plan Resource Conservation Element includes goals and policies regarding the protection and enhancement of air quality in the project region. The County's goal in maintaining air quality is to "Preserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant and property damage in accordance with the requirement of the Federal and State Clean Air Acts."

The General Plan Resource Conservation Element (for Air Resources) contains the following air quality goals, objectives, and policies that would generally be applicable to the project:

- Objective RC-13.1: Maintain the projected county air quality as set forth in the Final Environmental Impact Report [for the General Plan EIR] and minimize air pollution.
- Objective RC-13.2: Encourage reduced motor vehicle use as a means of reducing resultant air pollution.
- Policy RC-13b: Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.
- Policy RC-13c: Refer projects to the local air quality districts for their review. (Sonoma County PRMD, 1989)

2.3.3 Air Quality Impacts and Mitigation Measures

This section presents an analysis of the potential air quality impacts associated with project construction and operation. Emissions from construction equipment exhaust and generation of particulate matter (fugitive dust) are the primary concerns in evaluating short-term air quality

impacts. Long-term impacts, however, will be negligible since emission-related activities associated with project operation and maintenance will be limited to periodic maintenance trips.

Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts (BAAQMD, 1999). Project construction, including the undergrounding activities along Leveroni Road, would employ a variety of construction and grading equipment. PM10 is the primary air pollutant emitted during construction activities, but additional pollutants are emitted from motor-driven construction equipment, construction vehicles, and workers' vehicles. The "worst-case" scenario for total emissions during the project construction, which would involve conducting all construction activities and excavations and operating all project-related equipment simultaneously, would generate the following emissions:

- PM10: ~~0.09~~0.10 tons per day
- ROG: 0.11 tons per day
- CO: ~~0.32~~0.38 tons per day
- NOx: ~~0.66~~0.68 tons per day

Projected construction emissions are presented in **Table 2.3-4**, broken down by individual equipment. CARB's OFFROAD model was used to develop emission factors for off road equipment such as dozers and CARB's EMFAC2002 was used to develop emission factors for onroad vehicles such as pickup trucks. The Federal Aviation Administration's Emissions and Dispersion Modeling System was used to develop emission factors for helicopter exhaust emissions (assuming a CH-46 aircraft). Fugitive dust emission factors were developed based on guidance from BAAQMD.

Fugitive dust emissions would vary from day to day depending upon the level and type of activity, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard, but the smaller-diameter particles generally remain airborne until removed from the atmosphere by moisture and are associated with adverse health effects.

Based on approximate emission factors developed by the US EPA for construction emissions, uncontrolled project construction-related PM10 emissions are 0.77 tons per acre per month and 51 pounds per acre per day (BAAQMD, 1999). However, water application would provide a 70 to 90 percent reduction in project construction-related PM10 emissions.

a) Conflict with or obstruct implementation of the applicable air quality plan: *less than significant impact.*

Table 2.3-5 presents an emissions inventory of the Bay Area Air Basin by source category, including the net projected contribution of the project to each source category.

Even when assuming "worst-case" conditions, project-related contributions would be less than one percent of the Bay Area Air Basin totals. *BAAQMD CEQA Guidelines* recognizes that construction equipment emits ozone precursors, but indicates that such

TABLE 2.3-4
CONSTRUCTION EMISSIONS ESTIMATES

Activity and Equipment	Pounds per Day			
	ROG	CO	NOx	PM10
Transmission Line Activity				
Material Delivery and Installation				
Rigging Truck (2)	13.93	49.43	145.82	8.80
Mechanic Truck (1)	6.97	24.72	72.91	4.40
Helicopter[a]	105.62	183.78	15.39	0.00
1-Ton Pick-up Truck (4)	0.06	1.40	0.24	0.01
Boom Truck (2)	19.91	70.62	208.32	12.57
2-Ton Pick-up Truck (2)	0.08	1.81	0.58	0.01
Cable Puller Truck (1)	7.96	28.25	83.33	5.03
Tensioner Truck (1)	7.96	28.25	83.33	5.03
Construction Dust[b]	0.00	0.00	0.00	102.00
Line Activity Totals (pounds/day)	162.50	388.25	609.91	137.84
Line Activity Totals (tons/day)	0.08	0.19	0.31	0.07
Substation Activities				
Structure Foundation Excavation				
3/4-Ton Pick-up Truck (2)	0.06	1.40	0.24	0.01
1-Ton Truck (1)	0.05	0.32	0.60	0.01
Truck Mounted Digger (1)	4.44	16.45	49.01	2.69
Crawler Backhoe (1)	7.11	26.32	78.42	4.30
Concrete Truck (1)	7.96	28.25	83.33	5.03
Structure Delivery and Setup				
3/4-Ton Pick-up Truck (2)	0.06	1.40	0.24	0.01
Boom Truck (1)	9.95	35.31	104.16	6.28
Mobile Crane (1)	12.29	44.44	131.69	7.62
Cleanup and Landscaping				
2-Ton Flat Bed Truck (2)	11.94	42.37	124.99	7.54
3/4-Ton Pick-up Truck (2)	0.06	1.40	0.24	0.01
1-Ton Truck (2)	0.05	0.32	0.60	0.01
D-3 Bulldozer	12.44	46.05	137.23	7.52
Grading and Backfill[c]	0.00	0.00	0.00	76.50
Substation Construction Total (pounds/day)	66.43	244.03	710.72	117.52
Substation Construction Total (tons/day)	0.03	0.12	0.36	0.06
Undergrounding Activities				
Fugitive Dust	0.00	0.00	0.00	14.60
Combustion Sources	8.11	122.00	37.40	1.94
Undergrounding Total (pounds/day)	8.11	122.00	37.40	16.54
Undergrounding Total (tons/day)	0.004	0.06	0.02	0.01
Project Construction Total (tons/day)	0.11	~~0.32~~0.38	~~0.66~~0.68	~~0.09~~0.10

a Based on a CH-46 Sky Knight.

b Based on a maximum of two acres per day of soil disturbance and 51 pounds per acre per day (BAAQMD, 1999).

c Based on a maximum of 1.5 acres per day of soil disturbance and 51 pounds per acre per day (BAAQMD, 1999).

SOURCES: PG&E PEA (2004), ~~and~~ CARB (2000), and BAAQMD (1999)

TABLE 2.3-5
2004 BAY AREA ANNUAL AVERAGE EMISSIONS BY SOURCE CATEGORY

	Daily Emissions (tons per day)			
Source Category	**ROG**	**CO**	**NOx**	**PM10**
Stationary Sources	89.4	42.3	68.3	16.0
Area-wide Sources	90.1	174.4	19.3	151.6
Mobile Sources	233.4	2104.6	472.3	21.3
Totals	412.9	2321.3	559.9	188.9
Project Construction Contribution	0.11	0.32	0.66	0.09
Percent Net Project Contribution	0.03%	0.01%	0.12%	0.05%

SOURCE: CARB (2005)

emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions are not expected to impede attainment or maintenance of ozone standards in the Bay Area and thus, the project would be consistent with the Bay Area 2000 Clean Air Plan. Also, as shown in **Table 2.3-6**, operational emissions are well below the BAAQMD significance thresholds of 80 pounds per day (0.04 tons per day) for ROG, NOx, and PM10 and 550 pounds per day (0.275 tons per day) of CO, and thus, would also be consistent with the Bay Area 2000 Clean Air Plan.

TABLE 2.3-6
OPERATIONAL EMISSIONS ESTIMATES

	Daily Emissions (Tons per Day)			
Equipment	**ROG**	**CO**	**NOx**	**PM10**
Light Duty Truck	0.030	0.659	0.183	0.005
Heavy Duty Truck	0.021	0.105	0.696	0.015
Substation and Power Line Operations Total (pounds/day)	0.051	0.765	0.879	0.020
Substation and Power Line Operations Total (tons/day)	<0.000	<0.000	<0.000	<0.000

SOURCE: CARB (2002)

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation: *less than significant impact with mitigation incorporation*.

Construction and operational activities (i.e. grading, excavation, pole removal and installation, line installation, maintenance, etc.) associated with the project would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. The Proposed Project could potentially violate

air quality standards or contribute substantially to an existing or projected air quality violation.

Project Construction

As noted in the *BAAQMD CEQA Guidelines*, the determination of significance with respect to construction-related emissions should be based on a consideration of the emissions control measures to be implemented (BAAQMD, 1999). Project construction control measures include all basic and enhanced control measures as listed in the *BAAQMD CEQA Guidelines*. The guidelines state that, "[i]f all of the control measures indicated (as appropriate, depending on the size of the project area) will be implemented, then air pollutant emissions from construction activities would be considered a less than significant impact" (BAAQMD, 1999). Accordingly, all air quality impacts associated with project construction would be less than significant with mitigation incorporated.

Impact 2.3-1: Construction activities associated with the project would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. This would be a less than significant impact with implementation of Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.

Mitigation Measure 2.3-1a: During construction, PG&E shall ensure that its employees and contractors implement the following measures prescribed by BAAQMD to ensure the reduction of the project's contribution to local PM10 concentrations are to a level that is less than significant.

- For all active construction areas, water as needed or apply soil stabilizers to control dust.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard[1].
- If applicable, sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at or nearby construction sites.
- Sweep streets daily (with water sweepers) if visible soil material are carried onto adjacent public streets.

Mitigation Measure 2.3-1b: The following enhanced control measures shall be implemented at the Leveroni Road staging area or any construction sites greater than four acres pursuant to BAAQMD requirements:

- Hydroseed or apply (non-toxic) soil stabilizers to previously graded inactive (for more than 10 days) construction areas.
- Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)

[1] Freeboard is the distance between the material and the top of the haul truck. This mitigation measure reduces the overtopping and slippage of material, and thus, fugitive dust.

- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

Mitigation Measure 2.3-1c: To mitigate equipment exhaust emissions, PG&E shall require its employees and/or construction contractors to comply with the following requirements:

- Properly tune and maintain construction equipment in accordance with manufacturers' recommended maintenance schedule, if reasonably available. This applies to vehicles used for construction activities only, and does not apply to commuter vehicles
- Use best management construction practices to avoid unnecessary emissions (i.e., require trucks and vehicles in loading and unloading queues to turn engines off when not in use).
- Use diesel trucks which are post-1991 based on CARB inspection program (dated June 3, 1998) for heavy-duty diesel trucks and buses (CARB, 1998).
- Implement a carpooling strategy for construction workers prior to commencing construction (during construction worker orientation and training).

Significance after Mitigation: Less than significant.

Project Operations

Corona activity on electrical conductors surrounded by air can produce very tiny amounts of gaseous effluents: ozone and NOx. Ozone is a naturally occurring part of the air, with typical rural ambient levels around 10 to 30 parts per billion (ppb) at night and peaks of 100 ppb and higher. In urban areas, concentrations greater than 100 ppb are common. The NAAQS for ozone is 120 ppb, not to be exceeded as a peak one-hour concentration on more than one day a year (the standard for NO2 is 140 ppb). Ozone is the primary photochemical oxidant, representing 90 to 95 percent of the total. In general, the most sensitive ozone measurement instrumentation can measure about one ppb.

Gaseous effluents can be produced by corona activity on high voltage transmission line electrical conductors during rain or fog conditions, and can occur for any configuration or location. Typically, concentrations of ozone at ground level for 230 kV and lower voltage transmission lines during heavy rain are significantly less than the most sensitive instruments can measure, and thousands of times less than ambient levels (and nitrogen oxides are even smaller). Thus, because the Proposed Project would result in the construction and operation of a 115 kV transmission line, the project would not result in a significant impact.

The only other air emissions that would be created by the project, once operational, are those associated with maintenance and repair of project components. Project maintenance and repair would not involve grading, excavation, or the use of any motor-driven equipment, but would require the use of vehicles to transport maintenance workers to and from the site. As shown in **Table 2.3-6**, using an estimated worst-case scenario of 100 vehicle miles per day (80 miles light-duty trucks and 20 miles heavy-duty trucks) for maintenance and repairs, total operations-related emissions would be considerably less than the BAAQMD thresholds of significance of 80 pounds per day (0.4 tons per day) for ROG, NOx, and PM10 and 550 pounds per day (0.275 tons per day) for CO. Therefore, potential operational impacts to air quality would be less than significant.

~~*Mitigation Measure 2.1-1*~~

~~As a result of the Land Use and Aesthetics analyses (see Sections 2.1 and 2.9, respectively), Mitigation Measure 2.1-3 would require the new 115 kV single-circuit transmission line to be undergrounded beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see **Figure 2.1-4**), where the circuit would emerge through a substation riser structure and terminate on a substation bus structure.~~

~~Although under Mitigation Measure 2.1-1, there would be more ground disturbance with the excavation of the trench, PM10 air quality impacts would not be significant as dust control measures would be implemented during construction in accordance with the *BAAQMD CEQA Guidelines*. Excavated dirt would be hauled from the site as it is removed. As the undergrounding construction schedule would last 3 months (2.5 months longer than the original project), additional air quality impacts from motor-driven construction equipment and vehicles would occur. However, these impacts would be temporary and would not exceed significance criteria for ROG, NOx, and PM10 (see **Table 2.3-7**).~~

~~TABLE 2.3-7~~
~~MITIGATION MEASURE 2.1-1 EMISSIONS ESTIMATES~~

	~~Daily Emissions (Tons per Day)~~		
~~Equipment~~	~~ROG~~	~~NOx~~	~~PM10~~
~~Fugitive Dust~~	~~--~~	~~--~~	~~14.6~~
~~Combustion Sources~~	~~8.11~~	~~37.4~~	~~1.94~~
~~Mitigation Measure 2.1-3 Total (pounds/day)~~	~~8.11~~	~~37.4~~	~~16.5~~
~~Mitigation Measure 2.1-3 Total (tons/day)~~	~~0.004~~	~~0.019~~	~~0.008~~

~~SOURCE: BAAQMD (1999)~~

~~Impact 2.3-2: Construction activities associated with Mitigation Measure 2.1-1 would generate additional emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Implementation of Mitigation Measure 2.1-1 could violate air quality standards or contribute~~

~~**substantially to an existing or projected air quality violation. However, this would be a less than significant impact with implementation of Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.**~~

~~**Mitigation Measure 2.3-2:** Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~

~~**Significance after Mitigation:** Less than significant.~~

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors): *less than significant impact*.

According to the *BAAQMD CEQA Guidelines*, a project's contribution to cumulative impacts should be considered significant if the project's impact individually would be significant (i.e. exceeds the BAAQMD's quantitative thresholds). For a project that would not result in a significant impact individually, the project's contribution to any cumulative impact would be considered less than significant if the project is consistent with the local General Plan and the local General Plan is consistent with the applicable regional air quality plan. In this case, the applicable regional air quality plan would be the 2000 Bay Area Clean Air Plan. The project is consistent with the goals and objectives related to air quality in the Sonoma County General Plan. The Sonoma County General Plan was completed prior to publication of the 2000 Bay Area Clean Air Plan. However, the County's goal in maintaining air quality is to "[p]reserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant and property damage in accordance with the requirement of the Federal and State Clean Air Acts." Thus, the General Plan is consistent with the 2000 Bay Area Clean Air Plan and the intent to improve air quality and achieve compliance with ozone standards in the Bay Area Air Basin. Therefore, this would be a less than significant impact.

d) Expose sensitive receptors to substantial pollutant concentrations: *less than significant impact with mitigation incorporated*

A small church and school are located approximately 1/4 mile southeast of the Sonoma Substation. Residential neighborhoods exist along Leveroni and Felder Roads, and a few rural homes are scattered along the project corridor. Two staging areas are proposed for the project; one located at the Lakeville Substation, and the other near the east end of the project, adjacent to Sonoma Creek. A few residences are located within one mile of the staging areas. Construction pull sites would be located throughout the project area along the transmission line corridor.

Impact 2.3-~~3~~2: Construction activities would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment

exhaust emissions. These activities could expose sensitive receptors to substantial pollutant concentrations.

Mitigation Measure 2.3-~~3~~2: Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.

Significance after Mitigation: Less than Significant.

Per the *BAAQMD CEQA Guidelines*, application of the BAAQMD recommended emission reduction measures described in Mitigation Measure 2.3-1a would reduce the impacts of construction-related emissions to less than significant levels. Because impacts related to construction emissions would be less than significant, impacts to sensitive receptors would also be reduced to less than significant levels.

e) Create objectionable odors affecting a substantial number of people: ***less than significant impact***.

~~Proposed Project~~

~~The operation of the transmission line would not create odorous emissions. However, project construction could include sources, such as diesel equipment operation, which could result in the creation of objectionable odors. Since the construction activities would be temporary, move around geographically, and generally take place in rural areas, these activities would not affect a substantial number of people. Moreover, *BAAQMD CEQA Guidelines* provides a list of facilities known to emit objectionable odors; the Proposed Project does not include the types of facilities that are contained in that list.~~

~~Mitigation Measure 2.1-1~~

Project construction associated with the undergrounding of a portion of the transmission line along Leveroni Road from about Fifth Street West to the Sonoma Substation, could include sources, such as diesel equipment operation and asphalt re-paving, which could result in the creation of objectionable odors. The construction activities would be temporary and infrequent and these activities would not affect a substantial number of people.

The operation of the transmission line would not create odorous emissions. However, project construction could include sources, such as diesel equipment operation, which could result in the creation of objectionable odors. Since the construction activities would be temporary, move around geographically, and generally take place in rural areas, these activities would not affect a substantial number of people. Moreover, *BAAQMD CEQA Guidelines* provides a list of facilities known to emit objectionable odors; the Proposed Project does not include the types of facilities that are contained in that list.

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Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

2.4 Biological Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
BIOLOGICAL RESOURCES—Would the project:					
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

2.4.1 Setting

Regional

The Proposed Project is located in southern Sonoma County and is regionally located within the greater San Francisco Bay Area (Bay Area). The Bay Area is located in the Coast Range of the California Floristic Province. Vegetation in this region is influenced by Mediterranean climate and coastal weather patterns (e.g., fog and on-shore flow) with cool wet winters and hot dry summers. The vegetation communities in the area are characterized by redwood forest, riparian and oak woodland and forests, as well as native and non-native grassland. Freshwater and seasonal wetland communities are located along drainages and within grassland habitats and topographic low points.

In the vicinity of the project area, vegetation communities consist of annual grasslands, oak woodland and forest, and a mixture of freshwater and alkali wetlands in areas that are seasonally

or perennially inundated. Surrounding land uses include agriculture, including vineyard production, residential development, and rural residential.

Local Setting

The project region includes southeastern Petaluma, the southern end of the Sonoma Mountains and part of the southern Sonoma Valley. The proposed transmission alignment begins in southeastern Petaluma at the Lakeville Substation and traverses east over Sonoma Mountain and terminates at the Sonoma Substation in the Sonoma Valley. Lowest elevation is 54 feet mean sea level at the Sonoma Substation and the highest elevation is 712 feet mean seal level at the top of the Sonoma Mountain.

The predominant vegetation and land cover types in this region are grasslands, pasturelands, oak woodlands, vineyards, and riparian forests. The lower slopes of Sonoma Mountain and the flat valley lands are dominated by grazed grasslands, pasturelands, and vineyards. Major drainages located within the project area include Sonoma Creek on the eastern side of Sonoma Mountain. Rodgers Creek, Felder Creek, and Carriger Creek, are tributary drainages to Sonoma Creek. On the western side of Sonoma Mountain are unnamed USGS “blue line” tributaries to the Petaluma River. Both Sonoma Creek and the Petaluma River are tributaries to San Pablo Bay.

Land use within the project area varies from rural housing and agricultural lands to relatively undisturbed areas on Sonoma Mountain.

Vegetation Communities and Wildlife Habitats

Vegetation communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. *A Manual of California Flora* (Sawyer and Keeler-Wolfe, 1995) was used to classify the vegetation communities or “series” in the project corridor to the extent feasible. Several vegetation communities found within the project area do not fit into the classification system developed by Sawyer and Keeler-Wolfe. Vegetation series generally correlate with wildlife habitat types and were classified and evaluated using the California Department of Fish and Game’s (CDFG) *A Guide to Wildlife Habitats of California* (Mayer and Landenslayer, 1988).

Vegetation communities along the proposed transmission line vary from intact natural communities to disturbed non-native species within agricultural areas. Disturbed lands within the project area have been subject to grazing or vineyard agriculture and occur mostly on the lower foothills and valley floors on the western and eastern side of Sonoma Mountain. Dense vegetation occurs on the upper foothills and on Sonoma Mountain.

The vegetation in the area of the Sonoma Substation consists of ornamental landscaping of small trees and shrubs along the perimeter of the substation boundary. The vegetation in the area of the Lakeville Substation consists of non-native weedy grasses and forbs characteristic of ruderal areas.

California Annual Grassland

California annual grassland is a common vegetation community in Sonoma County and in Petaluma and Sonoma Valley. It is found in the surrounding hillsides along with oak woodlands and is often found in areas that have been grazed or otherwise converted to agriculture. This community occurs throughout the project corridor, varying from disturbed ruderal vegetation in lowland areas to relatively intact communities in the upper foothills of Sonoma Mountain. The most common species found in this community include wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), fescue (*Vulpia myuros*), filaree (*Erodium* sp.), and mustards (*Brassica* and *Hirschfeldia* sp.). Native wildflowers may also occur within the annual grassland community and these species may include fiddleneck (*Amsinckia* ssp.), lupine (*Lupinus* ssp.), popcorn flower (*Plagiobothrys* ssp.), and California poppy (*Eschscholzia californica*).

The non-native grasslands in the project area have a long history of livestock grazing, The currently ungrazed grasslands are dominated by introduced annual grasses such as slender wild oat (*Avena barbata*), brome grasses, Mediterranean barley, and other barleys (*Hordeum* spp.), Italian ryegrass (*Lolium multiflorum*), introduced weedy forbs such as Italian thistle, milk thistle and yellow and purple starthistles, and native forbs such as tarweeds (*Hemizonia congesta*, *H. fitchii*), and summer lupine (*Lupinus formosus*). Coyote brush (*Baccharis pilularis*) is sometimes present in these sites in small patches.

Annual grasslands in general support a small diversity of wildlife, but the adjacent riparian and oak woodland communities greatly enhance the wildlife habitat elements of the grassland in the project area. The habitats adjacent to the grasslands in the project area provide breeding, nesting, and refugia for species utilizing the grassland habitat. Small mammals such as the western harvest mouse (*Reithrodontomys megalotis*) and deer mouse (*Peromyscus maniculatus*) use this community for nesting and foraging. Amphibians in this community include western toad (*Bufo boreas*), Pacific tree frog (*Hyla regilla*), and California slender salamander (*Batrachoseps attenuats*). Reptiles typically found in grassland habitats include western fence lizard (*Sceloporus occidentals*), western skink (*Eumeces skiltonianus*), gopher snake, and western rattlesnake (*Crotalus viridus*). Common birds that use grasslands for nesting and foraging materials include western meadowlark (*Sturnella neglecta*), red-winged blackbird (*Agelaius phoeniceus*), and song sparrow (*Melospiza melodia*).

Coast Live Oak Series

The Coast Live Oak Series is widespread within the project area, where it is found mainly on ridges and slopes with a northern or eastern exposure, and on some upper slopes of Sonoma Mountain. Coast live oak habitat is typically found on higher slopes and ridgetops where soils are well-drained. The dominant tree species is coast live oak (*Quercus agrifolia*) with other oak species, including Oregon oak (*Quercus garryana*.) and blue oak (*Quercus douglasii*) typically occurring as sub-dominants. Other tree species typically found within this community include California bay laurel (*Umbellularia californica*), and California buckeye (*Aesculus californica*). The understory in oak woodlands can be native grasslands or it can be dominated by introduced

weedy annual grasses, or weedy annual forbs such as Italian thistle (*Carduus pycnocephalus*) and milk thistle (*Silybum marianum*). Within the project area, weedy understory is observed primarily in areas currently used for livestock grazing.

Oak woodlands and savannahs provide important nesting and perching habitat for raptors and other birds, an abundant food source in acorns, and cover for larger mammals. Common birds and mammals that utilize this habitat type include red-shouldered hawk (*Buteo lineatus*), California quail (*Callipepla californica*), nuthatches (*Sitta* spp.), western scrub jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), gray squirrel (*Sciuris griseus*), and mule deer (*Odocoileus hemionus*). Leaf litter deposited below the trees creates microhabitats for a number of small vertebrates including newts (*Taricha* spp.), western fence lizard (*Sceloporus occidentalis*), and rodents such as deer mouse (*Peromyscus maniculatus*).

Redwood Series

The Redwood Series is dominated by coast redwood (*Sequoia sempervirens*) and occurs more or less continuously along the coast from the Oregon border to the southern end of Monterey County (Holland, 1986). Redwood forest can occur on all slope aspects, from alluvial stream terraces to steep slopes subject to erosion. Redwoods in the project area are found on shallow soils with sufficient soil moisture to support this species. Other species typically found in this community include Douglas fir (*Pseudotsuga menziesii*) and madrone (*Arbutus* spp). This community produces a shaded understory that supports patches of sword fern (*Polystichum munitum*) and shade-tolerant native annual and perennial forbs.

Riparian Forest

Riparian forest is the predominant vegetation occurring at the margins of Sonoma Creek and other drainages throughout the project area. Riparian forest within the project area consists mainly of two subtypes, Mixed Riparian Forest and Oak-Bay Riparian Forest. The Mixed Riparian Forest subtype occurs along lower gradient, usually perennial streams, and consists of a mixture of deciduous and evergreen tree species, none of which dominates by area. Mixed Riparian Forest also occurs along intermittent streams with well developed beds and banks. Typical species include: coast live oak, valley oak (*Quercus lobata*), California buckeye (*Aesculus californicus*), Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), California bay, white alder (*Alnus rhombifolia*), red willow (*Salix laevigata*), and walnuts (*Juglans hindsii* and others). The native understory often includes California wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*) and Himalayan blackberry (*Rubus discolor*). Riparian Forest is found at the Rodgers Creek and Carriger Creek in Segment 1 and the Sonoma Creek crossing in Segment 17.

Riparian woodlands (including mixed riparian and oak-bay riparian forest) habitats provide food, water, migration and dispersal corridors, breeding sites, and thermal cover for wildlife and can support many resident and migratory wildlife species (CDFG, 1999). Wooded stream edges serve as nesting sites and provide escape habitat for many species. Birds found in this community are those that forage for insects in riparian areas and include Bewick's wren (*Thryomanes bewickii*),

black phoebe (*Sayornis nigricans*), and black-headed grosbeak (*Pheuticus melanocephalus*). Bark-insect foraging birds also occur in this habitat and include acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttalli*), and white-breasted nuthatch (*Sitta canadensis*). Other bird species typically observed in riparian woodland habitats include dark-eyed junco (*Junco hyemalis*), bushtit (*Psaltriparus minimus*), oak titmouse (*Baeolophus inornatus*), chestnut-backed chickadee (*Poecile rufescens*), and brown creeper (*Certhia americana*).

Riparian woodlands also provide habitat for reptiles and amphibians including the western toad, California newt (*Taricha torosa*), Pacific tree frog (*Hyla regilla*), and Pacific slender salamander (*Batrachoseps pacificus*). Small mammals such as the western harvest mouse, deer mouse, western gray squirrel (*Sciurus griseus*), Virginia opossum (*Didelphis marsupialis*), and raccoon (*Procyon lotor*), utilize these habits for nesting and foraging. Small rodents attract raptors such as red-shouldered hawk (*Buteo lineatus*) and red-tailed hawk (*Buteo jamaicensis*).

Bulrush-Cattail Series

Bulrush (*Scirpus* ssp.) and cattails (*Typha latifolia* and *T. angustifolia*) are found in areas that are wet year-round and typically in ponds (natural or human made), shallow edges of lakes, pools, stockponds, and in seasonal drainages and riparian areas. In the project area this community is found within larger in-stream pools in Sonoma Creek and tributaries and in stock ponds and detention basins within vineyard areas. This vegetation community is found in artificial ponds and small reservoirs used mainly for vineyard irrigation. Several reservoirs are located in Segment 1(GANDA, 2004a).

Wildlife species that typically use this community include Pacific tree frog, California red-legged frog (*Rana aurora draytonii*), and western pond turtle (*Clemmys marmorata*) depending on the depth of the aquatic feature. Common bird species using this community include marsh wren (*Cistothorus palustris*), common yellowthroat (*Geothlypis trichas*), and red-winged blackbird (*Agelaius phoeniceus*). Mammals may use these aquatic features for water or forage.

Seasonal Wetlands

Seasonal freshwater wetlands may occur in topographical low-points where water is allowed to saturate or inundate for long periods of time and hydrophytic vegetation is able to establish seasonally. These seasonal wetlands are typically annual in nature and are colonized by opportunistic vegetation such as rabbit-foot's grass (*Polypogon monospliensis*), toad rush (*Juncus bufonius*), and Italian ryegrass (*Lolium multiflorum*). These features may not be evident by late spring or early summer and may not persist from year to year, depending on climatic conditions.

Vernal Pools

Vernal pools are seasonal wetlands that occur in grasslands and are typically located in slight depressions that form over bedrock or hardpan soils that allow water to pool during winter and spring rains. Vernal pools within the project area are a northern California type that does not completely fit within any of the subcategories of Northern Vernal Pools described by Holland

(1986) or Sawyer and Keeler-Wolf (1995). As with all vernal pools, they occupy shallow depressions that hold water during the rainy season due to a clay or hardpan substrate that impedes water percolation.

Although vernal pools occur naturally in grassland and woodland settings, they may also occupy disturbed locations where the underlying soil conditions remain intact. Vernal pools are considered unique habitat and often support species that are endemic to vernal pools or other shallow pools in that particular geographic region. Vernal pool communities have been greatly reduced due to conversion of grasslands to agriculture or urban development.

Vernal pool vegetation found in the project area includes goldfields (*Lasthenia* spp.), downingias (*Downingia* spp.), popcorn flowers (*Plagiobothrys* spp.), meadowfoams (*Limnanthes* spp.), and button-celeries (*Eryngium* spp.). One large vernal pool was found in the project area along Segment 1 between, and just to the south of Poles 43 and 44. This vernal pool contained bracted popcorn flower (*Plagiobothrys bracteatus*), Jepson's button-celery (*Eryngium aristulatum*), flowering quillwort (*Lilaea scilloides*), and the special-status plant Lobb's aquatic buttercup (*Ranunculus lobbii*).

Vernal marshes are described by Holland (1986) as wetlands somewhat similar to vernal pools in species composition. They differ in hydrology, with vernal marshes retaining some standing water well into the summer and often throughout the year. The central area, with deeper water, often supports plants characteristic of freshwater marshes, while the gradually sloping shoreline, which dries completely during the summer, supports vernal pool species.

One vernal marsh is located adjacent to the Segment 1 survey corridor, on the upper west-facing slope of Sonoma Mountain, just west of the route's intersection with Rodgers Creek. This wetland appears to have been formed from a natural vernal pool whose size was enhanced by the construction of a low berm along the eastern edge of the wetland. Common species identified on the shores of this vernal marsh during field surveys include: Jepson's button-celery, flowering quillwort, bracted popcorn flower, and pygmy-weed (*Crassula aquatica*). Common tule (*Scirpus acutus*), lance-leaved water plantain (*Alisma lanceolatum*), and floating pondweed (*Potamogeton* sp.), species characteristic of freshwater marshes, were common in the permanent standing water of this vernal marsh.

Vernal pools and other seasonal wetlands support a unique assemblage of species adapted to the seasonal regime of inundation and desiccation. Species composition depends in part on the period of inundation during the wet season. When filled or saturated, these habitats support a variety of aquatic invertebrates and provide breeding sites for amphibians such as Pacific tree frog and western toad. In winter and spring, seasonal wetlands also provide foraging habitat for resident and migratory birds such as killdeer (*Charadrius vociferus*), snowy egret (*Egretta thula*), and greater yellowlegs (*Tringa melanoleuca*). Because they are often isolated from other water bodies and provide unique habitat conditions, vernal pools and other seasonal wetlands can be essential habitats for locally endemic and rare species.

Seasonal wetlands, including vernal pools, provide a high diversity of habitat. They provide forage, cover, and water for a diversity of wildlife and are essential habitats for amphibians and reptiles such as Pacific tree frog and garter snakes (*Thamnophis* spp.). Common birds found in these habitats include water birds such as American coot (*Fulica americana*), mallard (*Anas platyrhynchos*), and cinnamon teal (*Anas cyanoptera*), wading birds such as great blue heron (*Ardea erodias*) and great egret (*Ardea alba*), and songbirds such as red-winged blackbird (*Agelaius phoeniceus*).

Vineyards and Other Agricultural Lands

Vineyards of wine grapes are common within the project area, occurring within or adjacent to the transmission line. Native plants sometimes persist within vineyards. In the flatlands of the Santa Rosa Plain in Sonoma County, special-status plants have occasionally been found within vineyards that contain seasonal wetlands and are not extensively tilled. The vineyards within the project area occur on slopes and on flatlands on both the eastern and western sides of Sonoma Mountain.

Vineyards and other row crops are generally planted in areas that once supported productive and diverse biological communities. The conversion of native vegetation to cultivated crops has greatly reduced the wildlife species diversity and habitat value. However, some common and agricultural “pest” species forage in vineyard habitats, and cultivated vegetation can provide benefits such as cover, shade and moisture for these and other species during hot summer months. Typical species found in vineyards include red-tailed hawk, common crow (*Corvus brachyrhynchos*), Brewer’s blackbird, house finch (*Carpodacus mexicanus*), California ground squirrel, and western harvest mouse (*Reithrodontomys megalotis*).

Aquatic Resources

Aquatic resources in the project area include perennial creeks, ephemeral creeks, and artificial ponds located in agricultural areas. The quality of the aquatic habitat in the proposed project corridor varies considerably, depending on the degree of disturbance from current and past land use. On the western side of Sonoma Mountain, there are three blue line streams that are tributaries to the Petaluma River. A large artificial pond, formed by an earthen dam in one of these drainages is located just east of Pole 25. A smaller, rectangular stock pond is located immediately north of the line between Pole 36 and Pole 37.

On the eastern side of Sonoma Mountain, there are several perennial and intermittent creeks along the transmission line including Rodgers Creek, Felder Creek, and Carriger Creek, that are all tributaries to Sonoma Creek. Large portions of the proposed transmission line either cross, span, or parallel these drainages.

Perennial and ephemeral streams provide habitat for a variety of aquatic invertebrates, including California freshwater shrimp (*Syncaris pacifica*), and fish species such as California roach (*Lavinia symmetricus*), steelhead (*Oncorhynchus mykiss*), and sunfish (*Lepomis* spp.). These features also provide aquatic and breeding habitat for amphibians and reptiles such as garter

snakes and western pond turtle (*Clemmys marmorata*). Ponds in the project may contain introduced fish such as mosquitofish (*Gambusia* sp.) and sunfish, bullfrogs (*Rana catesbiana*), and native Pacific tree frogs and pond turtles.

Agricultural stock and detention ponds occur within the vineyard areas and in other areas used for cattle grazing. These ponds are mostly open water areas but can contain some vegetation typically found in freshwater wetlands such as common cattail and bulrush. These ponds provide aquatic breeding habitat for common amphibians such as the Pacific tree frog and western toad and the non-native bullfrog. These ponds also provide suitable habitat for western pond turtles and waterfowl species such as mallard (*Anus platyrhynchos*), Canada goose (*Branta canadensis*). The shorelines of these ponds also provide suitable habitat for wading birds including snowy egret (*Egretta thula*), lesser yellow legs (*Totanus flavipes*), and great egret (*Ardea alba*).

Jurisdictional Waters of the U.S., including Wetlands

Wetlands are ecologically productive habitats that support a rich variety of both plant and animal life. They are recognized as important natural systems because of their value to fish and wildlife, and their functions as storage areas for flood flows, groundwater recharge, nutrient recycling and water quality improvement. Wetlands are defined as areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted to saturated soils.

Potentially jurisdictional Waters of the United States (U.S.), including wetlands may occur within the project area where topography and soils allow for frequent inundation or saturation. These potentially jurisdictional features also include channels, ditches, ponds, vernal pools, and seasonal areas that would meet criteria for wetlands. Other waters within the project area include ephemeral and perennial drainages including Sonoma Creek, Rodgers Creek, Felder Creek, and several unnamed blue line streams. Wildlife species typically found within these features include Pacific tree frog, western toad, and common garter snake as well as numerous birds species including red-winged blackbird, snowy egret, northern harrier (*Circus cyaneus*), and red-shouldered hawk.

Special-status Species

Species known to occur on or in the vicinity of the project site are accorded “special status” because of their recognized rarity or vulnerability to various causes of habitat loss or population decline. Some of these receive specific protection defined in federal or state endangered species legislation. Others have been designated as “sensitive” on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as “special status species” in this Initial Study, following a convention that has developed in practice but has no official sanction. The various categories encompassed by the term, and the legal status of each, are discussed in the Regulatory Context section of this chapter.

Special-status plant and wildlife species with potential to occur in the project area are discussed in the following sections.

A list of special status plant and animal species reported to occur within the vicinity of the project site was compiled on the basis of data in the California Natural Diversity Database (CNDDB, 2004), consultation with the California Department of Fish and Game (CDFG), California Native Plant Society (CNPS) literature (Skinner and Pavlik, 1998), consultation with the U.S. Fish and Wildlife Service (USFWS), and biological literature of the region. The list is intended to be comprehensive and the "Potential for Occurrence" designations (**Table 2.4-1**) apply to species and their habitats in close proximity to the proposed project boundary and facilities but not necessarily impacted by the project. Special-status species with the potential for occurrence within the project area are described below.

Special Status Plants

Protocol-level rare plant surveys were conducted by Garcia and Associates (GANDA) in March through June 2003 (see **Appendix C**). The purpose of these surveys was to locate all populations of special-status plants within the project area, to precisely record and map their locations using GPS technology, and to estimate the size, number of individuals, phenology, and microhabitat characteristics of each rare plant population. Protocol-level surveys were floristic in nature and were conducted according to the rare plant survey guidelines approved by the California Native Plant Society (CNPS) (Tibor, 2001), CDFG (2000), and USFWS (1996a). Results of these surveys indicate the presence of two special status species: cotula navarretia and Lobb's buttercup.

Cotula navarretia (*Navarretia cotulifolia*) – CNPS 4

Cotula navarretia is an annual forb with cream-colored flowers in the Polemoniaceae (Phlox Family). It is found in chaparral, cismontane woodlands, and especially in moist grasslands, sometimes with serpentine influence, from San Benito County to Mendocino, Colusa and Butte counties (Tibor, 2001). The CNPS Inventory (Tibor, 2001) places cotula navarretia on List 4.

One population of cotula navarretia was found on the lower east-facing slope of Sonoma Mountain, in grazed Non-native Grassland with adobe soil between Poles 58 and 59. Approximately 20,000 individuals were found within the 200 foot-wide survey corridor in June 2003. In June 2004 the survey area was expanded to include the entire small valley in the vicinity of Poles 57 to 60. The cotula navarretia population was found to extend to the north and south beyond the original survey corridor within the project area. All the plants observed were located north of the ephemeral drainage that flows northwest to southeast in the valley bottom, and northwest of the fence line that runs along the southwest margin of the valley. In June 2004 the estimated size of the entire population of cotula navarretia was approximately 40,000 individuals.

Lobb's aquatic buttercup (*Ranunculus lobbii*) – CNPS 4

Lobb's aquatic buttercup is an aquatic annual herb in the Buttercup Family (*Ranunculaceae*) with floating and submerged leaves, and small, white, floating flowers. Lobb's aquatic buttercup is

TABLE 2.4-1
SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE PROJECT AREA

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFG/ CNPS**	**General Habitat**	**Flowering Period**	**Potential for Occurrence**
Plants				
Napa False Indigo (*Amphora californica* var. *napensis*)	FSC/--/1B	Broadleafed upland forest, chaparral, cismontane woodland.	April-July	**Low potential**: No suitable habitat occurs within project area. Closest known location is in Sonoma at Norrbom Road, approximately 2 miles northeast of the project area.
Alkaki milk vetch (*Astragalus tener* var. *tener*)	FSC/--/1b	Alkali playas and vernal pools in valley foothills and grasslands	March-June	**Low potential:** No suitable habitat occurs on project site. Species known from a single collection in 1880 (CNDDB, 2004).
Narrow-anthered California brodiea (*Brodiaea californica* var. *leptandra*)	FSC/--/1B	Broadleafed upland forest, chaparral, lower montane coniferous forest	May-July	**Low potential**: No suitable habitat occurs within the project area. No CNDDB occurrences reported within project area.
Yellow larkspur (*Delphinium larkspur*)	FE/CR/1B	Chaparral, coastal prairie, and coastal scrub. Endemic to a few occurrences in Sonoma County	March-May	**Low potential:** No suitable habitat occurs within the project area. No CNDDB occurrences reported within project area.
Sonoma sunshine (*Blennosperma bakerii*)	FE/SE/1B	Endemic to Sonoma County. Found in vernal pools and valley and foothill grasslands.	March-May	**Moderate potential:** CNDDB lists several known occurrences within 5 miles of project site. Special-status plant surveys did not reveal this species within the project area (GANDA, 2004a)
Sonoma Ceanothus (*Ceanothus sonomensis*)	FSC/--/1B	Endemic to Napa and Sonoma Counties. Chaparral, including sandy and serpentine or volcanic soils	February-April	**Low potential**: No suitable habitat occurs within the project area. No CNDDB occurrences reported within project area.
Sonoma spineflower (*Chorizanthe valida*)	FE/SE/1B	Known only from Marin and Sonoma Counties although thought to be extinct in Sonoma County. Habitat is coastal prairie on sandy soils	June-August	**Low potential:** No suitable habitat occurs within the project area. No CNDDB occurrences reported within project area.

TABLE 2.4-1 (continued)
SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/ CNPS	General Habitat	Flowering Period	Potential for Occurrence
Dwarf downingia *Downingia pusilla*	--/--/2	Vernal pools in valley and foothill grasslands.	March-May	**Moderate potential**: Suitable habitat occurs on project site. However, special-status plant surveys did not reveal this species within the project area (GANDA, 2004a). Closest known occurrence is at Sonoma Valley Regional Park, approximately 5 miles north of project site (CNDDB, 2004).
Round-leaved filaree (*Erodium macrophyllum*)	--/--/2	Valley and foothill grassland. Cismontane woodland.	March-May	**Low potential:** Suitable habitat occurs on the project site. However, special-status plant surveys did not reveal this species within the project area (GANDA, 2004a)
Lobb's aquatic buttercup (*Ranunculus lobbii*)	--/--/4	Vernal pools and seasonal wetlands within valley and foothill grasslands	February-May	**Present:** This species was identified during focused special-status plant surveys (GANDA, 2004a)
Cotula navarretia (*Navarretia cotulifolia*)	--/--/4	Valley and foothill grasslands	April-June	**Present:** This species was identified during focused special-status plant surveys (GANDA, 2004a)
Contra Costa goldfields (*Lasthenia conjugens*)	FE/--/1B	Vernal pools and shallow depressions in valley and foothill grasslands. Thought extirpated from most of its range	March-June	**Moderate potential**: Vernal pools within the project area provide suitable habitat. However, this species was not detected during focused plant surveys

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/ CNPS	General Habitat	Localities of Occurrence Reported by CNDDB in the Project Area	Potential for Occurrence
Invertebrates				
California freshwater shrimp *Syncaris pacifica*	FE/SE	Low gradient streams with pools, undercut banks, exposed roots and with dense riparian vegetation. Found in Napa and Sonoma Counties	Less than five miles upstream of the project area near the town of Glen Ellen	**High potential.** The project area in Sonoma Creek (Poles 107 and 108) provides suitable habitat for this species.

TABLE 2.4-1 (continued)
SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE PROJECT AREA

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFG/ CNPS**	**General Habitat**	**Localities of Occurrence Reported by CNDDB in the Project Area**	**Potential for Occurrence**
Fish				
Steelhead-Central California Coast ESU *Oncorhynchus mykiss*	FT/-CSC	Drainages of San Francisco and San Pablo Bays. Central California coastal rivers	Adobe Creek adjacent to the Lakeville Substation but outside the project boundary.	**Low potential.** The streams and drainages within the project area do not provide suitable habitat for this species. No CNDDB reported occurrences in Sonoma, Rodgers, Carriger, or Felder Creek within the project area.
Amphibians				
California tiger salamander *Ambystoma californiense*	FT/CSC	Breeds in ephemeral ponds and pools and vernal pools, aestivates most of the year in burrows or subterranean areas	No known occurrences within project area. Closest known occurrence approximately 8 miles north in Cotati**.**	**Low potential.** Marginal habitat occurs on project site. Surveys did not reveal any occurrences of this species within the project boundary.
California red-legged frog *Rana aurora draytonii*	FT/CSC	Breeds in stock ponds, pools, and slow-moving streams with emergent vegetation for escape and egg attachment	Closest known CNDDB occurrence approximately 10 miles east at Sears Point.	**Present:** Present in the upper portion of Felder Creek.
Foothill yeloow-legged frog *Rana boylii*	--/CSC	Partly shaded streams with riffles and rocky substrate. Require at least cobble-size substrate for egg-laying	Closest known CNDDB occurrence at Adobe Creek approximately ½ mile west of the Lakeville Substation	**Moderate potential:** Suitable habitat occurs with the project area in Rodgers and Felder Creeks.
Reptiles				
Western pond turtle *Clemmys marmorata*	FSC/CSC	Requires permanent streams and creeks with sandy banks for egg laying.	Closest known CNDDB occurrence at a stock pond near the intersection of Adobe Rd. and Stage Gulch Road	**High potential.** Suitable habitat for this species is found throughout the project site.
Birds				
Cooper's hawk *Accipiter cooperii*	--/CSC	Nests in riparian growths of deciduous trees and live oak woodlands.	Not reported by CNDDB	**Low potential**. Nesting sites are available throughout the wooded riparian margins of Sonoma Creek but no known occurrences in the project area..
White-tailed kite (*Elanus leucurus*)	CDFG Fully Protected	Nests near wet meadows and open grasslands dense oak, willow or other large tree stands.	Not reported by CNDDB	**High potential**. Observed within project area during field surveys.
Golden eagle (*Aquila chrysaetos*)	--/CSC	Nests in canyons and large trees with adjacent open foraging habitats	Not reported by CNDDB	**Moderate potential.** Suitable habitat occurs within Segment 1.

TABLE 2.4-1 (continued)
SPECIAL STATUS SPECIES REPORTED OR POTENTIALLY OCCURRING IN THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/ CNPS	General Habitat	Localities of Occurrence Reported by CNDDB in the Project Area	Potential for Occurrence
California horned lark *Eremophila alpestris actia*	--/CSC	Nests and forages in short-grass prairie, mountain meadow, coastal plain, fallow fields, and alkali flats	Not reported by CNDDB	**High potential.** Suitable habitat occurs in the grasslands within Segment 1. Species observed during field surveys (GANDA, 2004a)
Loggerhead shrike *Lanius ludovicianus*	FSC/CSC	Scrub, open woodlands, and grasslands.	Not reported by CNDDB	**Low potential**. The project area provides foraging and marginal nesting habitat in surrounding grasslands. No known occurrences within the project area.
Burrowing owl *Athene cunicularia*	FSC/CSC	Nests and forages in low-growing grasslands that support burrowing mammals.	Closest known occurrence approximately 5 miles from project site Lakeville Road and Highway 37.	**Low potential**. Marginal habitat occurs along the western side of Sonoma Mountain. Surveys for this species did not reveal presence within the project area.
Mammals				
Pallid bat *Antrozous pallidus*	--/CSC	Grasslands and shrublands, woodlands and forests. Roosts in cliffs, rock faces, and bridges. Forages in open areas such as grasslands	CNNDB reports known occurrences on Watmaugh Bridge over Sonoma Creek approximately less than one mile downstream of the project area.	**Moderate potential.** The bridge at Leveroni Road provides suitable habitat for this species. CNDDB reports no known occurrences at this location.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered (in danger of extinction) by the Federal Government.
FT = Listed as Threatened (likely to become endangered within the foreseeable future) by the Federal Government.
FP = Proposed for Listing as Endangered or Threatened.
FC = Candidate to become a *proposed* species.
FSC = Federal Species of Concern. May be endangered or threatened, but not enough biological information has been gathered to support listing at this time.
FD = Delisted by the Federal Government

STATE: (California Department of Fish and Game)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California (plants only)
CSC = California Species of Special Concern
* = Special Animals
3503.5=Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)

California Native Plant Society
List 1A=Plants presumed extinct in California
List 1B=Plants rare, threatened, or endangered in California and elsewhere
List 2= Plants rare, threatened, or endangered in California but more common elsewhere
List 3= Plants about which more information is needed
List 4= Plants of limited distribution

endemic to vernal pools and other seasonal wetlands in coastal areas from Santa Clara County to Mendocino County and in Oregon. It is included on List 4 of the CNPS Inventory (Tibor, 2001).

One population of Lobb's aquatic buttercup is located within the project area, in a large vernal pool in grazed Non-native Grassland in Segment 1, between Poles 43 and 44 (GANDA, 2004a). This population contained an indeterminate number of individuals. The plants covered a crescent-shaped portion of the vernal pool approximately 80 feet by 20 feet in size, about one-fourth of the total area covered by the vernal pool. The pool showed substantial trampling impacts by cattle that were grazing in the area at the time of the protocol-level surveys.

Special-Status Wildlife

California Freshwater Shrimp (*Syncaris pacifica*)

This species is endemic to perennial lowland streams in Marin, Sonoma, and Napa counties. It is also found in intermittent streams with perennial pools, and prefers areas with undercut banks, exposed roots, overhanging woody debris, or overhanging vegetation. It is currently known to exist within 17 streams, all generally low-gradient streams below 400 feet elevation.

Within the project area, California freshwater shrimp has been documented throughout Sonoma Creek (Pole 107) with the closest known occurrence approximately five miles upstream from the project site near the Sonoma Developmental Center (CNDDB, 2004).

Steelhead-Central California Coast ESU (*Oncorhynchus mykiss*)

O. mykiss (Central California Coast ESU) is a federally listed threatened species. Critical habitat, which was designated for this species by the National Marine Fisheries Service (NMFS) on February 16, 2000. However, on April 30, 2002, NMFS withdrew the critical habitat designation pending further economical impact analysis (NMFS, 2002). On September 29, 2003, NMFS formally withdrew critical habitat designation for the Central California Coast ESU, as well as 18 other ESUs (final rule dated September 29, 2003, Federal Register 68: No. 188, 55900). A final rule is expected in late summer 2005 (NMFS, 2004).

O. mykiss exhibit one of the most complex life histories of any salmonid species. The resident form spends its entire life in freshwater environments, while the anadromous form migrates between their natal streams and the ocean. Migratory *O. mykiss* typically migrate to marine waters after spending one or more years in freshwater. They typically reside in marine waters two to three years before returning to their natal stream to spawn as four or five year olds. Unlike salmon, migratory *O. mykiss* are iteroparous, meaning they can spawn more than once before they die.

Migratory *O. mykiss* incubate in gravel depressions, termed "redds," made by the adult female. The egg incubation period varies based on local conditions such as water temperature and oxygen availability. Juvenile "fry" emerge from the gravel and rear in the freshwater environment for one to four years, after which they migrate to the ocean as smolts. Two reproductive forms are recognized, the "stream maturing" and "ocean maturing" forms (also termed summer-run and winter-run, respectively), which describes the level of sexual development following return to the freshwater environment.

Within the project vicinity, migratory *O. mykiss* are reported to occur in Adobe Creek, located north of the Lakeville Substation (CNDDB, 2004). Rodgers, Felder, Carriger, Fowler, and

Sonoma Creeks along Segments 1, 2 and 17 also provide suitable habitat but there are no known occurrences of this species in these drainages (CNDDB, 2004). Adults could migrate through the lower reaches of these creeks and spawn in the upper reaches mostly north of the project area. Also, *O. mykiss* have the potential to occur in Fryer Creek along Segment 17. Fryer Creek is tributary to Nathanson Creek, which is known to support this species, but their presence in Fryer Creek has not been established (GANDA, 2004b). The lower reaches of these streams that cross the project corridor generally become too warm and dry for steelhead, but some pools that remain in well-shaded locations could provide suitable rearing habitat for juveniles.

California Tiger Salamander (*Ambystoma californiense*)

Based on the results of the site assessment for California tiger salamander (CTS), nocturnal terrestrial surveys were conducted according to the CDFG protocol (1997) from December 13, 2002 to March 19, 2003. The survey area encompassed terrestrial habitat within 1,600 feet of the five aquatic sites determined during the site assessment phase to have suitable breeding habitat. Five night surveys were performed at each site, one during each of the months of December, January, and February, and two additional surveys during storm systems in February and March. Mammal burrows and other suitable underground refuges were identified in daylight and flagged prior to the night surveys. The surveys were conducted when rain had occurred during the day and continued after dark, and air temperatures ranged from 46 to 61 degrees Fahrenheit (F). Teams of two biologists conducted either randomized walk or transect surveys around suitable breeding ponds. Transects were spaced 16 to 50 feet apart, and six-volt flashlights were used to scan both sides of each transect for CTS. Mammal burrows and other suitable refuge sites were carefully inspected by looking down the tunnel as far as possible.

California tiger salamander is a federally listed threatened species and a California species of special concern. It breeds primarily from December through February and spends the majority of its adult life in subterranean refugia, such as ground squirrel burrows, in grasslands. Adult salamanders emerge for only a few weeks per year from their underground retreats near breeding areas, generally at the height of the rainy season, and move to temporary rain pools, streams, and ponds to mate and lay their eggs. During the short breeding season, salamanders can be observed moving to temporary rain pools, ponds, streams, and lakes. Habitat elements required for species presence include natural or artificial aestivation sites, such as small mammal burrows or debris piles, and suitable breeding sites, which may include ephemeral pools, ponds, or slow-moving streams.

Suitable aquatic habitat was identified at five ponds within 0.6 mile (1 km) of the project corridor, and suitable upland habitat (rodent burrows in grasslands) was observed in the vicinity of some of these ponds. No CTS were observed at or around any of these five areas visited during nocturnal surveys. This result included no sightings at entrances of burrows, under woody debris, in vegetation, or along the banks of the suitable aquatic sites. There are no California Natural Diversity Database (CNDDB) occurrences within the project area. The closest recent records of Sonoma County CTS are in southern Cotati, approximately five miles northwest of the Lakeville Substation (CNDDB, 2004). Based on the survey results and current range information, this species is not likely to occur within the project area.

California Red-legged Frog (*Rana aurora draytonii*)

Following the site assessments, protocol surveys for California red-legged frog (CRLF) were conducted according to U.S. Fish and Wildlife Service (USFWS, 1997) guidance from October 21 to 31, 2002, May 1 to June 30, 2003, October 20 to 30, 2003, and June 17 to July 20, 2004 (GANDA, 2004b). These consisted of two daytime and two nighttime surveys conducted at those sites identified in the assessment as suitable habitat for CRLF and which could be affected by the project. Protocol surveys were not performed at sites that would not be affected because of their distance from the project area or isolation by barriers such as major roads. Fifteen sites were surveyed, including eleven ponds and four creek reaches. The ponds surveyed consisted mostly of artificial stock ponds and small reservoirs. The creek reaches included upper Felder Creek and its tributary (crossed by the route between Poles 54 and 55), Felder Creek north of the route (between Poles 68 and 77), and Carriger and Sonoma Creeks upstream and downstream of the transmission line crossing. Daytime surveys were conducted by visually scanning all aquatic habitats and shoreline areas with binoculars. Nighttime surveys were conducted using binoculars and a six-volt flashlight. Both visual and auditory detection methods were used. In cases where surveyors could not see the water, the vegetation was parted where possible to uncover hidden pools. Care was used while walking in and around water bodies to avoid disturbing sediment, vegetation, and amphibian larvae. A detailed account of these surveys is provided in the CRLF survey report (GANDA, 2004b) provided as **Appendix D**.

CRLF is a federally listed threatened species and California species of special concern. Critical habitat was re-proposed on April 13, 2004 using the configuration of the previously published final designation of critical habitat for the CRLF. Moist woodlands, forest clearings, and grasslands also provide suitable habitat for this species in the nonbreeding season (Stebbins, 1985). Adult frogs seek waters with dense shoreline vegetation, such as cattails, that provide good cover (Miller et al., 1996), but may be found in unvegetated waters as well.

CRLF breed from January to May. Eggs are attached to vegetation in shallow water and are deposited in irregular clusters (Miller et al., 1996). Tadpoles grow to 3 inches before metamorphosing. CRLF are active year-long along the coast, but aestivate from late summer to early winter inland. Adults consume insects such as beetles, caterpillars, and isopods, while tadpoles forage on algae and detritus.

The project area is not within any designated or proposed critical habitat for CRLF. Critical habitat for this species was previously designated by the USFWS (2001); however, most of this designation was vacated by a U.S. District Court ruling in 2002. The USFWS (2004b) recently re-issued proposed critical habitat designations for CRLF. The closest proposed critical habitat to the project area is Unit 10, Stage Gulch and Lower Petaluma River, which extends as far north as southeastern Petaluma, approximately one mile south of the Lakeville Substation.

During CRLF habitat assessment surveys (GANDA, 2004b), suitable aquatic habitat for this species was identified at 26 sites within one mile of the proposed route. Protocol surveys were subsequently conducted at 15 of these suitable habitat sites where it was determined that CRLF individuals or their habitat could potentially be affected by project activities. CRLF adults were

found at the upper portion of Felder Creek and a small tributary to this creek in June 2004. Six adult frogs were observed at three locations along the creek and tributary and the area is likely breeding habitat for this species.

Foothill Yellow-legged Frog (*Rana boylii*)

Foothill yellow-legged frog (FYLF) occurs in the Coast Ranges, from the Oregon border south to the Transverse Mountains in Los Angeles County. This species requires shallow, flowing water and prefers small to moderate-sized streams with cobble-sized substrate (Jennings and Hayes, 1994). Females lay eggs between March and early June during periods of high stream flows. FYLF is typically found in or near streams with rocky or gravelly bottoms, shallow runs or riffles, and deep pools. This species prefers areas with mixed sun and shade and requires cobble-sized or larger substrates for egg laying (CDFG, 2002b). Smaller tributaries and ephemeral streams may be used for overwintering and for post-breeding refuge from summer heat.

There are two CNDDB records of foothill yellow-legged frogs in the vicinity of the project area. The closest record is from 1997 in Adobe Creek, approximately one mile northwest of the western end of Segment 1. Another record is from 2003 in Carriger Creek, approximately 1.7 miles north of the eastern end of Segment 1 and three miles upstream of the Carriger Creek crossing in Segment 17 (CNDDB, 2004). FYLF has moderate potential to occur in the project area in Rodgers, Felder, and Carriger Creeks along Segment 1, 2 and 17.

Western Pond Turtle (*Clemmys marmorata marmorata*)

Pond turtles require still or slow-moving temporary and permanent waters such as ponds, freshwater marshes, and pools in perennial streams. Freshwater ponds and streams, such as those found in the project area provide suitable habitat for this species. Pond turtles may remain active all year and sometimes move overland for distances of more than 300 feet to find a suitable nest site (Jennings and Hayes, 1994). They generally lay their eggs in open areas that are on dry slopes with soils rich in silt and clay.

Suitable habitat for pond turtles occurs throughout the project area and this species is presumed present in areas where suitable habitat exists. Pond turtles were observed during surveys for CRLF in 2003 in a pond west of Rodgers Creek, approximately 1,200 feet south of Pole 44, and in 2004 in a vineyard pond approximately 1,700 feet north of Pole 61(GANDA, 2004b). There are three known occurrences of this species within three miles of the project area; the nearest occurrence is 1.6 miles south of Segment 1 (CNDDB, 2004).

White-tailed Kite (*Elanus leucurus*)

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 California ground squirrels (*Spermophilus beecheyi*) and black-tailed jackrabbits (*Lepus californicus*), are relatively abundant. Suitable nesting habitat for this species is present in the grasslands and oak stands along Segment 1 and suitable foraging habitat exists throughout the project area. There are no CNDDB records for this species within the project area. However, white-tailed kites were

observed in flight over the eastern portion of Segment 1 during field surveys in July 2003 (GANDA, 2004d).

Golden Eagle (*Aquila chrysaetos*)

Golden eagles typically inhabit open mountain areas, foothills, grasslands, and other open country. They are an uncommon permanent resident and migrant species in Sonoma County and throughout most of California (CDFG, 2002b). Golden eagle nests are commonly built on cliff ledges and are also frequently found in large trees in open areas. They prey mainly on small mammals ranging in size from ground squirrels to jackrabbits (Kaufman, 1996). Within the project area, there is a moderate potential for golden eagles to occur in Segment 1. In this segment, large trees near Rodgers Creek and adjacent to expanses of grassland could provide suitable nesting sites, and grasslands throughout the area provide suitable foraging habitat. A large raptor nest consistent in size and structure to that of a golden eagle nest was observed in January 2003 in a eucalyptus stand approximately 1,100 feet south of Pole 36 (GANDA, 2004d).

California Horned Lark (*Eremophila alpestris actia*)

California horned larks occur in grasslands and other semi-open habitats that lack trees or brushy areas. They build their nests on the ground, usually near grass clumps or earth clods, and feed on seeds and insects (Kaufman, 1996). The grasslands habitat along valley bottoms and lower foothill areas provide suitable foraging and nesting habitat for this species. Horned larks were observed along Segment 1 in the vicinity of Poles 28 and 29 during a field survey in February 2004 (GANDA, 2004d).

Special-status Bats

Pallid Bat (*Antrozous pallidus*) – California Species of Special Concern

Pallid bats occur throughout California at low elevations. They can be found in a variety of habitats, including grasslands, shrublands, woodlands, and forests. They roost in deep crevices, rock faces, buildings, and under bridges and are yearlong residents in most of their range (CDFG, 2002b). According to the CNDDB, pallid bats have been reported in the project area and vicinity. Along Segment 2 at Felder Road, a pallid bat was captured and released in 2000 (CDFG, 2004). Pallid bats and an unidentified bat species were also documented (based on fecal pellets and prey remains) in 1999 approximately 0.8 miles south of the project area under the Watmaugh Road Bridge over Sonoma Creek (CDFG, 2004). Based on these observations and recent CNDDB records, there is a high potential for this species to occur in the project area along Segment 2 and a moderate potential to occur along Segments 1 and 17.

2.4.2 Regulatory Context

In general, projects approved through the California Environmental Quality Act (CEQA) process should show that new land uses are in compliance with the wetlands provisions of the federal Clean Water Act (CWA) and with state and federal endangered species acts (CESA and FESA).

A complex array of state and federal regulatory guidelines directs how the jurisdictional boundaries of wetlands are identified, defined, and regulated. The U.S. Army Corps of Engineers

(USACOE or "the Corps") is the major regulatory agency involved in wetland regulation under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Additional agencies that have jurisdiction over on-site wetlands include the U.S. Environmental Protection Agency (US EPA) (oversight authority on USACOE 404 permits), USFWS, CDFG, and the California State Water Resources Control Board (SWRCB).

CEQA directs each lead agency to consult with the CDFG on any project the agency initiates that is not statutory or categorically exempt from CEQA. CEQA Guidelines Section 15065(a) declares that substantial impacts to rare, threatened, or endangered plants or animals are significant. The Native Plant Protection Act also affords limited protection to special status plant species. A formal consultation process must be initiated with the CDFG for projects which may or will have an adverse effect on state-listed species (i.e., listed under CESA).

Similarly, the permitting responsibilities of the USACOE include consultation with the USFWS when federally listed species (i.e., listed under FESA) are at risk. At both the state and federal levels, the process requires that a Biological Assessment (BA) be prepared to determine the effects on listed species. With both USFWS and CDFG policy, "species of special concern" are not subject to the same consultation requirements as listed endangered, rare, or threatened species, but the agencies encourage informal consultation for species of special concern that may become officially listed prior to completion of the CEQA process.

CEQA Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

Federal

Federal Regulation of Waters of the U.S., including Wetlands (Clean Water Act Sections 404 and 401)

Wetlands and nonwetland water resources (e.g., rivers, streams, and natural ponds) are a subset of "waters of the United States"[1] and receive protection under Section 404 of the Clean Water Act. The Corps is the major regulatory agency involved in wetland regulation under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Additional agencies that have jurisdiction over on-site wetlands include the US Environmental Protection Agency (oversight authority on CWA Section 404 permits), USFWS, CDFG, and the State Water Resources Control Board (SWRCB).

Through the nine Regional Water Quality Control Boards (RWQCBs), the SWRCB regulates discharge and/or fill to waters of the state under Section 401 of the federal CWA and under the California Clean Water Act (Porter-Cologne Act). The RWQCBs are authorized to ensure that actions permitted by the Corps under Section 404 also meet state water quality standards.

[1] The regulatory term "waters of the United States," as used by USACOE, has broad meaning and incorporates both deep-water aquatic habitats and special aquatic sites, including wetlands.

Under Sections 1600-1607 of the California Fish and Game Code, CDFG regulates activities that would alter the bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. CDFG is also authorized to develop mitigation measures and to enter into a streambed alteration agreement with applicants that propose a project that would adversely affect a river or stream, including intermittent and ephemeral streams. The SWRCB must certify that a Corps permit action meets state water quality objectives (Section 401, CWA).

CEQA Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by Fish and Game Code Section 903.

The federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Riparian Communities in California

Riparian communities have a variety of functions, including providing high-quality habitat for resident and migrant wildlife, streambank stabilization, and runoff water filtration. Throughout the United States, riparian habitats have declined substantially in extent and quality compared with their historical distribution and condition. These declines have increased concerns about dependent plant and wildlife species, leading federal agencies to adopt policies to arrest further loss. USFWS mitigation policy identifies California's riparian habitats as belonging to resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644, January 23, 1981).

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the National Marine Fisheries Service (NMFS) has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The FESA prohibits the "take"[2] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

[2] Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.

Section 10 of the FESA requires the issuance of an "incidental take" permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur, incidental to implementation of the project, by providing for the overall preservation of the affected species through specific mitigation measures.

Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed action will have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant in this Initial Study. The USFWS also publishes a list of candidate species. Species on this list receive "special attention" from federal agencies during environmental review, although they are not protected otherwise under the FESA. The candidate species are those for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened. Project impacts to such species would be considered significant in this Initial Study. Similarly, the permitting responsibilities of the Corps include consultation with the USFWS and NMFS when federally listed species (i.e., listed under the FESA) are at risk. At both the state and federal levels, the process requires that a Biological Assessment (BA) be prepared to determine the effects on listed species. With both USFWS and CDFG policy, "species of special concern" are not subject to the same consultation requirements as listed endangered, rare, or threatened species, but the agencies encourage informal consultation for species of special concern that may become officially listed before completion of the CEQA process.

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act states that without a permit issued by the U.S. Department of the Interior, it is unlawful to pursue, hunt, take, capture, or kill any migratory bird. The federal Migratory Bird Treaty Act (16 United States Code § 703 Supp. I, 1989) prohibits the killing, possessing, or trading migratory birds, bird parts, eggs, and nests, except in accordance with regulations prescribed by the Secretary of the Interior. Birds of prey are protected in California under California Fish and Game Code Section 3505.5. Under this section it is "unlawful to take possess, or destroy the nests or eggs of any such bird except otherwise provided by this code or any other regulation adopted hereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment and/or reproductive failure. Disturbance that causes nest abandonment or reproductive failure is considered "taking" by CDFG. Any loss of eggs, nests, or young or any activities resulting in nest abandonment would constitute a significant impact. Project impacts to these species would not be considered significant unless they are known or have high potential to nest in the project area or to rely on it for its primary foraging.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) or part thereof. The USFWS oversees enforcement of this act.

Interstate Transport of the Sudden Oak Death Pathogen

Federal regulations restricting the interstate movement of regulated and restricted articles have been established to control the movement of *Phytophthora ramorum*, the organism that causes Sudden Oak Death (SOD), from infested counties in California. Regulated articles include nursery stock and soil and may only be moved interstate from a quarantined area if accompanied by a certificate. Restricted articles include bark chips, forest stock, or mulch from certain vegetation, and any other article that an inspector determines poses a risk of spreading *Phytophthora ramorum*. Restricted articles may only be moved interstate from a quarantined area by the U.S. Department of Agriculture for experimental or scientific purposes. State and federal regulations have recently been revised so that they are nearly identical with the following exceptions: 1) federal regulations apply to interstate transport, whereas state regulations apply to intrastate transport; and 2) federal regulations limit the transport of soil, as well as plant parts and products from hosts and potential carriers.

State

CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statues, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. These criteria have been modeled after the definition of FESA and the Section of California Fish and Game Code discussing rare or endangered plants or animals. This section was included in the guidelines primarily for situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by CDFG or USFWS. CEQA provides the ability to protect species from potential project impacts until the respective agencies have the opportunity to designate the species protection.

CEQA also specifies the protection of other locally or regionally significant resources, including natural communities or habitats. Although natural communities do not presently have legal protection, CEQA requires an assessment of such communities and potential project impacts. Natural communities listed by CNDDB as sensitive are considered by CDFG to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents such as general and area plans often identify natural communities.

State Regulation of Waters

The State Water Resources Control Board (SWRCB), through its nine Regional Water Quality Control Boards (RWQCB), regulates waters of the state through the California Clean Water Act (Porter-Cologne Act). If the Corps determines wetlands or other waters to be isolated waters and

not subject to regulation under the federal CWA, the RWQCB may choose to exert jurisdiction over these waters under the Porter Cologne Act as waters of the state.

The CDFG regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the California Fish and Game Code requires notification of the CDFG for lake or stream alteration activities. If, after notification is complete, the CDFG determines that the activity may substantially adversely affect an existing fish and wildlife resource, the CDFG has authority to issue a streambed alteration agreement under Section 1603 of the California Fish and Game Code. Requirements to protect the integrity of biological resources and water quality are often conditions of streambed alteration agreements. These may include avoidance or minimization of heavy equipment use within stream zones, limitations on work periods to avoid impacts to wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses.

California Endangered Species Act

California implemented its own Endangered Species Act (CESA) in 1984. The state act prohibits the take of state-listed endangered and threatened species; however, habitat destruction is not included in the state's definition of take. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFG administers the act and authorizes take through California Fish and Game Code Section 2081 agreements (except for designated "fully protected species").

Regarding listed rare and endangered plant species, CESA defers to the California Native Plant Protection Act (NPPA) of 1977, which prohibits importing of rare and endangered plants into California, and the taking and selling of rare and endangered plants. The CESA includes an additional listing category for threatened plants which are not regulated under the NPPA. In this case, plants listed as rare or endangered under the NPPA are not protected under CESA but can be protected under CEQA. In addition, plants that are not state-listed but meet the state standards for listing, are also protected under CEQA Guidelines Section 15380). In practice, this is generally interpreted to mean that all species on lists 1B and 2 of the CNPS Inventory (Tibor, 2001) potentially qualify for protection under CEQA, and some species on lists 3 and 4 of the CNPS Inventory may qualify for protection under CEQA. List 3 includes plants for which more information is needed on taxonomy or distribution. Some of these are rare and endangered enough to qualify for protection under CEQA. List 4 includes plants of limited distribution that may qualify for protection if their abundance and distribution characteristics are found to meet the state standards for listing.

California Fish and Game Code Bird Protections

Section 3503 of the CFGC prohibits destruction of the nests or eggs of most native resident and migratory bird species. Section 3503.5 of the CFGC specifically prohibits the taking of raptors or destruction of their nests or eggs.

The legal framework and authority for the State's program to conserve plants is derived from various legislative sources, including CESA, the California Native Plant Protection Act (Fish and

Game Code Section 1900 – 1913), the CEQA Guidelines, and the Natural Communities Conservation Planning Act.

Native Plant Protection Act

California Fish and Game Code Section 1900–1913, also known as the Native Plant Protection Act is intended to preserve, protect, and enhance endangered or rare native plants in California. The act directs CDFG to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more cause. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. The act also directs the California Fish and Game Commission to adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

Vascular plants listed as rare or endangered by the CNPS (Skinner and Pavlik, 1995), but which may have no designated status or protection under federal or State endangered species legislation, are defined as follows:

- List 1A: Plants Presumed Extinct.
- List 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.
- List 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.
- List 3: Plants About Which More Information is Needed – A Review List.
- List 4: Plants of Limited Distribution – A Watch List.

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of CEQA Guidelines Section 15380 and effects to these species are considered “significant” in this Initial Study. Additionally, plants listed on CNPS List 1A, 1B or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code.

Transport of the Sudden Oak Death Pathogen

The California Department of Food and Agriculture (CDFA) Plant Quarantine Manual, Section 3700, describes state restrictions that apply to the movement of plants, plant parts, and plant products (e.g., bark chips, mulch, firewood, and wreaths) of species that are hosts or possible carriers of the pest that causes oak mortality disease. The regulated area includes the entire counties of: Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma. SOD has been found within all 13 of these counties. Plants and plant parts of hosts and possible carriers can be transported freely within and between the 13 infested counties, but cannot be transported to non-infested counties or, under

federal regulations, to non-infested states. Within Sonoma County, SOD regulations are under the jurisdiction of the County Agricultural Commissioner's office (see below).

Local

Sonoma County General Plan

The 1989 Sonoma County General Plan Open Space Element sets forth certain goals and objectives for the protection of riparian corridors. The following general plan objectives would be applicable to the Proposed Project:

- Objective OS-5c: Establish streamside conservation areas, measured from the top of the higher bank as determined by the SCWA [Sonoma County Water Agency], for designated riparian corridors as follows:
  - Urban Riparian Corridors: 50 feet
  - Russian River Riparian Corridor: 200 feet
  - Flatland Riparian Corridors: 100 feet
  - Upland Riparian Corridors: 50 feet
- Objective OS-5e: Allow or consider allowing the following uses within any streamside conservation area: …Road crossings and street crossings, utility line crossings…
- Objective OS-5f: Prohibit, except as allowed by OS-5e, structures, roads and utility lines and parking lots within any streamside conservation area. Consider waiver of this prohibition if:
  - it makes a lot unbuildable and vegetation removal is minimized;
  - no significant disturbance of riparian habitat would occur; or
  - the use involves only the maintenance, restoration or minor expansion of an existing structure. (Sonoma County PRMD, 1989)

Sonoma County Zoning Ordinance

The Sonoma County Ordinance provides a Valley Oak Habitat (VOH) Combining District, which provides for the protection and enhancement of valley oaks and valley oak woodlands. Under the Zoning Ordinance, large valley oak trees with a diameter at breast height (dbh) greater than 20 inches or smaller valley oak trees that have a cumulative dbh greater than 60 inches cannot be removed unless appropriate mitigation measures are implemented. These measures include retaining large oaks on protected lands, planting replacement valley oaks, and paying compensation.

The zoning ordinance further provides a Biotic Resource combining zone to protect biological resources including critical habitats and riparian corridors.

Sonoma County Code

The Sonoma County Code (Chapter 26D) contains the Sonoma County Heritage or Landmark Tree Ordinance. The Tree Ordinance seeks to protect trees that qualify for heritage or landmark status, which can be conferred by the Sonoma County Board of Supervisors to nominated trees, with landowner approval. "Heritage tree" means "a tree or a group of trees with historical interest or significance." "Landmark tree" means "a tree or a group of trees with outstanding characteristics in terms of size, age, rarity, shape, or location." Heritage and landmark trees can be removed or damaged only under certain limited conditions, for example, if the tree is dead or diseased. A permit must be obtained to remove or damage a heritage or landmark tree. A number of exemptions apply, including "any utility company licensed by the California Public Utilities Commission is exempt from the requirement of obtaining a permit so that they or their agents may maintain the required clearance around power lines" (Sonoma County, 1986).

Sonoma County Agricultural Commissioner's Office

The Sonoma County Agricultural Commissioner's office provides protection to the county by regulatory control through quarantines to prevent the introduction of pests that are not known to exist or are of very limited distribution in the county. Plant material is inspected at the Post Office, United Parcel Service centers, Federal Express centers and the bus depot. Shipments sent to nurseries, landscape planting sites, parks, and grain mills are also inspected for pests. To facilitate the shipment of agricultural products out of Sonoma County, phytosanitary certificates are issued for agricultural commodities, which have been inspected for pests and diseases and verified to meet the plant quarantine requirements of the receiving county, state, or country. The Agricultural Commissioner's office also regulates SOD. Sonoma County is generally infested with the disease, and it is primarily found in the native woodland and rural areas within the county. The Agricultural Commissioner's office is responsible for helping to prevent the artificial movement of the disease out of the regulated area. Anyone moving host plant material outside of the regulated area must contact our office to have the plants inspected and certified prior to shipment. The Agricultural Commissioner's also assists in the assessment of oak trees, which are removed under the California State Department of Forestry's Hazardous Tree Removal Program.

City of Sonoma Tree Ordinance

The City of Sonoma protects trees through a Tree Ordinance (City of Sonoma, Municipal Code, Chapter 12.08). This ordinance prohibits actions such as pruning, trimming, relocating, removing, or killing any tree on public property without a permit from the director of public works. Applications for new developments that propose to remove trees must be reviewed by the Planning Commission, the Architectural Review Commission and the Tree Committee. A tree inventory is required, and replacement is required for any trees that are removed. No permit is required to trim branches or roots that are interfering with public utility lines.

2.4.3 Biological Resources Impacts and Mitigation Measures

As part of PG&E's standard construction practice, the following measures will be incorporated into the project and will be implemented to avoid or minimize impacts to biological resources:

- An ongoing environmental education program for construction crews will be conducted before beginning the site work and during construction activities. Sessions will include information about the Federal and State Endangered Species Acts, the consequences of noncompliance with these acts, identification of special-status species and wetland habitats (including waterways), and review of mitigation requirements.

- Vehicles will be restricted to established roadways and identified access routes.

- An Environmental Monitor or Specialist will be on site during any construction activity near sensitive habitat to ensure implementation of, and compliance with, mitigation measures. The monitor will have the authority to stop activities and determine alternative work practices in consultation with construction personnel, if construction activities are likely to impact special-status species or other sensitive biological resources.

- If special-status species are located prior to or during work activities, construction personnel will contact the environmental monitor. If the monitor determines that project activities may adversely affect the species, the monitor will consult with USFWS, NOAA Fisheries, and/or CDFG regarding appropriate avoidance and mitigation measures.

- Photo documentation of preconstruction habitat conditions will occur at all construction locations within sensitive habitat prior to the start of work, as well as immediately after construction activities.

- Trash, dumping, firearms, open fires, hunting, and pets will be prohibited in the project area.

Additional measures to avoid, minimize, and mitigate specific potential impacts to biological resources are described below under the corresponding potential impact.

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service: *less than significant with mitigation incorporation.* See discussion under d).

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites: *less than significant with mitigation incorporation*

Substations

Vegetation at the Lakeville Substation consists of non-native weedy grasses and forbs characteristic of ruderal areas with no potential for the occurrence of special-status plants. Expansion of the Sonoma Substation would occur within the paved area inside the

existing substation fence. No habitat for special-status wildlife species exists at either of these sites. No significant impacts to vegetation, special-status plants or wildlife would occur from modifications to the Lakeville and Sonoma Substations.

Transmission Line

Mitigation for impacts to special-status plant and animal species would be implemented at various project construction sites to reduce the potential for "take" of listed or otherwise special-status species. In some cases, preconstruction surveys to determine presence or absence of biological resources within the project area and avoidance of these resources would avoid significant impacts to plants and animals. However, due to the extent of the project, specific project components would impact areas where the presence of special-status species is presumed based on occurrence of suitable habitat, CNDDB occurrence, or biological resource assessment surveys indicates presence.

CNDDB lists 12 special status plant species with known occurrences in the vicinity of the project. Of these 12 species, 5 have at least moderate potential to occur within the project area. Special-status plants with at least moderate potential to occur within the project are:

- Cotula naverretia
- Lobb's aquatic buttercup
- Contra Costa goldfields
- Sonoma sunshine.
- Dwarf downingia

CNDDB lists 13wildlife species (including invertebrates) that have known occurrences in the vicinity of the project area. Of these, eight have at least moderate potential to occur along the transmission line and in project construction areas. Special-status animal species with at least moderate potential to occur within the project area include:

- California freshwater shrimp
- California red-legged frog
- Foothill yellow-legged frog
- Western pond turtle
- Golden eagle
- White tailed kite
- California horned lark
- Pallid bat.

Impact 2.4-1: Construction activities associated with pole removal and installation and equipment access could result in temporary or permanent impacts to special-status plants located within the vicinity of the transmission line alignment. This would be a less than significant impact with implementation of Mitigation Measures 2.4-1a and 2.4-1b.

Two known occurrences of special-status plants could be adversely affected by proposed construction activities. These include Lobb's aquatic buttercup and *cotula navarretia*. Direct and indirect impacts to Lobb's aquatic buttercup and its wetland habitat could result from replacement of Poles 43 and 44, and construction of a new permanent road segment and improvement of an existing road to access these poles. The proposed pole installation and road footprints would avoid the vernal pool habitat of Lobb's aquatic buttercup, but ground disturbance and other activities adjacent to the pool could affect

this species' habitat conditions, for example, by reducing water quality in the pool as a result of sedimentation or fuel spills.

Direct and indirect impacts to *cotula navarretia* and its habitat are unlikely but possible from activities associated with the removal of Poles 58 and 59, and construction of a new permanent access road. The proposed route of the new permanent access road from the vicinity of Pole 60 to the vicinity of Pole 57 has been rerouted to the ridge north of the small valley to avoid direct impacts to *cotula navarretia*. At the west end of the ridge, a cut would be required on the steep slope below the ridge to connect the new road segment to the existing ranch road. Erosion from the cut could affect potential habitat for *cotula navarretia* on the lower slope, although this is unlikely. No direct impacts are expected based on the plant's distribution in June 2004.

Protocol-level surveys conducted by GANDA did not report occurrence of other special-status plants in the project area. Impacts to species other than Lobb's aquatic buttercup and *cotula navaerrteia* are not anticipated.

Implementation of Measures 2.4-1a and 2.4-1b would reduce impacts to special status plants to less than significant.

> **Mitigation Measure 2.4-1a:** PG&E shall contract with a Specialist[3] to conduct preconstruction surveys for special status plants. Preconstruction surveys shall occur during the appropriate blooming period immediately prior to the start of construction activities at Poles 43 and 44 and Poles 58 and 59. The Specialist shall establish an appropriate protection zone around known populations of Lobb's aquatic buttercup and *cotula navarretia* and any new populations of special-status plants observed during preconstruction surveys. The protection zone shall be staked and flagged in the field prior to construction by a qualified botanist. To the extent feasible, poles or other project components shall not be placed in areas where these plant populations have been identified. If avoidance of special-status plants is not feasible, PG&E shall contract with a Specialist to harvest plant seeds and top-soil for post-construction restoration or replanting in an appropriate location. PG&E shall prepare a Special Status Plant Species Protection Plan that shall incorporate the following measures which shall be implemented during all phases of construction in areas marked in the field with temporary fencing.
>
> - Restrict construction activities to the dry season (June 1 to October 15), or, if this is not feasible, implement appropriate erosion and sediment control measures to prevent water quality and indirect habitat impacts to these species.
>
> - During construction activities near areas of known special-status plant occurrences, daily monitoring shall occur using a qualified Environmental Monitor to ensure protection zones and water quality measures are being implemented at construction sites. If direct or indirect impacts to special-

[3] Specialist is defined as a botanist, biologist qualified to handle special status species, paleontologist or other monitor with specialized qualifications.

status plant species are observed then the monitoring biologist shall notify the construction manager immediately. Examples of impacts may include, but are not limited to damage to exclusionary fencing or water or sediment from construction areas entering exclusion zone. The Environmental Monitor shall report any direct or indirect impacts resulting from construction activities in daily monitoring report.

- Keep construction vehicles on designated access roads only. Do not fuel or repair construction vehicles within the vicinity of special status plants.

Mitigation Measure 2.4-1b: Project construction shall avoid known habitat for Lobb's aquatic buttercup to the extent feasible. To the extent feasible, major earthmoving activities in the vicinity of Poles 43 and 44 shall occur during the dry season (June 1 to October 15), or, if this is not feasible, the appropriate erosion and sediment control measures to prevent water quality degradation as described in the SWPPP Plan.

To the extent feasible, poles and other project components shall not be placed in known habitat for Lobb's aquatic buttercup. If habitat for this species cannot be avoided, Mitigation Measure 2.4-7f shall be implemented to compensate for the direct loss of vernal pool habitat.

Significance after Mitigation: Less than significant.

Impact 2.4-2: Construction of the transmission line could result in temporary and permanent impacts to California red-legged frog breeding and associated upland habitat. This would be a less than significant impact with implementation of Mitigation Measures 2.4-2.

Potential aquatic habitat for California red-legged frog occurs within Felder Creek and in stock ponds in surrounding agricultural lands. Potential associated upland habitat used for aestivation and dispersal is located along the upland areas adjacent to Felder Creek and uplands adjacent to the stock ponds. Construction activities have the potential to result in direct and indirect impacts to this species. Indirect impacts include sedimentation, removal of aquatic habitat, removal or disturbance of riparian vegetation and harassment due to increased human presence and construction equipment. Direct impacts could include mortality and incidental "take" of individual frogs dispersing into uplands.

Temporary loss of associated upland habitat for California red-legged frog would occur with the construction of temporary access roads at Pole 36, 40, and 41. These access roads are within 700 feet of potential aquatic breeding habitat for California red-legged frog.

Permanent loss of associated upland habitat would occur with the construction of permanent access roads located approximately between Poles 50 and 53, Poles 55 and 57 and 57 and 60. These access roads are located within 700 feet of known aquatic habitat for California red-legged frog.

Mitigation Measure 2.4-2: PG&E shall implement measures to minimize and avoid "take" of California red-legged frog. These measures include complying with the federal Endangered Species Act and implementation of measures that would substantially reduce the risk of incidental "take" of CRLF within the project area. Prior to and during construction, PG&E shall perform the following actions to minimize adverse effects to California red-legged frog:

- To the extent feasible, earthmoving activities in the vicinity of Felder Creek shall be conducted during the dry season (June 1-October 1).

- PG&E shall contract with ~~a Specialist~~ an environmental monitor and submit the name and credentials of this individual to act as construction monitor(s) to USFWS for approval at least 15 days prior to commencement of any construction activities.

- Immediately prior to activities in the vicinity of Felder Creek, the USFWS-approved Specialist shall perform a preconstruction survey for California red-legged frog. For wet season work sites, t~~T~~he survey area should consist of all proposed wet season work sites within one mile of Felder Creek and should include all suitable aquatic and upland habitats within 90 m (300 ft) of these proposed work sites.

- Preconstruction surveys during the dry season shall consist of all suitable aquatic habitat in Felder Creek and upland habitat within 300 feet of proposed construction activities.

- If CRLF are found within a work area prior to construction, the Specialist, with prior authorization from the USFWS, would relocate the frogs out of the project area in coordination with USFWS. A temporary silt-fence barrier would be installed around the work area to prevent CRLF from re-entering the work area. If a California red-legged frog is found nearby but outside a proposed work area, it should not be disturbed and USFWS shall be contacted.

- During wet season construction, temporary construction fencing should be installed to mark the limits of the affected work area(s) and to limit construction personnel and equipment to the designated work area. The location of the fencing should be determined by the Environmental Monitor in coordination with the construction supervisor. In addition, as recommended by the Specialist, a temporary drift fence (e.g. silt-fence) barrier should be installed to prevent California red-legged frogs from entering those work area(s) during project activities.

- A USFWS-approved Specialist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the any construction activities

may occur. The biologist should provide maps of potential CRLF habitat to construction personnel.

- Following construction, remove all trash and construction debris from work areas. All trash and construction debris shall be properly contained.

- Ensure that all fueling and maintenance of vehicles and other equipment and staging areas occurs at least 20 meters from any riparian habitat or water body. PG&E shall ensure contamination of habitat does not occur during such operations. Prior to the start of construction, PG&E shall prepare a plan to ensure a prompt and effective response to any accidental spills.

Significance after Mitigation: Less than significant.

Impact 2.4-3: Project construction activities, such as tree removal and trimming, grading of temporary work areas, improvement of access roads, operation of heavy equipment, installation and removal of poles, and conductor installation, could disturb nesting birds, including raptors. Tree removal or trimming could disrupt nesting behavior or destroy active nests if they occur. Use of helicopters to remove and install poles and transmission line and to move equipment to and from remote areas could also impact nesting birds and raptors. Use of helicopters in nesting areas could cause adult and juvenile birds to flush and abandon the nest. This would be a less than significant impact with implementation of Mitigation Measures 2.4-3a (preconstruction surveys), 2.4-3b (measures to avoid nesting bird habitat), and 2.4-3c (measure to restrict helicopter use near nesting raptor habitat).

The use of helicopters to remove and install poles and to span the new transmission line within densely vegetated areas has the potential to cause nesting birds to flush from their nests, resulting in loss of eggs or nest abandonment. If a helicopter is used for any phase of construction during the nesting season, helicopter operation, especially takeoff and landing, could also disturb nesting birds if they occur in the landing area. Nesting birds and raptors are protected under the Federal Migratory Bird Treaty Act and the California Fish and Game Code.

Potential impacts to nesting birds resulting from project activities include flushing of nesting birds causing abandonment of the nest and nest and reproductive failure. Mortality to juvenile or naïve birds or raptors could result from flushing from nest prior to fledging or, abandonment by parents.

Mitigation Measure 2.4-3a: To the extent feasible, project activities shall not occur during the nesting and breeding season (from March 1 through August 15) to avoid impacts to nesting birds and raptors. If seasonal avoidance is not feasible, then Mitigation Measures 2.4-3b through 2.4-3d shall be implemented to avoid impacts to nesting birds and raptors.

Mitigation Measure 2.4-3b: Prior to any potential nest-disturbing activities during the period from March 1 through August 15, PG&E shall contract with an

Environmental Monitor who shall conduct a pre-construction survey for nesting birds. The survey shall be conducted no more than one week prior to the start of work activities and would cover all affected areas including the transmission line route, staging areas, pull sites, and access road improvement areas where substantial ground disturbance or vegetation clearing is required.

- Additional pre-construction surveys shall be conducted for each new phase of project implementation that occurs during the nesting season, no more than two weeks prior to construction (e.g., prior to road improvement and pole installation, and again prior to conductor installation).

- If any active nests are found, an appropriate nest protection zone shall be established by the Environmental Monitor. These guidelines for protection zones shall be used: For passerine birds, a 50 - 100-foot protection zone shall be established around active nests; For raptors, a 300-foot protection zone and for golden eagles a 500 foot protection zone shall be established around active nests. These protection zones may be modified on a site-specific basis as determined by the Environmental Monitor or in coordination with CDFG.

- Active nests within the project area would be monitored for signs of disturbance. If the biological monitor determines that a disturbance is occurring, construction shall be halted, and the agencies shall be contacted as to the measures that shall be implemented.

Mitigation Measure 2.4-3c: Use of helicopters shall be restricted to necessary trips to install and remove poles, install the transmission line, and to deliver and remove equipment to areas lacking vehicular access or in areas where access would cause severe erosion. Helicopters may be used in an area if active raptor nests occur if an appropriate buffer has been established in coordination with CDFG. In active nesting areas, helicopters may be used after young have fledged, as ~~determined by a qualified biologist in coordination with CDFG~~ set forth in Mitigation Measure 2.4-3b.

Significance after Mitigation: Less than significant.

Operation of the new transmission line could pose a collision or electrocution risk to birds, particularly larger species such as raptors. While there is potential for birds to collide with the new transmission line, the risk is relatively low and is not expected to be appreciably greater than with the existing line. There are no major bird migration routes in the project area, and the placement and configuration of the line are not substantially different from the existing line. A double-circuit line is proposed to replace the existing single-circuit line, which would increase the number and cross-sectional area of conductors intersecting potential bird flight paths. However, the new line would have higher ground clearance and would likely have greater visibility than the existing line, which would tend to reduce collision risks. Overall, these effects are expected to offset each other and result in no additional risk of collision to birds.

The extended wings of large birds could potentially span the distance between energized phase conductors or from energized components to grounded objects such as

transmission line poles or other second points of contact. To prevent electrocutions due to wing contact with two phases, the Avian Power Line Interaction Committee (APLIC) recommends that a minimum of 60 inches of separation be maintained between conductor phases (APLIC, 1996). The project's design would provide 120 inches of conductor phase separation where Gull cross arms are used and 102 inches where post insulators are used. This substantially exceeds the APLIC recommendation and should eliminate the possibility of electrocutions from this cause. In addition, distribution protection measures such as perch deterrents and line covers would be implemented where there is distribution under-build on the new poles.

Overall, implementation of these measures for the new double-circuit line is expected to result in fewer bird electrocutions than the existing single-circuit Lakeville-Sonoma 115 kV line. The reduced risk of electrocution would be a beneficial impact of the project and would result in no additional impacts to birds and raptors.

Maintenance activities such as vegetation trimming and line repairs could affect nesting birds if these activities occur during the nesting season. PG&E operating standards specify that, unless an active nest presents an immediate safety or operating hazard, it shall be left undisturbed. For situations where an active nest presents an immediate hazard, before disturbing this nest, the PG&E Bird Protection Program Manager or Terrestrial Biology Supervisor would be contacted to obtain necessary permission from the USFWS Migratory Bird Permit Office. If nest removal or relocation is necessary before permission can be obtained, appropriate action would be taken to correct the safety or operating hazard and the PG&E Bird Protection Program Manager or Terrestrial Biology Supervisor would be notified within 72 hours. Implementation of these measures would reduce this impact to a less than significant level. No further mitigation is required.

Impact 2.4-4: Project construction activities adjacent to Sonoma Creek could have short-term effects on aquatic habitat of the California freshwater shrimp. Construction activities could result in water quality impacts within Sonoma Creek. This would be a less than significant impact with implementation of Mitigation Measure 2.4-4.

Removal and installation of new poles at pole locations 107 and 108 along Sonoma Creek could result in indirect impacts to freshwater shrimp if they are present within the project area. Installation of a new pole at Pole 107 would involve operation of equipment, ground disturbance, and clearing of vegetation within the riparian zone to accommodate the pole footprint, work area, and access route.

> **Mitigation Measure 2.4-4:** Certain construction activities at Pole 107 shall be conducted during the dry season (June 1 through October 1) to avoid impacts to California freshwater shrimp. Installation of the Pole 107 foundation and construction/improvement of the access road to Pole 107 shall be done during the dry season to avoid sediment or other debris discharge into Sonoma Creek.

Installation of TSPs on top of foundations, wire and wood pole removal shall be done outside of the dry season using BMPs.

Significance after Mitigation: Less than significant.

Impact 2.4-5: Pond turtle habitat occurs throughout the project alignment in detention basins and stock ponds located on agricultural areas and in freshwater streams including Rodgers Creek and Felder Creek. Construction activities in the vicinity of streams or ponds occupied by Western pond turtle could harm individual turtles or temporarily affect their habitat. This would be a less than significant impact with implementation of Mitigation Measure 2.4-5.

Pond turtles were observed in two ponds near Segment 1, and could also be present in Rodgers Creek and other perennial water bodies in the project area. The occupied ponds are more than 1,000 feet from the transmission line route and would not be affected by project activities. Potential temporary impacts to pond turtle habitat would occur at Poles 26 and 27, Rodgers Creek at Poles 43 and 44, and at Felder Creek at Poles 54 and 55. Impacts to turtles could occur with the installation of temporary access roads. Indirect impacts include sedimentation and erosion of turtle aquatic habitat. Direct impacts could occur with mortality of individual turtles, if they occur within the project area; individual turtles could be crushed by construction equipment.

Mitigation Measure 2.4-5: Prior to the start of construction activities, PG&E shall contract with a Specialist who shall perform pond turtle surveys within Rodgers Creek, Felder Creek, Sonoma Creek, Fryer Creek and in other ponded areas within 700 feet of the project features where ground-disturbing activities would occur. If no turtles are found during surveys, search for turtle nests is then not necessary. If turtles are found in aquatic habitat, then clearance of the nearby terrestrial habitat that would be impacted shall occur prior to construction activities; the biologist(s) shall look for eggs and WPT individuals including over-wintering hatchlings. If eggs are found, the biological monitor shall contact CDFG for the appropriate measures to relocate the eggs.

Measures outlined in the SWPPP Plan shall be implemented to avoid impacts to pond turtle aquatic habitat.

Significance after Mitigation: Less than significant.

Impact 2.4-6: Project construction activities at or adjacent to the Leveroni Road Bridge over Sonoma Creek in Segment 17 could disturb common or special-status bat species, including pallid bat if they are present during construction. This would be a less than significant impact.

The Leveroni Bridge provides suitable habitat for nesting and roosting bats and there is at least moderate potential for special-status bats to occur at this location. Evidence of both

common and special status bats was found at the Leveroni Bridge during an October 2005 survey. Evidence included small amounts of guano. No bats were seen during this survey (GANDA, 2005).

Impacts to bats include noise and vibration associated with construction work which could disturb and possibly displace nesting and roosting bats. This potential disturbance would be temporary and is not expected to cause direct harm to individual bats, because no work would be done on the bridge itself and there would be relatively little disturbance of the riparian habitat of Sonoma Creek. The distance between Poles 107 and 108 is of sufficient distance to avoid any impacts to bats on the bridge.

Mitigation: None required.

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b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service: *less than significant impact with mitigation incorporation*. See discussion under c).

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means: *less than significant impact with mitigation incorporation*

Substations

There are no aquatic or riparian habitats at the Lakeville or Sonoma Substations. Vegetation communities at these facilities consist of non-native weedy grasses and forbs characteristic of ruderal areas. No impacts to riparian areas or potentially jurisdictional waters of the U.S., including wetlands subject to regulation under Section 404 of the federal CWA would occur at these facilities.

Transmission Line

The transmission line alignment crosses, spans, or parallels riparian area and potentially jurisdictional waters of the U.S., including wetlands. Impacts to riparian areas and potentially jurisdictional features would occur during the removal and installation of poles, construction of permanent and temporary access roads, clearing of vegetation, and installation of the new transmission line.

Impact 2.4-7: Construction of the Proposed Project could result in impacts to potentially jurisdictional wetlands or waters of the U.S. under the jurisdiction of the Corps and waters of the state under the jurisdiction of the SWRCB or RWQCB. The Proposed Project could also result in impacts to the streambed and banks under jurisdiction of CDFG. Potential impacts include sedimentation of channels downstream of the construction areas during trenching and excavating activities and loss of riparian and instream wetland vegetation. Permanent impacts to

jurisdictional features would not be greater than 1/2 acre qualifying the project to be authorized under a Section 404 Nationwide Permit (NWP). This would be a less than significant impact with implementation of Mitigation Measures 2.4-7a through 2.4-7d.

Portions of the project area support wetlands and other waters of the U.S. under regulatory jurisdiction of the USACOE, RWQCB, and CDFG. Disturbances would occur within drainages, wetlands, and creek channels where facility construction requires excavation or installation or improvement of new access roads. Permanent disturbance to creeks could occur with the installation of new culverts or stream crossings. This disturbance would affect both areas classified as wetland and channels that are considered "other waters of the U.S.".

Construction activities within the vicinity of Poles 43 and 44 have the potential to result in temporary impacts to the vernal pool feature. Potential impacts to this feature could include sedimentation and erosion from the removal of existing Poles 43 and 44 and the installation of new poles within the existing pole footprints. Other direct impacts could result from the movement of construction vehicles within the area. Indirect impacts could also include water quality impacts from construction vehicles such as fuel or oil leaks should they occur. Installation and maintenance of these poles requires a vegetation clearance of approximately 640 square feet and could result in permanent impacts to jurisdictional features found within this area.

Project activities adjacent to Felder and Sonoma Creeks could adversely affect these aquatic habitats in the project area. Pole replacement and conductor installation adjacent to Felder Creek (Poles 75 to 87) could affect the creek bank or result in sedimentation. Similarly, replacement of Pole 107 adjacent to Sonoma Creek and construction of a new access road to this pole could result in erosion and sediment transport to the creek. Also, dry-bore directional drilling under the concrete channel/culvert of Fryer Creek (near Pole 115) for the underground portion of the new transmission line could result in erosion and sediment transport to the creek. Water quality could also be affected by discharge of oil, gas or other chemical pollutants into these watercourses from vehicles and equipment. Proposed road crossings of four minor drainages could directly affect creek beds or banks that may be subject to Corps, SWRCB, and/or CDFG jurisdiction.

Construction within waters of the U.S., including wetlands would require permits and/or agreements from the Corps, RWQCB, and CDFG. Permit and agreement conditions may require compensatory mitigation for temporary and permanent impacts to jurisdictional features. Failure to obtain permits and agreements would result in violation of the state and federal Clean Water Acts and California Fish and Game Code 1600-1616.

> **Mitigation Measure 2.4-7a:** In order to determine the extent of jurisdictional features within the project area, PG&E shall conduct a wetland delineation and submit it to the Corps prior to the start of construction. Potentially jurisdictional features have only been preliminarily identified. To remain in compliance with state and federal CWA, a determination of jurisdictional features shall be made. A

wetland delineation, identifying and mapping potentially jurisdictional features subject to CWA Section 404 and 401 jurisdiction shall be completed. The wetland delineation map and report shall be submitted to the Corps for field verification of jurisdiction. The wetland delineation report and Corps verified map shall be submitted to RWQCB and CDFG, and other appropriate regulatory agencies.

Mitigation Measure 2.4-7b: To the extent feasible, final project design shall avoid impacts to wetlands and other waters. State and federal regulations specify that wetland avoidance is required to the extent feasible. Areas that are avoided shall be subject to Best Management Practices (BMPs). These Best Management Practices (BMPs), or storm water protection methods are standard in the construction industry and are proven effective to reduce water quality degradation. PG&E shall implement specific erosion control and surface water protection methods for each construction activity conducted as part of the project. As discussed in the Regulatory Context of Section 2.8, Hydrology and Water Quality, the project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit and therefore, be required to employ specific BMPs for the protection of surface water. PG&E is required to provide details as to the design and monitoring of the BMPs in the Stormwater Pollution Prevention Plan (SWPPP). Examples of standard BMPs, which PG&E would implement as part of the SWPPP and the typical application of those BMPs are as follows:

- Site grading operations necessary to develop temporary staging areas and pull and tension sites would be required to use appropriately-placed silt fencing to protect surface water sources from entrainment of sediment. Surfaces of these staging areas would be graveled during wet weather use to minimize erosion and sediment laden runoff. To restore vegetation at disturbed temporary staging areas, measures and monitoring specified in the SWPPP Plan shall be implemented to achieve the performance standards indicated in the Plan.

- Silt fencing is proposed as part of the project and is standard BMP to control erosion and siltation from loose or disturbed soil. Silt fencing would be placed as appropriate at each pole installation site, especially those adjacent to natural surface water bodies. Stockpiled soil generated from the excavation of pier foundations or boreholes would not be left at the site. Loose soil would be loaded and used elsewhere or stockpiled in staging areas. Soil stockpiled at the staging area would be managed as required in the SWPPP and be appropriately covered, vegetated, or bermed during rainy periods to ensure that eroded sediments do not runoff to surface water resources.

- As part of the Proposed Project, access roads would be in- or out-sloped, as appropriate, providing effective surface sheet flow to avoid formation of erosive gullies caused by concentrated runoff. Where necessary, flow diversions, known as water bars, would be used on roadways exceeding gradients of 10 degrees. Water bars divert runoff from roads before gullies can form. Where necessary, all-weather roads would be covered with gravel

base material. The gravel base would reduce the erosive energy to reduce erosion.

- NPDES requires that the SWPPP show BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and waste. The SWPPP must also describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage or service areas. The SWPPP would require PG&E to identify equipment storage, cleaning and maintenance areas.

Mitigation Measure 2.4-7c: To the extent practicable, ground-disturbing activities such as access road construction, site grading, and foundation installation shall be conducted during the dry season (June 1 through October 1). The dry season window may begin as early as May 1 if ground conditions at the work sites and access routes are determined to be sufficiently dry by an Environmental Monitor.

Mitigation Measure 2.4-7d: Wetlands and other waters, including vernal pools, shall be avoided during construction activities to the extent feasible. Installation of exclusionary fencing and other appropriate methods shall be installed at specific locations described below.

- For the vernal pools between Poles 43 and 44, an Environmental Monitor shall establish a protection zone of the maximum practicable distance, not less than 50 or greater than 100 feet, from the wetland edge. The exclusion zone shall be staked and flagged or delineated with temporary fencing. For work at Pole 107 and its access road near Sonoma Creek, temporary exclusion fencing and silt fencing shall be installed at the downslope edge of the work footprint and not less than 25 feet from the top of the bank of Sonoma Creek. Staking and flagging or fencing shall be completed prior to any construction activities and shall remain in place during all construction activities.

- For the vernal marsh near Poles 40 and 41, silt fencing shall be installed between the access road and the marsh as close as practicable to the edge of the road improvements footprint to prevent sedimentation impacts to the marsh (see Mitigation Measure 2.4-7b).

- PG&E shall contract with an Environmental Monitor to monitor protected areas during all work activities in the vicinity of wetlands and sensitive aquatic and riparian habitats including Sonoma Creek, Felder Creek, and other watercourses that may be affected by the project. The Environmental Monitor shall verify that environmental fencing, erosion and sediment control measures, and other protection measures are properly installed and are effective. If problems are found, the Environmental Monitor shall recommend remedial measures. Consistent with project safety, t~~T~~he monitor shall have the authority to stop activities that are likely to adversely affect sensitive aquatic habitats and recommend alternative work practices in consultation with construction personnel.

Mitigation Measure 2.4-7e: Prior to the start of construction, for any jurisdictional features identified as a result of implementing Mitigation Measure 2.4-7a, PG&E shall obtain necessary regulatory permits. Construction activities within jurisdictional features including wetlands and vernal pools would require permit approval from the Corps and RWQCB for fill in wetlands and other Waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. Water quality certification from RWQCB would also be required pursuant to Section 401 of the federal CWA. In addition, the CDFG has jurisdiction pursuant to Section 1601-1616 of the Fish and Game Code for construction activities affecting, or within the channels or banks of (or under) Sonoma, Rodgers, Fryer and Felder Creeks which would require Streambed Alteration Agreements. Terms and conditions of the permits would include measures to protect and maintain water quality, restore work sites, and mitigate for permanent and temporary impacts.

Mitigation Measure 2.4-7f: Measures to prevent erosion and sedimentation and to restore work areas where vegetation would be removed or where bare soil is exposed shall be applied to project elements as specified in the SWPPP Plan.

Significance after Mitigation: Less than significant.

Impacts to wetlands would result from operation and maintenance of the transmission line if maintenance vehicles leave the established access roads and drive through streams, vernal pools or other wetlands. The Proposed Project includes the installation of new access roads and improvement of existing roads. Maintenance vehicles are required to remain on roads for safety of maintenance personnel and to eliminate impacts to wetlands.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance: *less than significant with mitigation incorporation*. (see discussion under f).

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan: *no impact*.

Protected trees, which include heritage trees, or other locally important trees occur throughout the project alignment.

Impact 2.4-8: Trees considered significant by local municipalities could be damaged during project construction activities. This would be a less than significant impact.

An unknown number of protected trees would likely be trimmed to install new poles in areas where the transmission line would pass through dense oak woodland in Segment 1 (e.g., near Poles 34, 36, 37, 38, and 39). All drainages with riparian forest would be spanned, eliminating the need for tree removal, but some trees might be trimmed to protect the transmission lines and to reduce fire danger. Tree trimming also would likely

be required along some access roads and at some staging areas (e.g., near Poles 34 and 35) and at a few pull sites.

The valley oaks located at Sonoma Creek would not be removed during construction, although some trimming of branches or limbs may be required. County-protected heritage and landmark trees would be avoided during construction.

Mitigation: None Required.

Operation and maintenance of the transmission line requires vegetation trimming and clearing in the vicinity of transmission lines and transmission poles during fire season. Clearing around wood poles would not affect special-status species populations or wetlands as long as maintenance crews avoid these areas. Tree trimming may affect some trees in riparian corridors. Tree ordinances of the County and City of Sonoma provide exemptions for tree trimming that is necessary to maintain public utilities. These exemptions apply to tree trimming required during operation and maintenance of the proposed project. No mitigation is required.

Impact 2.4-9: Construction activities could potentially spread noxious or invasive weeds into the project area and within the project area where weeds do no currently exist. New noxious or invasive weed species could also be transported into the project area if seeds or plant material is carried on vehicles and construction equipment.

This would be a less than significant impact with implementation of Mitigation Measure 2.4-9a and 2.4-9b.

New weed populations could become established in sites disturbed during construction, especially along roads, in staging areas, and other temporary use areas, and in locations where poles would be removed and replaced.

Invasive plant removal has been implemented within the transmission line alignment between approximately Poles 32 and 39. Construction vehicles used in areas that contain exotic plants have the potential to re-introduce invasive plants to this area.

Numerous non-native invasive plants are found within the proposed transmission line alignment, including: yellow starthistle (*Centaurea solstitialis*), purple starthistle (*Centaurea calcitrapa*), Harding grass (*Phalaris aquatica*), milk thistle (*Silybum marianum*), bull thistle (*Cirsium vulgare*), medusahead (*Taeniatherum caput-medusae*), and Italian thistle (*Carduus pycnocephalus*), wild fennel (*Foeniculum vulgare*), and thickets of Himalayan blackberry occur and have the potential to spread. At the Sonoma Creek crossing site in Segment 17, stands of giant reed (*Arundo donax*) and wild fennel grow on the creekbanks, but would not likely be spread by project activities.

Mitigation Measure 2.4-9a: To reduce the likelihood of spreading noxious or invasive weeds within the project area or increasing their abundance in the project area, or introducing new noxious or invasive weed species to the project area, PG&E shall prepare and submit a Vegetation Management & Restoration Plan which includes best management practices for control of noxious weeds.

Mitigation Measure 2.4-9b: To reduce the potential for the spread of invasive or noxious weeds, cleaning stations shall be set up at key points along access roads. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing.

Significance after Mitigation: Less than Significant.

Impact 2.4-10: The project could result in the spread of the Sudden Oak Death pathogen. This would be a less than significant impact with implementation of Mitigation Measure 2.4-10a through 2.4-10 f.

Sudden Oak Death (SOD) is a forest disease caused by the plant pathogen *Phytophthora ramorum*. Known susceptible plants include tanoak, coast live oak, Shreve's oak, California black oak, canyon live oak, and sometimes madrone. These trees are infected through the trunk of the tree (except for tanoak which can also be infected through the leaves) and are known as bole hosts.

The pathogen that causes SOD also causes a foliar/twig disease in other susceptible plants. While it is not uncommon for plants that contract Sudden Oak Death to succumb to disease, it is uncommon for foliar/twig host plants to die from infection. Many foliar hosts act as a breeding ground for the disease, allowing inoculum to build up on leaves, and then spread to new areas via natural or artificial means.

The SOD fungus may be transported to new areas when infected plant material or infected soil is moved. The pathogen resides in soil in infested areas and therefore soil is a potential carrier of the pathogen. The risk of pathogen spread is greatest in muddy areas and during rainy weather where spore producing hosts are present. Currently, soil movement is unregulated. Most common plants may be carriers of the pathogen including California bay laurel (*Umbellularia californica*), a common species found throughout the Sonoma Mountain area.

Trees affected by the Sudden Oak Death pathogen have been found 1.5 miles north of the project area (California Oak Mortality Task Force, 2004), and in many locations in Sonoma County. During field surveys for the project, trees were observed near Pole 42 that appeared to be affected by the Sudden Oak Death pathogen (GANDA, 2004d). In addition, many individuals of host and potential carrier species (coast live oak, black oak, California bay, bigleaf maple, madrone, California buckeye, and common manzanita) grow within the project area, and it is possible that some of these are infested without

showing signs of the disease. The potential for a significant impact exists if infested plants are removed or trimmed during construction and the parts are transported to a non-infested county or state. Leaving materials on-site (without burning them), or moving them only within the 13-county[4] infested area, are actions that do not violate state or federal regulations, and would not constitute significant impacts. However, moving plant material within Sonoma County would be inconsistent with the Sonoma County Agricultural Commissioner's request for voluntary assistance in combating the spread of the Sudden Oak Death pathogen within Sonoma County (see *Regulatory Context* section, page 2.4-24). While implementation of Mitigation Measure 2.4-10a is consistent with the Sonoma County Agricultural Commissioner's request; implementation of Mitigation Measures 2.4-10b through 2.4-10e would further reduce the likelihood of spreading the SOD pathogen.

Mitigation Measure 2.4-10a: To reduce the potential for the spread of the Sudden Oak Death pathogen, PG&E shall comply with applicable regulations during the construction activities including vegetation trimming, clearing, and removal and by following the practices documented as part of the Vegetation Management & Restoration Plan which shall include the following mitigation measures to reduce the potential for spread of the SOD pathogen.

Mitigation Measure 2.4-10b: To reduce the potential for the spread of SOD, Mitigation Measure 2.4-9b shall be implemented. Cleaning stations shall be set up at key points along access roads easily accessible for job site personnel and vehicles. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing.

Mitigation Measure 2.4-10c: No plant material shall be removed from the project area to the extent feasible. Any branches, limbs, twigs, or other tree debris shall be left onsite. Any plant material trimmed or removed along Leveroni Road shall be removed and disposed of at an appropriate location[5].

Mitigation Measure 2.4-10d: Work in the project area shall be performed during the dry season (May through October) to the extent feasible. If work is performed during the wet season vehicles and personnel shall, to the extent feasible, be kept to paved areas and avoid mud.

Mitigation Measure 2.4-10e: PG&E shall institute a sanitation program to be approved by the CPUC including the implementation of Mitigation Measure 2.4-10b. Sanitation measures include decontamination of vehicles, personnel, tools and equipment. Mud and debris shall be scraped, brushed, or hosed from vehicles and equipment. A power washer shall be used where feasible. Sanitation of personnel shall include removal of mud and debris from boots clothing, and skin. Sanitation of tools that have contacted vegetation or soils shall be performed after completion of work to using Lysol® spray, a 70% or greater solution of alcohol, or a Clorox®

[4] Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma.
[5] In accordance with applicable regulations.

solution (1 part Clorox® to 9 parts water or Clorox clean up®). At the cleaning stations, a person trained by a qualified biologist, botanist or arborist experienced with SOD shall inspect each worker's clothing, especially the shoes. Any branches, limbs, twigs, seeds, or other tree debris shall be removed from worker's clothing. The inspection shall occur daily after work has been completed.

Mitigation Measure 2.4-10f: Prior to the start of construction, PG&E shall provide a worker education seminar to all personnel. The seminar shall include distribution of materials that help identify signs of SOD, description of sanitation procedures, and other measures to avoid the spread of the pathogen. The seminar shall be facilitated by a qualified biologist, botanist or arborist or other qualified person experienced with SOD. Any workers who join the construction job after the initial worker education seminar shall be trained by the Environmental Monitor on all topics covered in the seminar.

Significance after Mitigation: Less than significant.

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2.5 Cultural Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
5.	**CULTURAL RESOURCES—Would the project:**				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
b)	Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

2.5.1 Setting

This setting description provides a brief overview of the environment, prehistory, ethnography, and history of the surrounding region that includes the project area. Because archaeological regions can represent large geographic areas and display some cultural homogeneity throughout, a discussion of the broad context is useful in order to evaluate the impacts to cultural resources.

Existing Environment

The area that represents the proposed transmission line between the Lakeville Substation to Sonoma Creek—or the Sonoma Mountains—consists of moderately high relief with numerous upland and riparian vegetation communities. Large grassland areas are interspersed with patches of oak and redwood, along with vineyard and parcels used for grazing animals. As a whole, during the prehistoric period, the Sonoma Mountains would have been an attractive locale for temporary camps and gathering excursions, while the valleys to the east and west of the Sonoma range would likely have been more suitable for permanent villages—namely along major watercourses. Conversely, the landscape that represents the Lakeville Substation and the Sonoma Substation areas are now paved and urbanized underlain by mostly alluvial fan deposits, which reduce the probability of encountering intact archaeological sites, especially near the surface.

Prehistoric Context

Much of the prehistoric occupation of the commonly called Sonoma Archaeological District—or the area represented roughly by the boundaries of Sonoma County—was very similar to the chronology of traditions within the San Francisco Bay; however, the patterns[1] in the record seem to reflect connection to the North Coast Ranges and that region's prehistoric peoples. The later patterns that exemplified the Bay Area regions—such as the Berkeley and Augustine Patterns—

[1] A *pattern* is an essentially integrative cultural unit, or, in other words, the general mode of living shared by people within a given geographic region

was represented in the Sonoma District, but demonstrated a lack of similarity to the earliest Sacramento Valley material culture called the Windmiller Pattern (4,750–3,750 years before present (B.P.)). The material remains of the Windmiller sites reflected a people well adapted to riverine and marshland environments with common mortar and millingstone fragments and fishing implements (Ragir, 1972). However, while being contemporaneous with the Windmiller Pattern, the artifacts discovered in the Sonoma District reflected a greater influence from artifacts seen in the San Francisco Bay Area, often called the Berkeley Pattern (Morrato, 1984). By about 2,500 B.P., the Berkeley Pattern in the Sonoma District (sometimes called the Houx Aspect by archaeologists), showed a greater reliance on hunting tools than milling implements.

A few earlier sites were discovered in the Napa Valley to the northeast of Petaluma, as well as near the drought-exposed shoreline of Lake Berryessa, often called the Hultman Phase sites (dated at 8,000 to 5,000 B.P.) (Meighan, 1953 and True et al., 1979). These sites contained crude and heavy core stone tools, millingstones, and manos, or hand-sized grinding stones. Similarities to the Berkeley Pattern of the Bay Area continued to evolve and demonstrate increasing complexity, both technologically and socially. This sequence ultimately led to the Augustine Pattern, also very similar to the assemblages found in the Bay Area, with increasing emphasis on ornamentation, like *Olivella* and *Haliotis* beads and bone tool forms. The increased distribution of beads and obsidian tool use indicative of the Augustine Pattern further reflects the increasing sociopolitical complexity and status distinctions in wealth observable in the archaeological record (Morrato, 1984).

Ethnographic Context

By the time of European settlement, the project area was included within part of the Coast Miwok territory, which was centered in Marin and Sonoma Counties (Kelly 1978). Miwok was one of the California Penutian languages, which included two discrete groups: the Lake Miwok, to the northwest, and the Coast Miwok, to the west. The Coast Miwok exploited a large and abundant resource base that shaped a complex hunter-gatherer society. The settlement patterns consisted of large village sites surrounded by a constellation of small, task-specific camps. Primary village sites had headmen and were occupied throughout the year; these sites were located near to shore or freshwater sources. The ethnographic Patwin territory intersects with the eastern segment of the project area.

Historical Context

With the advent of the mission period and the establishment of the San Francisco –Solano Mission at Sonoma, much of the Coast Miwok culture was irrevocably changed. The missionization of the native peoples was followed by the occupation of the region by General Mariano Guadelupe Vallejo, who owned the large *Rancho Petaluma.* Between 1834 and 1840, Vallejo built the largest adobe in Northern California, the Petaluma Adobe, in the foothills of the Sonoma Mountains, just a quarter-mile northeast of the Lakeville Substation. Vallejo also owned *Rancho Aqua Caliente* along Sonoma Creek adjacent to the town of Sonoma. As the American Period began in the 1840s, the influx of new economies and the process of secularization resulted in an increase in settlement and the development of farming, ranching, and businesses in Sonoma County. In the mid-nineteenth century, wine grapes from Europe were first grown successfully in

Sonoma County. Today, Sonoma County is best known for the Sonoma Valley and its world-renowned wine production.

Methods

A records search of all pertinent survey and site data was conducted at the Northwest Information Center at Sonoma State University (PG&E, 2004). The records were accessed by utilizing the Glen Ellen and Sonoma USGS 7.5-minute quadrangle maps.

Previous surveys and studies and archaeological site records were accessed as they pertained to the project area. Records were also accessed and reviewed in the *Directory of Properties in the Historic Property Data File for Sonoma County* for information on sites of recognized historical significance within the *National Register of Historic Places* (as of November, 2004), the *California Register of Historic Resources* (as of November, 2004), the *California Inventory of Historic Resources* (1976), the *California Historical Landmarks* (1996), and the *California Points of Historical Interest* (1992). In addition, General Land Office (GLO) maps were also consulted.

EDAW project archaeologists attended a series of field inspections of the proposed project and alternative routes on various dates in the summer and fall of 2003 (PG&E, 2004). These sessions were attended by PG&E personnel, as well as other environmental specialists. In order to minimize potential impacts to cultural resources, input from PG&E was solicited regarding the placement of various installations. In addition, letters requesting information regarding the project area were sent to the Native American Heritage Commission and 15 Native American individuals or organizations which might have knowledge of the area. No response has been received as of the publication of this Initial Study.

Additional field reconnaissance was conducted subsequently by ESA archaeologist Dean Martorana, M.A., in January, 2005, to obtain a general impression of the physiographic setting and check the existence and condition of properties previously identified by the above field and archival research.

Results

Several surveys have been conducted in the general region of the project area, but none have included more than minor coverage of any project segment. Therefore, where feasible, the project route was examined by archaeologists (PG&E PEA, 2004). Limitations included terrain too steep to safely examine and areas where landowner permission could not be obtained for access. The steepest areas are unlikely to contain cultural resources. Furthermore, transmission line installation in these areas would involve overhead line work that would not impact any sites, features, or artifacts that might be present.

Two cultural resources have been identified near the proposed project route and within the access roads/other construction areas. The first is inside the Petaluma Adobe State Historic Park (CA-Son-363H), located about 1/4-mile northeast of the Lakeville Substation. This park includes the restored Petaluma Adobe (State Historic Landmark No. 18 and National Register of Historic

Places #70000151), built by General Mariano G. Vallejo. The adobe has been restored to its appearance during its prime period of significance, 1834–1845.

The second resource consists of a portion of a stone wall found along Segment 1, at Pole 61. The project would eliminate this pole and a planned access road would require a breach in the wall. No information was obtained defining the date of construction, specific purpose, or contextual association of the historic stone wall located near Pole 61 (PG&E PEA, 2004). However, stone walls of this type are ubiquitous in this region and are generally not considered to be significant cultural resources. The stone wall does not appear on historic maps of the Napa area, does not line up with known Mexican Land Grant boundaries, and is of a type, style, and method of construction common in the region (Beck and Haase, 1974; Elliot and Smith 1878; and PG&E PEA, 2004). There is no available information to indicate that the stone wall is associated with significant events or persons important in California's past. The stone wall is not of a distinctive design or high artistic value, and would not yield information important in history. Furthermore, the context in which the stone wall was built appears to lack integrity and portions of the wall have been damaged or removed. Therefore, the stone wall is not considered an historical resource.

Although located outside of the boundaries of the Proposed Project, numerous archaeological and historical resources have been identified within the Petaluma and Sonoma Valley regions and the Sonoma Mountains, which represents the physiographic setting for the proposed transmission line. A myriad of creek settings, such as Adobe Creek and Rogers Creek, have yielded significant midden deposits and sites consisting of obsidian tools and waste flakes, among other archaeological site types and constituents. Because the settings for known sites corresponds to portions of the Proposed Project, specifically within the transmission line corridor segments in proximity to watercourses, the probability for the discovery of previously unidentified cultural resources during construction in these areas is moderate to high.

2.5.2 Regulatory Context

Section 106

Section 106 (36 CFR Part 800) of the National Historic Preservation Act (NHPA) requires a federal agency with jurisdiction over a federally funded, federally assisted, or federally licensed undertaking to take into account the effects of the agency's undertaking on properties listed or eligible for listing in the National Register of Historic Places (NRHP) (16 USC 470 et seq.). Because the project may require permits from federal agencies, it may be necessary for the Project to comply with Section 106 of the NHPA (please see discussion of Impact 2.4-7 in Section 2.4, *Biological Resources*).

For compliance with Section 106 of the NHPA, the lead federal agency (e.g., U.S. Army Corps of Engineers) is required to consult with the State Historic Preservation Officer (SHPO) before granting permits, funding, or other authorization of the undertaking. The Section 106 review process is implemented using a 5-step procedure, which includes:

1. Determination of the area of potential effects (APE) and the identification and evaluation of cultural resources within the APE;

2. Assessment of the effects of the undertaking on properties that are eligible for listing in the NRHP;

3. Consultation with the SHPO and lead agency on the determination of effect on historic properties;

4. Completion of a Memorandum of Agreement, or similar document, to address the resolution of adverse effect, if necessary; and

5. Implementation of the project according to the conditions of the agreement.

To determine whether the Proposed Project could affect NRHP-eligible properties, cultural sites (including archaeological, historical, and architectural properties) must be inventoried and evaluated for eligibility for listing in the NRHP. Although compliance with Section 106 is the responsibility of the federal lead agency, the work necessary to fulfill compliance can be delegated to others.

California Environmental Quality Act (CEQA)

CEQA requires that public or private projects financed or approved by public agencies must assess the effects of the project on historical resources. CEQA also applies to effects on archaeological sites, which may be included among "historical resources" as defined by Guidelines section 15064.5, subdivision (a), or, in the alternative, may be subject to the provisions of Public Resources Code section 21083.2, which govern review of "unique archaeological resources." Historical resources may generally include buildings, sites, structures, objects or districts, each of which may have historical, architectural, archaeological, cultural, or scientific significance.

Under CEQA, "historical resources" include the following:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code, §5024.1.)

(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resources as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a

resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code, §5024.1) including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

(4) The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

Archaeological resources that are not "historical resources" according to the above definitions may be "unique archaeological resources" as defined in Public Resources Code section 21083.2, which also generally provides that "nonunique archaeological resources" do not receive any protection under CEQA. If an archaeological resource is neither a "unique archaeological" nor an "historical resource," the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the EIR, but they need not be considered further in the CEQA process.

In summary, CEQA requires that if a project results in an effect that may cause a substantial adverse change in the significance of an historical resource, or would cause significant effects on a unique archaeological resource, then alternative plans or mitigation measures must be considered.

Sonoma County General Plan

The Sonoma County General Plan Open Space Element contains the following goal and objective that are relevant to the Proposed Project:

- Goal OS-9: Preserve significant archaeological and historical sites which represent the ethnic, cultural, and economic groups that have lived and worked in Sonoma County. Preserve unique or historically significant heritage or landmark trees.

- Objective OS-9.1: Encourage the preservation and conservation of historic structures by promoting their rehabilitation or adaptation to new uses. (Sonoma County PRMD, 1989)

City of Sonoma General Plan

The City of Sonoma General Plan does not contain any policies related to cultural resources that are relevant to the Proposed Project (City of Sonoma, 1995).

2.5.3 Cultural Resources Impacts and Mitigation Measures

Impacts on cultural resources could result from ground-disturbing activities and/or damage, destruction, or alteration of historic buildings. Ground-disturbing activities include project-related excavation, grading, trenching, or other sub-surface disturbance, including the undergrounding activities along Leveroni Road, that could damage or destroy buried archaeological resources including prehistoric and historic remains or human burials. Mechanisms that would cause damage, destruction, or alteration of historic buildings includes project-related demolition, damage, or alteration of historic buildings or their immediate surroundings that could impair the significance of an historic resource or adversely alter those physical characteristics of an historical resource that convey its historical significance.

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5: *less than significant impact*.

The Proposed Project would not cause a substantial adverse change to the significance of an historical resource. EDAW identified two cultural resources through archival and field inspection: the Petaluma Adobe and an historic stone wall located near Pole 61. The Petaluma Adobe (State Historic Landmark No. 18) is located about 1/4 mile northeast of the Lakeville Substation. The Petaluma Adobe would not be directly or indirectly affected by the Proposed Project. While the proposed modifications to the Lakeville Substation and the proposed height increases to the existing transmission line would constitute a change to the existing conditions of the area surrounding the Petaluma Adobe, the present existence of multiple transmission lines and other modern features of the landscape demonstrates that the proposed changes are irrelevant to the significance of the property. That is, the physical features of the setting are not the criteria that contribute to the Adobe's significance; therefore, this would be a less than significant impact.

As discussed above, the stone wall identified at Pole 61 was determined not to qualify as an historic resource; therefore, the project's potential to damage the stone wall would be a less than significant impact. No mitigation is required.

b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5: *less than significant impact with mitigation incorporated*.

As described in the *Methods* section above, archival research at the Northwest Information Center was conducted to determine whether any archaeological resources have been identified along the transmission corridor or within the proposed access roads and staging areas. There are no recorded prehistoric or historic-period archaeological resources listed with the Northwest Information Center within the footprint of the

proposed alignment. Although no extant cultural resources along the corridor have been documented, no intensive survey with subsurface testing has been conducted. Moreover, the abundant grassland vegetation throughout much of the transmission line corridor precluded adequate surface examination. Therefore, the nonexistence of subsurface cultural resources cannot be demonstrated and unidentified, buried archaeological remains could be present along the corridor. Buried archaeological remains such as prehistoric midden deposits, flaked and ground stone artifacts, bone, shell, building foundations and walls, and other buried cultural resource materials could be damaged during grading, trenching, and other construction related activities.

Impact 2.5-1: If construction of the proposed project encounters currently unknown cultural resources, including archaeological resources, pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), this could cause substantial adverse changes to the significance of the resource. This would be a less than significant impact with implementation of Mitigation Measures 2.5-1a and 2.5-1b.

Damage to significant buried archaeological deposits would be a significant impact. Implementation of Mitigation Measure 2.5-1a would reduce potential impacts to a less than significant level. Further, based on the reasonable potential that archeological resources may be present within the transmission line corridor, Mitigation Measure 2.5-1b is provided to avoid any potentially significant adverse effect to buried or subsurface unique archaeological resources.

> **Mitigation Measure 2.5-1a:** In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and PG&E and/or the CPUC shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of PG&E and/or the CPUC and a Specialist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the CPUC. All significant cultural materials recovered shall be, as necessary, subject to scientific analysis, professional museum curation, and a report prepared by a Specialist according to current professional standards.
>
> In considering any suggested mitigation proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the CPUC shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.
>
> **Mitigation Measure 2.5-1b:** PG&E shall retain the services of a Specialist that has expertise in California prehistoric and urban historical archeology to monitor ground-disturbing activity within 200 feet of a perennial or seasonal watercourse (see Figures 1-4a through 1-4d). If an intact archeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit shall cease. The

archeological monitor shall be empowered to temporarily redirect demolition/excavation/construction crews and heavy equipment until the deposit is evaluated. The archeological monitor shall immediately notify the CPUC of the encountered archeological deposit. The archeological monitor shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the CPUC.

If the CPUC, in consultation with the Specialist, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, the CPUC shall require PG&E to:

- Re-design the project to avoid any adverse effect on the significant archeological resource; or

- Implement an archeological data recovery program (ADRP) (unless the archaeologist determines that the archeological resource is of greater interpretive use than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archeological data recovery program, an ADRP shall be conducted. The project archaeologist and the CPUC shall meet and consult to determine the scope of the ADRP. The archaeologist shall prepare a draft ADRP that shall be submitted to the CPUC for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archeological resource is expected to contain. That is, the ADRP shall identify the scientific/historical research questions are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Proposed Project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

Significance after Mitigation: Less than Significant.

~~*Mitigation Measure 2.1-1*~~

~~As discussed in Section 2.1, *Land Use and Planning*, Mitigation Measure 2.1-1 requires the undergrounding of the transmission line within Leveroni Road from about Fifth Street West to the Sonoma Substation. No previously recorded cultural resources have been identified within this corridor, and no built structures or buildings would be altered. While the undergrounding of the transmission line that would occur under this mitigation measure would increase the potential to disturb currently unknown, subsurface cultural resources, implementation of Mitigation Measures 2.5-1a and 2.5-1b would reduce this impact to a less than significant level.~~

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature: *less than significant impact with mitigation incorporated*.

Paleontologic Resources

Paleontologic resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils – particularly vertebrate fossils – are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

The majority of the project area contains pre-Quaternary (approximately 3 million years ago and older) deposits and bedrock in montane areas combined with areas of Pleistocene alluvium in valleys. These types of sediments have been known to yield significant paleontologic remains because they are formations considered as fossil-bearing rock units. Because the Proposed Project would result in minimal excavation in bedrock conditions for the installation of the transmission line, significant paleontologic discovery would be unlikely. However, in the event a paleontologic resource is encountered, Mitigation Measure 2.5-2 is provided.

Impact 2.5-2: The Proposed Project could adversely affect unidentified paleontologic resources at the pole and road construction sites. This would be a less than significant impact with implementation of Mitigation Measure 2.5-2.

While not anticipated to result from the Proposed Project, significant fossil discoveries can be made even in areas of supposed low sensitivity, and could result from the excavation activities related to the Proposed Project, which could have a deleterious effect on such resources.

> **Mitigation Measure 2.5-2:** In the event of unanticipated paleontologic discoveries, PG&E shall notify a Specialist who shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. In the event of an unanticipated discovery of a breas[2], true, and/or trace fossil during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995 and SVP, 1996). The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the CPUC determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the CPUC for review and approval.

Significance after Mitigation: Less than Significant.

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[2] A seep of natural petroleum that trapped extinct animals which preserved and fossilized their remains.

~~*Mitigation Measure 2.1-1*~~

~~As discussed in Section 2.1, *Land Use and Planning*, Mitigation Measure 2.1-1 requires the undergrounding of the transmission line within Leveroni Road from about Fifth Street West to the Sonoma Substation. The excavation required for the implementation of this mitigation measure would be conducted in surface alluvial deposits and road fill material. While the undergrounding would increase the potential to disturb unknown, paleontologic resources, the implementation of Mitigation Measure 2.5-2 would reduce this impact to a less than significant level.~~

d) Disturb any human remains, including those interred outside of formal cemeteries *less than significant impact with mitigation incorporated*.

Burial Resources

There is no indication that a particular site has been used for burial purposes in the recent or distant past along the transmission corridor. Thus, it is unlikely that human remains would be encountered during project construction. However, in the event of the discovery of any human remains, including those interred outside of formal cemeteries, during project construction, the following Mitigation Measure is provided.

Impact 2.5-3: Project construction could result in damage to previously unidentified human remains. This would be a less than significant impact with the implementation of Mitigation Measure 2.5-3.

> **Mitigation Measure 2.5-3:** In the event that human skeletal remains are uncovered during construction activities for the Proposed Project, PG&E shall immediately halt work, contact the Sonoma County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, PG&E shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease until appropriate arrangements are made.

Significance after Mitigation: Less than Significant.

~~*Mitigation Measure 2.1-1*~~

~~As discussed in Section 2.1, *Land Use and Planning*, Mitigation Measure 2.1-1 requires the undergrounding of the transmission line within Leveroni Road from about Fifth Street West to the Sonoma Substation. While the undergrounding would increase the potential to disturb unknown burials, the implementation of Mitigation Measure 2.5-3 would reduce this impact to a less than significant level.~~

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2.6 Geology and Soils

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
6. GEOLOGY AND SOILS — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

2.6.1 Setting

Geology

The Proposed Project is located within the natural geologic region known as the Coast Range geomorphic province, which is distinguished by a bedrock basement[1] consisting of chaotically mixed and crumpled ancient sea floor sediments, referred to as the Franciscan Assemblage. The Coast Range extends along the Pacific Coast, from Oregon to Southern California, and exhibits northwest-trending ridges and valleys, which were formed by tectonic forces. The project area transects the Petaluma and Sonoma Valleys, which are separated by the northwest-trending ridges of the Sonoma Mountains. Bedrock directly underlying the project area is younger than the Franciscan Assemblage and includes sediments of the Petaluma Formation along the flanks of the Sonoma Mountains and volcanic rocks, referred to as the Sonoma Volcanics, which form the

[1] Basement rocks are those much older parent rocks that underlie the younger sedimentary rocks of interest.

ridges and upper regions. The Petaluma Formation consists of poorly-consolidated clay, shale, silt, sand, and gravel, and some interbedded volcanic rocks (Fox et al, 1973). The Franciscan Assemblage is exposed at the surface just south of the Lakeville Substation.

The youngest geologic units underlying the project area are surficial deposits made up of unconsolidated sediments eroded from the surrounding bedrock units. These units are locally mapped as Older Alluvium and Younger Alluvium (Wagner and Bortugno, 1982). The Older Alluvium consists of alluvial deposits and underlies the Sonoma Substation site as well as portions of Segments 1, 2, and 17 of the transmission line. The Younger Alluvium consists of unconsolidated stream, channel, levee, flood plain, basin, terrace, and fan deposits ranging in size from boulder to clay. Younger Alluvium underlies the Lakeville Substation site, as well as Segments 2 and 17 of the transmission line.

Topography

The project area originates at the Lakeville Substation at the eastern edge of Petaluma Valley and traverses the Sonoma Mountains until descending into the Sonoma Valley, where it terminates at the Sonoma Substation. Relief is fairly gentle at each end of the transmission line, while sections of the Sonoma Mountains include relatively steep to moderately steep grades. The Lakeville Substation is approximately 106 feet mean sea level (msl). The elevations on the route increase to approximately 180 feet msl at the western edge of the Sonoma Mountains and reach a maximum elevation of 712 feet msl. The route then descends the eastern flank of the mountains to 165 feet in the vicinity of Felder Creek, terminating at the Sonoma Substation at an elevation of approximately 54 feet.

Soils

Soils within the project area form over the exposed alluvial deposits and bedrock and have been mapped as “soil associations”, which are a broad grouping of soils with common characteristics such as similar management uses or requirements like slope steepness. Five soil associations occupy the terrain crossed by the project and are described below.

Clear Lake-Reyes Association

The Clear Lake-Reyes Association, located on basins and on tidal flats, is comprised of nearly-level to gently-sloping soils that are poorly drained clays to clay loams. The Lakeville Substation and the western portion of Segment 1 of the transmission line are underlain by these soils.

Haire-Diablo Association

The Haire-Diablo Association, located on terraces and upland, is comprised of gently-sloping to steep soils that are well-drained to moderately well-drained sandy loams to clays. Portions of Segment 1 of the transmission line cross this association. Additionally half of the Lakeville Substation site is located on this soil association.

Huichica-Wright-Zamora Association

The Huichica-Wright-Zamora Association, located on low bench terraces and alluvial fans, is comprised of nearly-level to moderately-sloping soils that are well-drained to excessively-drained loams to silty clay loams. The Sonoma Substation site is underlain by these soils and portions of Segments 1, 2, and 17 of the transmission line cross these soils.

Yolo-Cortina-Pleasanton Association

The Yolo-Cortina-Pleasanton Association, located on flood plains, alluvial fans, and low terraces, is comprised of nearly-level to moderately-sloping soils that are well-drained to excessively-drained very gravelly sandy loams to clay loams. These soils are located in the central portion of Segment 17 of the transmission line.

Goulding-Toomes-Guenoc Association

The Goulding-Toomes-Guenoc Association, located on uplands of the Sonoma Mountains, is comprised of well-drained, gently-sloping to very steep clay loams to loams. The east-central portion of Segment 1 of the transmission line is underlain by these soils.

Seismicity

The seismic environment in Northern California and the San Francisco Bay Area is characterized by the San Andreas fault system, which formed due to major forces occurring at the boundary of shifting tectonic plates. This fault system, and its northwest-trending folds and faults, control much of the geologic structure within the northern Coast Ranges. The major faults in the region include the San Andreas, Hayward, Rodgers Creek, Maacama, Calaveras, and Green Valley faults. The USGS Working Group on California Earthquake Probabilities estimated there is a 21 percent chance of the San Andreas fault experiencing an earthquake of M 6.7 or greater in the next 30 years (USGS, 2003).

The 80-mile Rodgers Creek fault, like the San Andreas fault, is a “strike-slip” fault and bisects the project site between Pole 41 and Pole 43. [2] The Rodgers Creek fault is considered by the State of California as “active” because it has experienced displacement during the last 10,000 years.[3] The most recent significant earthquake on the Rodgers Creek fault occurred on 1 October 1969. On this date, two earthquakes of magnitude 5.6 and 5.7 occurred in an 83-minute period and caused serious damage to buildings in Santa Rosa. The last major earthquake (estimated Richter magnitude 6.7) was generated in 1898 with an epicenter near Mare Island at the north margin of San Pablo Bay. The USGS estimates the probability of a large earthquake (magnitude 6.7 or greater) on the Rodgers Creek fault zone (when considered as an extension of the Hayward fault zone) during the period 2002 to 2032 to be 27 percent, the highest probability for all San Francisco Bay fault zones (USGS, 2003). The expected ground shaking generated by a seismic

[2] Strike-Slip faults are those that displace laterally; movement of a strike slip fault is parallel with the direction of the fault trace.

[3] Active faults pose a potential hazard either directly, due to sudden permanent ground deformations (fault rupture and related deformation), or indirectly, due to strong ground shaking. The existing Lakeville and Sonoma Substation sites are not within identified Alquist-Priolo Earthquake Hazards Zones (described below) that would require investigations to assess the potential for surface-fault rupture (Hart, 1997).

event on the Rodgers Creek fault is anticipated to cause significant damage and interruption of service for transportation (e.g., highways, railroads, and marine facilities) and lifeline (e.g., water supply, communications, and petroleum pipelines) facilities throughout Sonoma County. Other faults in the region of the project include the potentially active Tolay fault located west of the Lakeville substation, as well as others east and north of the project, which include Carneros, West Napa, and Bennett Valley faults (Fox et al, 1973).

Geologic Hazards

Expansive Soils

Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Expansive soils with high clay contents were identified in the project area (USDA, 1972).

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as wind and precipitation runoff. Soils containing high amounts of silt or clay can be easily erodible, while sandy soils are less susceptible. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Typically, soil erosion potential is reduced once the soil is graded and covered with gravel, concrete, structures, or asphalt.

Settlement

Settlement is the depression of the bearing soil when a load, such as that of a structure or new fill material, is placed upon it. If not properly engineered, loose, soft, soils comprised of sand, silt, and clay have the potential to settle after a building or other load is placed on the surface. Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking.

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake’s seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults, including the Rodgers Creek Fault Zone which runs through the project area.

Ground Shaking

Strong ground shaking from a major earthquake could affect Sonoma County during the next 30 years. Earthquakes on a nearby active fault are expected to produce a range of ground shaking

intensities at the project site. Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the M 6.9 Loma Prieta earthquake in October 1989. This earthquake caused strong ground shaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area. The epicenter was approximately 50 miles southeast of the project site and therefore significant damage was not observed in Sonoma County.

Earthquake ground motion is commonly described using the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared.[4] For comparison purposes, the maximum peak acceleration recorded during the 1989 Loma Prieta earthquake on the San Francisco Peninsula was 0.64 g at the epicenter near Santa Cruz. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center. However, an earthquake on the nearby Rodgers Creek Fault would likely produce far more severe ground shaking at the project site than was observed during the Loma Prieta earthquake. The modeled shaking scenario in Sonoma for the 1989 Loma Prieta earthquake was considered light; however the modeled shaking scenario for a future earthquake on the Rodgers Creek Fault could produce a M 7.0 event. An earthquake of this magnitude could cause very strong to very violent ground shaking at the project site (ABAG, 2003).

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables, and buildings with shallow foundations. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 40 feet (ABAG, 2003). Hazard maps produced by the Association of Bay Area Governments (ABAG) depict liquefaction and lateral spreading hazards for the entire Bay Area in the event of a significant seismic event. According to these maps, the project site is in an area expected to have a very low to moderate potential to experience liquefaction (ABAG, 2005).

2.6.2 Regulatory Context

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zones Act), signed into law in December 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near

[4] In terms of automobile accelerations, one "g" of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart and Bryant, 1997). Surface fault rupture is not necessarily restricted to the area within a Fault Rupture Hazard Zone, as designated under the Alquist-Priolo Act.

California Building Code

The California Building Code (CBC) is another name for the body of regulations found in the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code (CBSC, 2001). Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. Published by the International Conference of Building Officials, the Uniform Building Code is a widely adopted model building code in the United States. The CBC incorporates by reference the Uniform Building Code (UBC) with necessary California amendments. These amendments include significant building design criteria that have been tailored for California earthquake conditions (CBSC, 2001).

The project area is located within Zone 4, one of the four seismic zones designated in the United States. Zone 4 is expected to experience the greatest effects from earthquake ground shaking and therefore has the most stringent requirements for seismic design. The national model code standards adopted into Title 24 apply to all occupancies in California except for modifications adopted by state agencies and local governing bodies.

Sonoma County

The Sonoma County General Plan contains the following goals, objectives, and policies that would applicable to the Proposed Project:

- Goal PS-1: Prevent unnecessary exposure of people and property to risks of damage or injury from earthquakes, landslides and other geologic hazards.
- Objective PS-1.1: Continue to utilize available data on geologic hazards and associated risks.
- Objective PS-1.2: Regulate new development to reduce the risks of damage and injury from known geologic hazards to acceptable levels.
- Policy PS-1a: Continue to utilize all available data on geologic hazards and related risks from the appropriate agencies.

- Policy PS-1b: Continue to utilize studies of geologic hazards prepared during the development review process.

- Policy PS-1e: Prepare a "geologic hazard area" combining district. Consider establishing limits on permissible uses and including standards for permitted development.

- Policy PS-1f: Require and review geologic reports prior to decisions on any project which would subject property or persons to significant risks from the geologic hazards shown on Figures PS-1a through PS-1i (pages 257 through 273 General Plan) and related file maps and source documents. Geologic reports shall describe the hazards and include mitigation measures to reduce risks to acceptable levels. Where appropriate, require an engineer's or geologist's certification that risks have been mitigated to an acceptable level and, if indicated, obtain indemnification or insurance form the engineer, geologist, or developer to minimize County exposure to liability.

- Policy PS-1i: Require dynamic analysis of structural response to earthquake forces prior to County approval of building permits for structures whose irregularity or other factors prevent reasonable load determination and distribution by static analysis. (Sonoma County PRMD, 1989)

City of Sonoma

The City of Sonoma General Plan contains the following goals, objectives, and policies that would be applicable to the Proposed Project:

- Goal PSE-1: Minimize risks to life and property posed by seismic and other geologic hazards.

- Policy 2: The City shall continue to require, as conditions of project approval, the incorporation of measures which eliminate or reduce to acceptable levels identified risks associated with relevant geologic hazards.

- Policy 4: All proposed critical and high priority facilities (including hospitals, convalescent homes, schools and community buildings) must be constructed in accordance with the latest adopted seismic and building codes. (City of Sonoma, 1995)

2.6.3 Geology and Soils Impacts and Mitigation Measures

a.i) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault: *less than significant impact.*

The Rodgers Creek fault bisects the Proposed Project between Pole 41 and Pole 43. The official map of the Alquist-Priolo Special Studies Zones for this area shows two fault traces of the Rodgers Creek Fault mapped at the project line crossing (CGS, 1983). As

demonstrated during major historical earthquakes on the San Andreas Fault, surface fault rupture and significant ground distortion may occur within a zone extending several hundred feet on either side of the main fault trace.

PG&E engineers calculated that based on the maximum anticipated slip movement across the fault and the orientation of the fault across the transmission line, the approximate maximum fault displacement between Poles 41 and 43 could range from 3.6 to 6.5 feet across the 1,275 foot span (PG&E PEA, 2004). The fault displacement occurring between the poles could cause a reduction of slack and increased tension in the conductors. For suspension tubular steel poles (TSP), fault displacement would cause the insulator strings to be pulled at an angle to the TSP adjacent the fault crossing. For dead-end TSPs, the steel poles would deflect (bend) elastically.

PG&E considered the anticipated displacement in the design and placement of Poles 41, 42, and 43. The transmission line at this location is designed with a flexible capacity by ~~lengthening the insulator strings~~ installing load-limiters to allow for any increased tension on the line caused by fault rupture and displacement.

Observations from previous earthquakes, such as the 1994 Northridge earthquake, indicate that fault rupture causes limited damage to overhead transmission lines (Gamble, 2005). Although surface fault rupture is not necessarily limited to the Alquist-Priolo zone, the poles would be located sufficiently far enough away to avoid significant damage as well as being designed to accommodate a substantial fault displacement. Therefore, the potential impact of fault rupture to the Proposed Project would be less than significant.

a.ii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking: *less than significant impact.*

Transmission Line

It is likely that the project area will experience a significant earthquake that will produce strong ground shaking. The greatest potential source for strong seismic ground shaking in the general project area is the active Rodgers Creek fault, which has historically produced moderately large earthquakes (USGS, 2003). The project area would experience moderate to very strong shaking intensity in the event of a magnitude 7 earthquake along the Rodgers Creek segment of the Hayward-Rodgers Creek Fault System (ABAG, 2003). Very strong ground shaking would be expected to occur east of the Lakeville Substation to the Sonoma Substation. This would include Segments 1, 2, and 17 of the transmission line. The Lakeville Substation site would likely experience comparatively less ground shaking intensity.

Strong ground shaking could cause wires to swing and contact each other causing short-circuiting. However, observations from past earthquakes have shown that overhead transmission lines can accommodate strong ground shaking (Gamble, 2005). In fact, the required separation distance to reduce wires touching in wind is sufficient to accommodate movement associated with ground shaking (Gamble, 2005). Although ground shaking could cause wires to swing, existing design criteria for wind loads are adequate to preclude wires contacting and thus, this impact is less than significant.

The Project also involves transitioning the new transmission line from overhead to an underground line along Leveroni Road. In general, underground transmission lines can accommodate significant ground shaking events and would not require any further mitigation measures beyond current design criteria.

Substations

Seismic waves attenuate with distance from their source so estimated bedrock accelerations are highest for portions of the project near the fault zone and decrease with distance from the fault. Local soil conditions may amplify or dampen seismic waves as they travel from underlying bedrock to the ground surface. In addition to the Rodgers Creek and Tolay faults, other active or potentially active faults within the project area also present significant potential for strong ground shaking within the region. A major earthquake along the Rodgers Creek Fault could damage the Lakeville Substation causing facility closure and possibly service disruption for a period up to two days (CDMG, 1994).

Some types of substation equipment are susceptible to damage from earthquake shaking. PG&E has reviewed historical substation damage to determine the vulnerabilities of each specific type of equipment. The review included immediate visits to substations following past earthquakes. PG&E personnel inspected substation damage in Los Angeles and Japan shortly after the Northridge and Kobe earthquakes. Damage has been found to vary dramatically with voltage. Damage was noted as extensive at 500 kV substations, significant at 230 kV substations, and minor at substations of 115 kV and below. The types of equipment most susceptible to damage from strong seismic ground shaking are transformer radiators and bushings, circuit breakers, circuit switchers, and disconnect switches (PG&E PEA, 2004).

The Institute of Electrical and Electronics Engineers (IEEE) Standard 693-1997 *Recommended Practices for Seismic Design of Substations*, has specific requirements to mitigate possible substation equipment damage. These design guidelines would be implemented during construction of substation improvements. Substation equipment would be purchased using the seismic qualification requirements in IEEE 693. When these requirements are followed, PG&E expects very little structural damage from horizontal ground accelerations approaching 1.0 g. Maximum ground accelerations throughout the project area have been calculated between 0.5 g and 0.58g (Abrahamson, Silva, 1997; Idriss, 1997, *in* PG&E PEA, 2004). Substation improvements would be

designed in accordance with the UBC and the seismic design criteria developed for the UBC Seismic Zone 4. Use of site-specific seismic data, standard seismic engineering design criteria, and accepted construction methods for the Bay Area region would ensure that impacts associated with strong ground shaking at the substations would remain less than significant.

~~*Mitigation Measure 2.1-1*~~

~~Mitigation Measure 2.1-1 involves transferring the transmission line from overhead to an underground line. In general, underground transmission lines can accommodate significant ground shaking events and would not require any further mitigation measures beyond current design criteria.~~

a.iii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction: ***less than significant impact.***

If seismic-induced ground failure, such as liquefaction occurred in areas underlying the project site, it could distress, displace, and/or destroy project components. Similar to all transmission line projects PG&E completes, it conducted a geologic reconnaissance and study of the Proposed Project alignment to determine geologic conditions and potential geologic hazards. The project area has a low to moderate potential for liquefaction hazards (ABAG, 2005). The Lakeville Substation was listed as having a low potential and the Sonoma Substation a very low potential for liquefaction. Areas along the transmission line varied from very low to moderate. The moderate areas were generally along Leveroni Road.

Lateral spreading is related to liquefaction in areas of free slopes. Such free slope areas are confined to stream banks in the project area and are generally spanned by the existing and proposed transmission line. The potential for lateral spreading to affect project facilities is very low given the relatively low potential for liquefaction.

The steeper areas of the project area where the transmission line traverses the Sonoma Mountains are susceptible to seismic induced landslide, earth flow, and debris flow as a result of strong seismic ground shaking. Ground cracking is typically a problem only on narrow-crested, steep-sided ridges, similar to some of those traversed by Segment 1 along the crest of the Sonoma Mountains. However, because the transmission line poles are placed in deep foundations, the potential is low for slope failure to adversely impact the structural integrity of the pole.

Geologic and geotechnical reconnaissance completed by PG&E for the proposed project as well as the use of standard engineering design criteria would ensure that impacts associated with seismically-induced ground failure would remain less than significant.

a.iv) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides: ***less than significant impact.***

Slope instability, including landslides, earth flows, and debris flows, have the potential to undermine foundations, cause distortion and distress to overlying structures, and displace or destroy project components. A design-level geotechnical survey would be performed to evaluate the potential for slope instability including landslides, earth flows, and debris flows along the proposed transmission line route and in the vicinity of the substations. The Proposed Project would allow for the transmission line to span large unstable areas. In cases of shallow sliding, slope creep, or raveling, specially-designed deep foundations may be used to anchor the overlying structure to underlying competent material. As appropriate, stabilization of unstable slopes would be performed by excavating and removing unstable material, regrading unstable slopes to improve surface drainage and limit infiltration, installing subsurface drainage systems, and/or constructing improvements to mechanically restrain slope movement. Facilities would be located away from very steep hillsides, debris flow source areas, the mouths of steep side-hill drainages, and the mouths of canyons that drain steep terrain. Incorporation of engineering recommendations completed during the design phase of this project, and the use of standard engineering design criteria and practices would ensure that impacts associated with slope instability would remain less than significant.

b) Result in substantial soil erosion or the loss of topsoil: ***less than significant impact.***

Proposed Project

Surface soil erosion and loss of topsoil could occur from soil disturbance associated with pole installation, grading staging areas, undergrounding of the new transmission line along Leveroni Road from about Fifth Street West to the Sonoma Substation, and the construction and use of new access roads. The extent of the soil erosion and topsoil loss expected for the Proposed Project is minor because the specific construction activities would occur in localized areas (pole sites, staging areas, and short lengths of access roads) and amount to only a limited area of soil disturbance. Compared to a large development grading project, the Proposed Project involves work in many small, disconnected areas, which allows PG&E to manage erosion within a limited footprint and more effectively reduce soil loss. PG&E would adopt erosion control strategies outlined in the Erosion Control and Restoration Plan (ECRP) (PG&E PEA, 2004), which it prepared specifically to address areas disturbed during the Proposed Project. The goals of the ECRP are to: 1) control soil erosion and reduce sedimentation; 2) minimize adverse impacts from erosion and sedimentation to sensitive biological resources, including special-status plants and animals, streams and other high-value wetlands and native vegetation; 3) minimize impacts from erosion and sedimentation to non-native grasslands and pasturelands; 4) control locally established weed species to pre-project levels and prevent the establishment of new weed species; 5) promote the natural re-establishment of native vegetation and non-native grasslands; and 6) restore pasturelands

to pre-project productivity. Considering the localized work areas, the limited soil disturbance, and adherence to the ECRP, impacts associated with erosion and topsoil loss would remain less than significant.

~~*Mitigation Measure 2.1-1*~~

~~As discussed above, the ERCP would include measures to reduce potential erosion from soil activities associated with the undergrounding of the transmission line beneath Leveroni Road from about Fifth Street West to the Sonoma Substation that would be required under Mitigation Measure 2.1-1. Implementation of the erosion control plan would ensure that impacts associated with soil erosion and topsoil loss would remain less than significant.~~

c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse: *less than significant impact.*

Destabilization of natural or constructed slopes could occur as a result of construction activities. Excavation, grading, and fill operations associated with providing access to proposed pole locations and other project facilities could alter existing slope profiles making them unstable as a result of over-excavation of slope material, steepening of the slope, or increased loading. However, as discussed above, PG&E would implement standard engineering design features and construction procedures to maintain stable slopes and excavations during construction, and therefore, impacts associated with stabilized slopes would be less than significant.

Temporary construction slopes and existing natural or constructed slopes impacted by construction operations would be evaluated for stability. In developing grading plans and construction procedures for access roads and transmission poles, PG&E would analyze the stability of both temporary and permanent cut, fill, and otherwise impacted slopes. Site-specific construction slopes and grading designs would limit the potential for slope instability, maintain adequate drainage of improved areas, and minimize the potential for erosion and flooding during construction. During construction, slopes affected by construction operations would be monitored and maintained in a stable condition. Construction activities likely to result in slope or excavation instability would be suspended during and immediately following periods of heavy precipitation when slopes are more susceptible to failure. As standard practice, temporary construction grading slopes would be evaluated by PG&E engineers during the construction phase of the project and therefore, impacts associated with failure of these slopes would remain less than significant.

For construction requiring excavations, such as concrete pier foundations, standard and appropriate support and protection measures would be implemented to maintain the stability of excavations and to protect surrounding structures and utilities. Where excavations are located adjacent to structures, utilities, or other features that may be

adversely impacted by potential ground movements, bracing, underpinning, or other methods of temporary support for the affected facilities would be designed and implemented as part of the project. Excavation stability would be evaluated and addressed using standard and accepted engineering and construction practices with adherence with trench and excavation safety laws and therefore, impacts related to excavation stability would remain less than significant.

Saturated, loose sands and soft clays may pose difficulties in access for construction and in excavating pole foundations. Soft or loose soils could also cause instability of excavations during construction of foundations. However, geologic reconnaissance conducted by PG&E during the design stages of this project evaluated the potential for, and effects of, soft or loose soils where necessary. Where potential soil strength issues exist, appropriate measures would be implemented by PG&E engineers to avoid, accommodate, replace, or improve soft or loose soils encountered during construction. Such measures, typical of common construction practice, may include: locating construction facilities and operations away from areas of soft and loose soil; over-excavating soft or loose soils and replacing them with engineered backfill materials; increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction; and treating soft or loose soils in-place with binding or cementing agents. PG&E would employ standard shoring construction methods for trenches and other excavations would be designed. Where necessary, construction activities would be scheduled for the dry season to allow safe and reliable truck and equipment access. As a result, potential construction impacts from soft or loose soils would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property: *less than significant impact.*

Shrink-swell or expansive soil behavior is a condition in which soil reacts to changes in moisture content by expanding or contracting. Many of the natural soil types identified within the project area have high clay contents and most have moderate to high shrink-swell potential. Expansive soils may cause differential and cyclical foundation movements that can cause damage and/or distress to overlying structures and equipment. Potential operation impacts from loose sands, soft clays, and other potentially compressible soils include excessive settlement, low foundation-bearing capacity, and limitation of year-round access to project facilities. Appropriate design features to address expansive soils may include excavation of potentially problematic soils during construction and replacement with engineered backfill, ground-treatment processes, direction of surface water and drainage away from foundation soils, and the use of deep foundations such as piers or piles. Implementation of these standard engineering methods would ensure that impacts associated with expansive soils remain less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater: *less than significant impact.*

The Proposed Project does not include any components that would include the construction of any septic tank or other wastewater disposal system into project area soils. Therefore, there would be no potential impact to soils in the project area from wastewater disposal.

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2.7 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
HAZARDS AND HAZARDOUS MATERIALS **Would the project:**				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

2.7.1 Setting

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term “hazardous material” is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.[1] In some cases, past industrial or commercial uses on a site can result in spills or leaks of hazardous materials and petroleum to the ground, resulting in soil and groundwater contamination. Federal and state laws require that soils having concentrations of contaminants such as lead, gasoline, or industrial solvents that are higher than certain acceptable levels must be

[1] State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

handled and disposed as hazardous waste during excavation, transportation, and disposal. The California Code of Regulations (CCR), Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste. The use of hazardous materials and disposal of hazardous wastes are subject to numerous laws and regulations at all levels of government.

In addition to toxic substances, the CPUC generally provides information about Electric and Magnetic Fields (EMF) in its environmental documents, including this Initial Study, to inform the public and decision makers; however, it does not consider EMF in the context of CEQA as an environmental impact because there is no agreement among scientists that EMF creates a potential health risk and because CEQA does not define or adopt standards for defining any potential risk from EMF. For a detailed analysis of EMF for informational purposes, refer to Section 1.10 of the Project Description and **Appendix B**.

Existing Environment

Existing Contamination

For the purposes of this Initial Study analysis, ESA retained Environmental Data Resources (EDR) of Southport, Connecticut to conduct a regulatory database search of sites adjacent to and in the vicinity of the project area that are listed on agency files for the documented use, storage, generation, or releases of hazardous materials or petroleum products. The database search process reviews several lists generated by federal, state, county, and/or city regulatory agencies for historically contaminated properties, and for businesses that use, generate, or dispose of hazardous materials or petroleum products in their operation. In addition, the database search reviews lists of active contaminated sites that are currently undergoing monitoring and remediation. The databases searched and reviewed by EDR for this project are listed in **Table 2.7-1**.[2]

The listed sites within one mile of the proposed transmission line alignment and the substations provided in **Table 2.7-2** have experienced a release of hazardous materials or petroleum products that have resulted in contamination of soil and/or groundwater. Sites located along and adjacent to the project are of greatest concern. Sites located within 1,000 feet of the project site may pose a risk of contamination since some contaminants, such as methyl tertiary butyl ether (MTBE) is known to travel through groundwater up to 1,000 feet. Those sites located at a distance of 1,000 feet or more pose a lower risk of contaminating the soils and groundwater beneath the project alignment and substations.

Figure 2.7-1 shows the locations of the listed sites along and within 1,000 feet of the project route that have had a release of hazardous materials or petroleum products that may result in the encounter of contaminated soil or groundwater during project construction.

[2] Potential sites of past historic hazardous materials use, storage, and/or contamination may have occurred prior to the activation of agency maintained databases.

TABLE 2.7-1
REGULATORY AGENCY DATABASES ACCESSED

Database	Type of Record	Agency
NPL	National Priority List	EPA
CORRACTS	RCRA Corrective Actions	EPA
CERCLIS / NFRAP	Sites currently or formerly under review by the EPA	EPA
RCRIS-TSD	RCRA permitted treatment, storage, disposal facilities	EPA
RCRIS-GEN	RCRA registered small or large generators of hazardous waste	EPA
RAATS	RCRA violations/ enforcement actions	EPA
FINDS	Facility information and "pointers" to other sources that contain more detail	EPA
ERNS	Emergency Response Notification System of Spills	EPA
HMIRS	Hazardous Material Spill Incidents Reports	U.S. Department of Transportation
MINES	Mines Master Index Database	U.S. Dept. of Labor, Mine Safety and Health Administration
MLTS	List of sites which possess or use radioactive materials and are subject to NRC licensing requirements	U.S. Nuclear Regulatory Commission
TRIS/TSCA	Facilities which release toxic chemicals to air, water and land/Facilities that manufacture or import chemical substances	EPA
PADS	Generators, Transporters, Commercial Storers of PCBs	EPA
CAL-SITES	Potential or confirmed hazardous substance release sites	STATE
AWP	Known hazardous waste sites	STATE
LUST	Leaking Underground Storage Tanks	STATE
STATE LANDFILL	Permitted solid waste landfills (active, inactive and closed), incinerators or transfer stations	STATE
CA WDS	Waste Discharge System	STATE
SWF/LF	Active, closed and inactive landfills	STATE
WMUDS/SWAT	Waste management units	STATE
DEED	Sites with deed restrictions	STATE
CORTESE	State index of properties with hazardous waste	STATE
TOXIC PITS	Toxic pits cleanup facilities	STATE
CHMIRS	Reported hazardous material incidents	STATE
NOTIFY 65	Reported releases that could impact drinking water	STATE
HAZNET	Facilities that generate hazardous waste	STATE
UST/AST	Registered underground and aboveground storage tanks	STATE/COUNTY

AWP: Annual Workplan Sites
CALSITES: California Department of Toxic Substances Control Database of Hazardous Substances Releases
CERCLIS: Comprehensive Environmental Response, Compensation & Liability Information System
CHMIRS: California Hazardous Material Incident Report System
CORRACTS: Corrective Action Report System, an EPA database of corrective actions taken at a RCRA Regulated site.
CORTESE: Based on input from 14 state databases
DEED: List of Deed Restrictions
HAZNET: Hazardous Waste Information System
MLTS: Material Licensing Tracking System
NFRAP: No Further Remedial Action Planned (archived CERCLIS sites)
NOTIFY 65: Proposition 65 Records
PADS: PCB Activity Database System
RCRA: Resource Conservation and Recovery Act
SWF/LF: Solid Waste Information System
TRIS/TSCA: Toxic Chemical Release Inventory System/Toxic Substances Control Act
WMUDS/SWAT: Waste Management Database

SOURCE: EDR (2005)

TABLE 2.7-2
HAZARDOUS MATERIALS RELEASE SITES ADJACENT TO THE TRANSMISSION LINE ALIGNMENT AND SUBSTATIONS

Site ID (see Figure 2.7-1)	Site Name	Site Address	Direction from Project[a]	Regulatory Lists	Status
1	Time Oil Jackpot	20820 Broadway	1 – 2 miles SE (downgradient[b])	Cortese, LUST	Case Closed
2	Four Corners Service	20500 Broadway	Less than 1,000 feet NE (downgradient)	Cortese, LUST	Preliminary Site Assessment Underway
3	Daniel Auto Repair	20501 Broadway	Less than 1,000 feet SE (downgradient)	Cortese, LUST	Remedial Action Underway
4	Jacoboni Property	370 Napa Road	1 – 2 miles E (downgradient)	Cortese, LUST	Case Closed

a The EDR report included distances and directions which were determined to be slightly inaccurate upon visual inspection of aerial photography, probably due to the fact that the project is a linear corridor extending over seven miles. This column provides accurate representation of actual site location in relation to closest point of the project alignment.
b A term used to describe where a property is located in relation to another property based on the flow of groundwater. For example, if the groundwater flow direction is to the south, and Property A is located to the north of Property B, property B is located downgradient of Property A, and therefore, contamination of Property A could contaminate Property B.

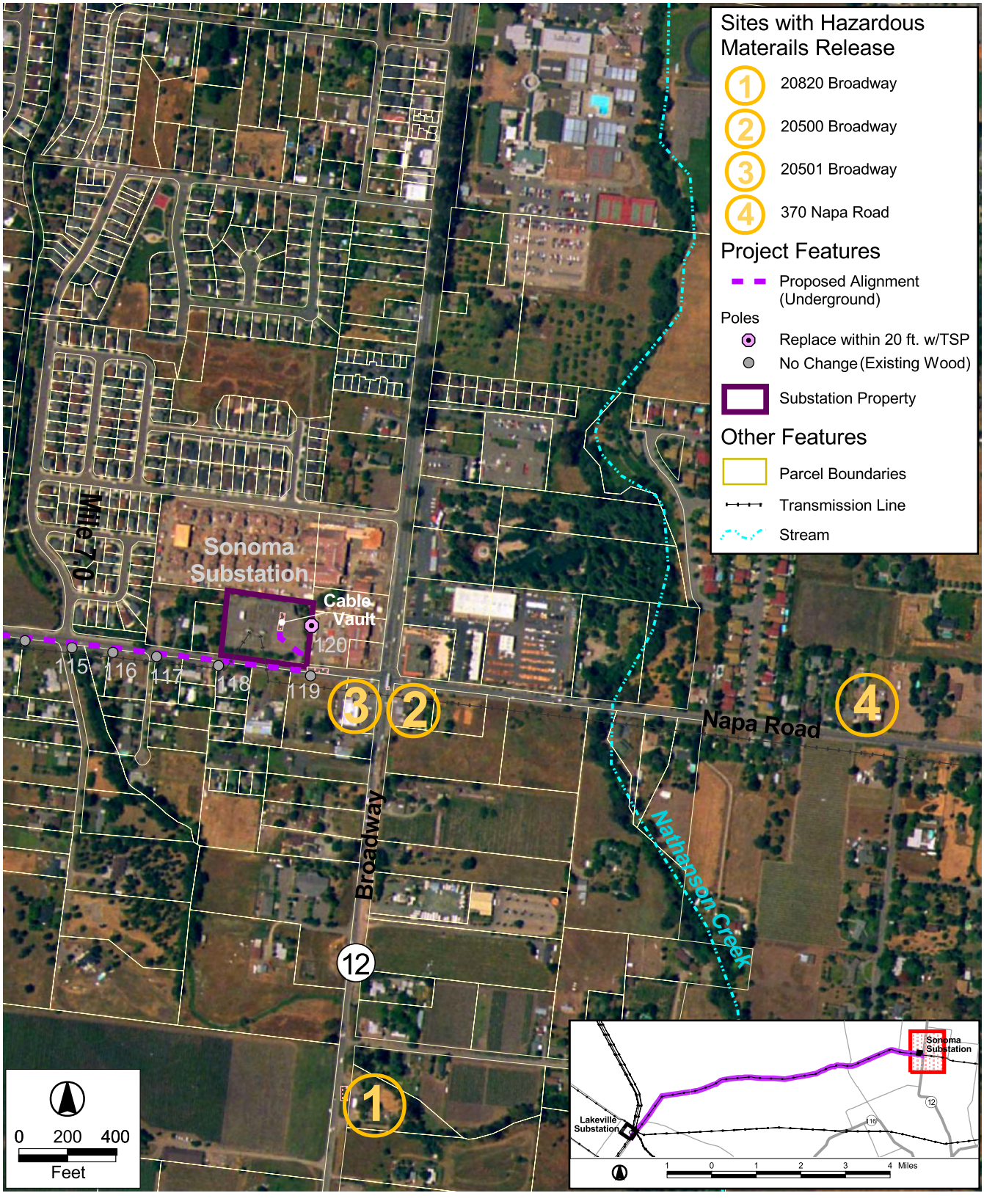
SOURCE: EDR (2005)

The database search identified other sites in addition to the sites of potential concern listed in **Table 2.7-1**. These other sites listed on the EDR database search include hazardous material/waste storage, generation and treatment facilities; underground storage tank (UST) locations; aboveground storage tank (AST) locations; dry cleaning facilities; sites that have waste discharge requirements; pesticide-producing facilities; and facilities with air emissions. These facilities are not considered to be a concern for the Proposed Project because they have not been listed as having experienced any releases or contamination. These facilities operate under permits with specific requirements in accordance with applicable laws and regulations, and are typically inspected on a regular basis by the regulating agency(ies).

The sites identified in **Table 2.7-2** are described below.

Site 1 - 20820 Broadway, Time Oil Jackpot

In October 1988, one 4,000-gallon and one 12,000-gallon gasoline UST were removed from this site, located approximately 7,848 feet southeast from the Proposed Project alignment. A 500-gallon waste oil UST was removed at the same time. The site is estimated to be approximately 48-feet lower in elevation than the project site. Four hundred cubic yards of soil were removed from the excavation and stockpiled on site to remove any soil which may have been contaminated by the three tanks removed. Six hundred gallons of water were pumped out of the excavation to extract any localized groundwater contamination. MTBE was initially detected in the excavated material. Laboratory tests indicated high chromium levels in the groundwater, reportedly due to a local rock formation rich in chromium rather than from leaking tanks. According to site records reviewed by ESA, this case is now closed (EDR, 2005). The likelihood of any contaminated soil or groundwater being encountered during project construction is very low due to distance,



SOURCES: EDR (2005) AND EDAW (2004)

Figure 2.7-1

Hazardous Material Release Sites

elevation, era of the incident, and determination by the San Francisco Regional Water Quality Control Board (RWQCB) to close the case in 1996.

Site 2 – 20500 Broadway, Four Corners Service

In March 2001, two 5,000-gallon and one 10,000-gallon gasoline UST were removed from this site, located approximately 500 feet northeast of the Proposed Project alignment. The site is estimated to be 56 feet in elevation below the project site. In addition, one 2,000-gallon diesel and a 250-gallon waste oil UST were removed from the site. An area of 1,140 square feet of soil was excavated to depths between 9.5 and 15 feet. Soil was initially stockpiled and used to backfill the waste oil tank excavation pit. In July 2002, over excavation work began at the locations of the former diesel and gasoline UST. Additional work was conducted to remove soil that had been used to backfill the original waste oil UST excavation. MTBE was detected in the soil and groundwater. In August 2002, excavations were backfilled using pea gravel. Approximately 1,000 cubic yards of soil were excavated and sent to Forward Landfill. Groundwater removed from the excavation totaled 18,000 gallons. According to California Environmental Protection Agency (Cal EPA) site records, a Preliminary Site Assessment by the RWQCB has been underway since 1997; however, the case for this site has not yet been closed (EDR, 2005). Due to the project area's distance from this site, its higher elevation in relation to this site, and its limited excavation volume, there is little risk of public or environmental hazard as a result of project construction activities.

Site 3 – 20501 Broadway, Daniel Auto Repair

In May 1986, four 1,000-gallon gasoline USTs were removed from this site, located about 500 feet southeast of the project site. Soil and groundwater removed from the excavation was tested and MTBE was detected to be present at a maximum level of 9.5 parts per billion (ppb). In June 1986, 2,100 cubic yards of soil were excavated in the vicinity of the former USTs. A preliminary site assessment was prepared in 1992. In March 2001, additional excavation work was conducted pursuant to a remedial action plan. Remedial action remains underway at the site (EDR, 2005). Since the site is undergoing remedial action overseen by the San Francisco Bay RWQCB, there is little risk of public or environmental hazard as a result of project construction activities.

Site 4 – 370 Napa Road, Jacoboni Property

In 1989, a gasoline UST was excavated and removed from this site. It is located over one mile east of the project site. In 1990, MTBE was detected and contaminated soil was excavated and removed. In 2002, this case was closed by San Francisco Bay RWQCB (EDR, 2005). Since the case has been closed and the site is over one mile from and downgradient of the Proposed Project, there is little risk of public or environmental hazard as a result of project construction activities.

Wood Treatment Products

The existing transmission line poles are treated with chemicals that include pentachlorophenol, creosote, and chromated copper arsenate. These treatment chemicals are used in pressure treated wood to protect wood from rotting due to insects and microbial agents. These chemicals, for certain uses and quantities, can be considered to be hazardous materials, which require specific

handling procedures prescribed by state and federal regulations. These chemicals are applied to wood transmission line poles by the manufacturer at their facility and are let to set and dry prior to installation and/or use of the wood. At the time of installation, the wood treatment is soaked into the wood and is dry. Because the chemicals have dried ~~and because the poles are placed in concrete footing~~, there is negligible leaching out of the wood and into the environment.

Additionally, the base of the treated wood poles at the project site could be wrapped with copper naphthenate paper**.** This paper has been accepted as a wood preservative for several decades and has been employed in nonpressure treatments of wood and other products. Copper naphthenate is a common preservative and its use has increased recently in response to environmental concerns associated with other wood treatment products.

Wildland Fire Conditions

The combination of highly flammable fuel, long dry summers and steep slopes creates a significant natural hazard of wildland fires in many areas of Sonoma County. Wildland fires can result in death, injury, economic losses and a large public investment in fire fighting efforts. Woodlands and other natural vegetation can be destroyed resulting in the loss of timber, wildlife habitat, scenic quality and recreation. Soil erosion, sedimentation of fisheries and reservoirs, and downstream flooding can also result.

Most damage results from a few large fires in the dry weather months. Fire hazard severity has been mapped by the California Department of Forestry (CDF). Areas with a high or very high risk include over half of Sonoma County. The highest hazard is found in mountainous areas with dry summers, plenty of fuel, and steep slopes, such as the project area (Sonoma County PRMD, 1989).

2.7.2 Regulatory Context

Table 2.7-3 provides a brief overview of federal and state laws and regulations.

State

Soil Contamination

Soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste when excavated. The California Code of Regulations, Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would classify a soil as a hazardous waste.

Hazardous Materials Management

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that businesses handling hazardous materials prepare a business plan. In January 1996, Cal EPA adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has

TABLE 2.7-3
FEDERAL AND STATE LAWS AND REGULATIONS REGARDING HAZARDOUS MATERIALS

Hazardous Materials Management	State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. These laws require hazardous materials users to prepare written plans, such as Hazard Communication Plans, Hazardous Materials Business Plans, and Chemical Hygiene Plans. Laws and regulations require hazardous materials users to store these materials appropriately and to train employees to manage them safely. A number of agencies participate in enforcing hazardous materials management requirements.
Hazardous Waste Handling	The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous material waste. These laws impose “cradle-to-grave” regulatory systems that require generators of hazardous materials waste to handle it in a manner that protects human health and the environment to the extent possible. The DTSC permits and oversees hazardous materials waste treatment, long-term storage, and disposal facilities.
Hazardous Materials Transportation	The U.S. Department of Transportation (U.S. DOT) regulates the transportation of hazardous materials between states. Within California, the state agencies with primary responsibility for enforcing federal and state regulations, and for responding to transportation emergencies, are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications. Although special requirements apply to transporting hazardous materials, requirements for transporting hazardous waste are more stringent, and hazardous waste haulers must be licensed to transport hazardous waste on public roads.
Soil and Groundwater Contamination	The Comprehensive Environmental Response, Compensation, and Liability Act and associated Superfund Amendments provide the U.S. EPA with the authority to identify hazardous sites, to require site remediation, and to recover the costs of site remediation from polluters. California has enacted similar laws intended to supplement the federal program. The DTSC is primarily responsible for implementing California’s Superfund Law.
Emergency Response	California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local government and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES), which coordinates the responses of other agencies, including Cal EPA, CHP, the Department of Fish and Game (DFG), the RWQCB, and the local fire department.

six elements: hazardous waste generators and hazardous waste on-site treatment; USTs; ASTs; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level, and the agency responsible for the implementation of the Unified Program is called the Certified Unified Program Agency (CUPA). In Sonoma, Sonoma County Department of Emergency Services Hazardous Materials Division is the designated CUPA.

Hazardous Waste Management and Handling

Under the Resource Conservation and Recovery Act (RCRA), individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements. The U.S. EPA must approve state programs intended to implement federal regulations. In California, Cal EPA and DTSC, a department within Cal EPA, regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The U.S. EPA approved California’s RCRA program, called the Hazardous Waste Control Law (HWCL), in 1992. DTSC has primary hazardous material regulatory responsibility, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC

for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe the management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in ordinary landfills. Hazardous waste manifests must be retained by the generator for a minimum of three years. Hazardous waste manifests provide a description of the waste, its intended destination, and regulatory information about the waste. A copy of each manifest must be filed with the state. The generator must match copies of hazardous waste manifests with receipts from treatment, storage, and disposal facilities.

Contaminated soils and other hazardous materials removed from a site during construction or remediation may need to be handled as hazardous waste. In Sonoma County, remediation of contaminated sites is performed under the oversight and with the cooperation of Sonoma County Local Oversight Program and RWQCB.

Hazardous Materials Transportation

The State of California has adopted U.S. DOT regulations for the intrastate movement of hazardous materials; state regulations are contained in 26 CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (26 CCR). Both regulatory programs apply in California.

The two state agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the CHP and Caltrans. The CHP enforces hazardous material and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill identification teams at as many as 72 locations throughout the state that can respond quickly in the event of a spill.

Common carriers are licensed by the CHP, pursuant to California Vehicle Code Section 32000. This section requires the licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards.

Every hazardous waste package type used by a hazardous materials shipper must undergo tests that imitate some of the possible rigors of travel. Every package is not put through every test. However, most packages must be able to be kept under running water for a time without leaking; dropped, fully loaded, onto a concrete floor; compressed from both sides for a period of time; subjected to low and high pressure; and frozen and heated alternately.

Hazardous Materials Emergency Response

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the state OES. The OES coordinates the responses of other agencies, including the U.S. EPA, CHP, DFG, the RWQCBs, the local air pollution control districts (in this case, the Bay Area Air Quality Management District (BAAQMD)), and local agencies.

Pursuant to the Business Plan Law, local agencies are required to develop "area plans" to response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the Business Plans submitted by people who handle hazardous materials. An area plan must include pre-emergency planning and procedures for emergency response, notification, and coordination of affected governmental agencies and responsible parties, training, and follow up. As described above under above, the Sonoma County designated CUPA, is responsible for implementing the Unified Program which includes provisions for the implementation of hazardous materials release response plans.

Local

Bay Area Air Quality Management District

BAAQMD is responsible for regulating and enforcing air quality standards in the project area. With regard to hazardous substance releases, the BAAQMD can impose specific requirements on remediation and other activities to protect ambient air quality from dust or other airborne contaminants. According to BAAQMD regulations, soils having concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste when excavated. Title 22 CCR Section 66261.20-24 contains technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste.

Sonoma County Local Oversight Program

The Sonoma County Local Oversight Program (LOP) oversees the investigation and cleanup of fuel releases from USTs in all areas of the county, with the exception of the Cities of Santa Rosa and Healdsburg. Sites are entered into the LOP when a release from an underground tank is reported, which typically happens when an underground tank is removed, and signs of a release are either obvious or reported in laboratory sample results. Releases are also reported when contamination is found while repairing fuel delivery systems, or when Phase II environmental site assessments are performed at the time of property sales. Once entered into the LOP, the site must be investigated and cleaned up in accordance with the California Underground Storage Tank Regulations, Sonoma County Program Guidelines for Site Investigations, and RWQCB water quality objectives.

Sonoma County Department of Emergency Services

The Emergency Management Division of the Department of Emergency Services (DES) is responsible for the planning, coordination of response, recovery, and mitigation activities related

to countywide emergencies and disasters. The DES is the lead agency for the Sonoma Operational Area and serves as the primary coordination point for emergency management's communication between federal, state, and local levels. DES develops emergency operation plans for the county, cities, and districts; conduct training and educational outreach programs related to emergency preparedness; and sponsor emergency management training. The local representative of the DES in the project area is the Sonoma Fire Department. Fire Stations #1 and #2 are located at 630 2nd Street West and 877 Center Street, respectively.

Sonoma County General Plan

The Sonoma County General Plan Safety Element contains the following goals, objectives, and policies related to hazardous materials and wildland fires that would be applicable to the Proposed Project:

- Goal PS-3.1: Prevent unnecessary exposure of people and property to risks of damage or injury from wildland and structural fires.
- Policy PS-3b: Consider the severity of natural fire hazards, potential damage from wildland and structural fires, adequacy of fire protection and mitigation measures consistent with this element in the review of projects.
- Policy PS-3g: Encourage strong enforcement of state requirements for fire safety by the California Department of Forestry.
- Policy PS-3h: Encourage continued operation of CDF programs for fuel breaks, brush management, controlled burning, revegetation and fire roads.
- Goal PS-4: Prevent unnecessary exposure of people and property to risks of damage or injury from hazardous materials.
- Objective PS-4.2: Regulate the transport, storage, use and disposal of hazardous materials in order to reduce the risks of damage and injury from hazardous materials to acceptable levels.
- Policy PS-4d: Where allowed by law, regulate the transportation of hazardous materials to minimize the potential for damage. Seek regulation by other agencies consistent with adopted County policies. (Sonoma County PRMD, 1989)

City of Sonoma General Plan

The City of Sonoma General Plan Public Safety Element contains the following goals and policies related to hazardous materials and wildland fires that would be applicable to the Proposed Project:

- Goal PSE-2: Minimize hazards posed by fires, hazardous materials, and medical incidents and maintain a level of protection which safeguards life and property at a reasonable cost.

- Goal PSE-4: Ensure that essential emergency and public services will function effectively in a disaster.

- Policy 16: The City shall use the Standardized Emergency Management System as the basis of its emergency planning.

- Policy 18: The City shall continue to promote awareness of the Emergency Plan and its recommendations.

- Policy 19: The City shall continue to coordinate its emergency planning efforts with other relevant jurisdictions, agencies, and groups. (City of Sonoma, 1995)

2.7.3 Hazards and Hazardous Materials Impacts and Mitigation Measures

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials: *less than significant with mitigation incorporated*.

~~Proposed Project~~

During project construction (i.e., modifications to the substations and installation of the new transmission line, including the underground portion ~~and modifications to the substations~~) activities, limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, etc. would be used for vehicles and motorized equipment. Accidental spill of any of these substances could impact water and/or groundwater quality. Liquid concrete would also be utilized for utility pole foundation construction, and accidental release of this material could wash into nearby waterways or infiltrate the soil. Temporary bulk above-ground storage tanks and 55-gallon drums may also be used for fueling and maintenance purposes. As with any liquid, during handling and transfer from one container to another, the potential for an accidental release exists. Depending on the relative hazard of the material, if a spill were to occur of significant quantity, the accidental release could pose a hazard to construction workers, the public, as well as the environment. While the project would not require long-term operational use, storage, treatment, disposal, or transport of significant quantities of hazardous materials, hazardous materials would be used during project construction activities.

Impact 2.7-1: Construction activities would require the use of certain materials such as fuels, oils, solvents, and other chemical products that, in large quantities, could pose a potential hazard to the public or the environment if improperly used or inadvertently released. This would be a less than significant impact with implementation of Mitigation Measures 2.7-1a through 2.7-1e.

Mitigation Measure 2.7-1a: PG&E and/or its contractor(s) shall implement construction best management practices including but not limited to the following:

- Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- During routine maintenance of construction equipment, properly contain and remove grease and oils; and
- Properly dispose of discarded containers of fuels and other chemicals.

Mitigation Measure 2.7-1b: *Hazardous Substance Control and Emergency Response Plan* – PG&E shall prepare a Hazardous Substance Control and Emergency Response Plan (the Plan) for the project and implement it during construction. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include a discussion of appropriate response actions in the event that hazardous materials are released or encountered during excavation activities.

Mitigation Measure 2.7-1c: *Health and Safety Plan* – PG&E shall prepare and implement a Health and Safety Plan to ensure the health and safety of construction workers and the public during project construction. The plan shall include information on the appropriate personal protective equipment to be used during construction.

Mitigation Measure 2.7-1d: *Worker Environmental Awareness Program (WEAP)* – PG&E shall ensure that an environmental training program is established and delivered to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program shall emphasize site-specific physical conditions to improve hazard prevention, and shall include a review of the Health and Safety Plan and the Hazardous Substance Control and Emergency Response Plan. PG&E shall submit documentation to the CPUC mitigation monitor that each worker on the project has undergone this training program.

Mitigation Measure 2.7-1e: *Emergency Spill Supplies and Equipment* – PG&E shall ensure that oil-absorbent material, tarps, and storage drums shall be used to contain and control any minor releases. Emergency spill supplies and equipment shall be kept adjacent to all areas of work, and shall be clearly marked. Detailed information for responding to accidental spills and for handling any resulting hazardous materials shall be provided in the project's Hazardous Substance Control and Emergency Response Plan, which shall be implemented during construction.

Significance after Mitigation: Less than Significant.

~~*Mitigation Measure 2.1-1*~~

~~As a result of the Land Use analyses (Section 2.1), Mitigation Measure 2.1-1 would require the new 115 kV single-circuit transmission line to be undergrounded beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see~~

~~**Figure 2.1-4**). The underground portion of the transmission line would be about 1/2 mile in length.~~

~~Implementation of this mitigation measure would not add or increase any environmental impacts from those discussed above.~~

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment: *less than significant impact.*

~~*Proposed Project*~~

It is not anticipated that construction or operation of the Proposed Project would create a significant hazard to the public due to upset or accident conditions involving the release of hazardous materials into the environment. Accidental release of hazardous materials routinely used during construction activities are addressed in section a), above. Implementation of the project would not involve significant grading or large excavations and therefore the release of previously unidentified hazardous materials in urban, open space, or agricultural areas is low.

Additionally, PG&E has procedures in place to control its construction work activities in contaminated areas. Before or during the detailed design phase of a project, PG&E generally performs subsurface soil sampling at intervals along the entire project alignment, and especially in areas of known potential contamination to identify areas that contain contaminated soils. PG&E extracts and test samples of soil and groundwater to identify types and concentrations of contaminants. The design-phase sampling program helps identify health hazards that may be encountered during construction, and is used to develop appropriate construction practices and procedures as a part of a Health and Safety Plan and Hazardous Substance Control and Emergency Response Plan. These plans are developed to ensure worker safety as well as to reduce the potential for discharges of pollutants from the contaminated soils. All soil and groundwater sampling follows proper testing and handling protocols for hazardous waste and water collection and decontamination procedures.

In addition to the pre-project soil and groundwater testing, PG&E incorporates standard procedures for work in contaminated soils into project construction methods. These procedures are incorporated to ensure worker safety as well as protect the environment during construction in contaminated areas. Specific construction procedures are developed after identifying contaminants in a project area and may include a Worker Training Program, use of personal protective equipment and clothing, containment and testing of potentially contaminated soils and water, and use of a qualified observer, as well as implementing construction best management practices to prevent accidental transport of contaminants outside the construction area. Implementation of these protocols would ensure that any hazardous materials encountered during construction, including during excavation of the underground portion along Leveroni Road, would be

handled in an appropriate and safe manner and that these activities would not create a significant hazard to the public or the environment due to upset or accidental release.

Treated wood poles from the project would either be reused or disposed as waste pursuant to PG&E's Treated Wood Protocol (see **Appendix F)**. If the wood is reused, then PG&E would provide the recipient with a letter of agreement stating that the recipient will use the wood for specified purposes and a warning statement indicating that the wood contains preservative chemicals. In addition, each reused pole would have an adequate warning statement affixed to it describing the wood treatment material on the pole. If the poles are not reusable, then the poles would be disposed of as non-hazardous waste at a landfill that is under contract to PG&E and is permitted by the State of California to accept it. While it is not required by law, PG&E's protocol for wood pole disposal recommends the use of a non-hazardous waste manifest when shipping treated wood to a landfill to help track the quantity of treated wood sent for disposal.

Treated wood poles would be transported from the field to a consolidation site. However, if treated wood is temporarily left unattended at a job site that is accessible to the public, each piece of wood must have the treated wood warning statement affixed to it.

Treated wood poles are wrapped around the base with copper naphthenate paper. The following requirements would apply if naphthenate paper is found at the base of the poles:

- If the paper is in good condition and is securely attached to the poles, the poles may be transported from the field to a consolidation site with the paper intact.
- If the paper is in poor condition and there is the possibility that it will tear off during transport, remove the paper in the field before transporting. If the amount of copper naphthenate paper removed in the field is > 10 lb, it must be bagged, labeled as hazardous waste, and transported to a PG&E consolidation site using a appropriate hazardous materials documentation. (If < 10 lb. of copper naphthenate paper is shipped, a log describing the waste must be kept at the consolidation site).
- PG&E would remove the paper from the poles prior to reuse or disposal.
- PG&E would manage the paper as hazardous waste.

The protocol for disposal of treated poles was developed to protect site workers and would be followed during removal and disposal of the wood poles. As part of PG&E's Hazard Communication training, and as part of its training in specific work practices, information about the hazards and proper handling practices would be communicated to all employees and/or contractors that would handle treated wood. The poles would be reused or disposed of as nonhazardous waste and any naphthenate paper would be handled in accordance with hazardous materials regulations. Therefore, impacts related to the removal and disposal of treated wood would be less than significant.

~~Mitigation Measure 2.1-1~~

~~Implementation of Mitigation Measure 2.1-1 would involve excavation of a trench and installation of a 1/2 mile underground transmission cable. While no hazardous material sites have been identified along the proposed route, there is the potential that unidentified contamination areas could be encountered.~~

~~Encountering contaminated soil, surface water, and groundwater without taking proper precautions could result in the exposure of construction workers and the environment to hazardous conditions. The potential for encountering contaminated soil and groundwater could come from sites located adjacent to and within the vicinity of the Proposed Project where the underground transmission line would be installed that have experienced a release of hazardous materials or petroleum products. PG&E maintains specific protocols for subsurface soil sampling and testing for contaminated soils during construction activities. Implementation of these protocols would ensure that any hazardous materials encountered during construction would be handled in an appropriate and safe manner and that these activities would not create a significant hazard to the public or the environment due to upset or accidental release.~~

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school: *less than significant impact.*

There are no existing or proposed schools within 1/4 mile of the transmission line alignment. A small church school on Highway 12, south of Leveroni / Napa Road, is located about 0.20 miles southeast of the Sonoma Substation, the eastern extent of the project. Sonoma Valley High School is located about one-half mile northeast of the Sonoma Substation. Since significant quantities of hazardous materials would not be used during construction and because there are no schools located within 1/4 mile of the project, there is a very low potential for the project to result in any significant impact to nearby schools.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment: *less than significant impact*.

According to the EDR report (EDR, 2005), the Proposed Project would not be located on a site with known hazardous materials contamination. If contaminated materials are encountered during project construction activities, implementation of Mitigation Measures 2.7-1b through 2.7-1e would reduce these impacts to a less than significant level.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area: *no impacts*.

There are no public airports located within 2 miles of the project area. The Proposed Project would involve the installation of transmission line and modifications to existing substations. There would be no structures of significant height that would impair airport operations. Therefore, there would be no airport safety hazards associated with project construction or operation.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area: *no impacts*.

There are no known private airports located within 2 miles of the project area. Accordingly, there should be no airport safety hazards associated with project construction or operation. The use of helicopters for project installation in remote areas is addressed in Section 2.17, *Transportation and Traffic*.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan: *less than significant impact*.

~~*Proposed Project*~~

The Proposed Project would involve the operation of heavy machinery during installation activities, including during excavation for the underground portion of the new line along Leveroni Road. Consequently, ~~and~~ emergency response times along Leveroni Road may be impacted for a short period of time. Neither Sonoma County nor the City of Sonoma has designated Leveroni Road as an emergency evacuation route (Helgren, 2005 and Cahill, 2005). Sonoma County has designated evacuation routes for areas subject to inundation from dam breaks only, and Leveroni Road is not designated as such. Other emergencies (earthquake, fire, etc.) requiring evacuation are handled on a per incident basis. This would be a less than significant impact with implementation of Mitigation Measure 2.13-2, discussed in the Section 2.13, *Public Services*.

~~*Mitigation Measure 2.1-1*~~

~~Implementation of Mitigation Measure 2.1-1, which requires a portion of the transmission line to be undergrounded from approximately Fifth Street West to the Sonoma Substation, would result in an increase in construction time for the underground component of the transmission line along Leveroni Road, increasing emergency service response times as indicated above. This would be a less than significant impact with implementation of Mitigation Measure 2.13-2, discussed in Section 2.13, *Public Services*.~~

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands: *less than significant impact*.

The project could increase the risk of wildland fires in the area because induced current on the new transmission line could result in sparks that could reach trees and/or

vegetation along the transmission line corridor that could result in fire. To minimize the risk of trees falling on the transmission line or other accidental ignition of a wildland fire from the transmission line, PG&E would follow guidelines including CPUC General Order 95, Public Resources Code Section 4293, PG&E's Transmission Right of Way Vegetation Management Program and Transmission Routine Patrol Standard, and the International Society of Arboriculture's pruning guidelines and the ANSI A300 Pruning Standards.

The project site is located within an area of Sonoma County that consists mainly of agricultural land and open space. Wildland fire hazards exist in varying degrees over much of the County. The fire season extends approximately 5 to 6 months, from late spring to fall, and hazards arise from a combination of climatic, vegetative, and physiographic conditions. Grazing land and open space are more susceptible to wildland fires than irrigated agricultural land or vineyards.

While the project would place people (construction and/or maintenance workers) in an area highly susceptible to wildland fires, these individuals would only be in the area on a temporary basis during construction and an intermittent basis during project operation for maintenance activities and therefore, implementation of the Proposed Project would not result in a significant risk of loss, injury, or death involving wildland fires.

References – Hazards and Hazardous Materials

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2.8 Hydrology and Water Quality

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
8.	**HYDROLOGY AND WATER QUALITY—Would the project:**				
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

2.8.1 Setting

Climate

Sonoma County has a Mediterranean climate characterized by warm, dry summers and cold, moist winters. The majority of annual precipitation in this region occurs as rain that falls during the period of November through April and ranges from 25 to 40 inches per year. Precipitation

patterns in the region are influenced by local topography; correspondingly, mean annual precipitation generally increases with elevation.

Surface Water Hydrology

Watersheds

The project area lies within Sonoma County and transects the Petaluma and Sonoma Valleys. The proposed alignment crosses a total of seven streams and two ponds and makes an elevation change of approximately 600 feet. The entire project area lies within the boundaries of the Sonoma Creek Watershed and the Petaluma River Watershed. Water flow within these two watersheds discharges into San Pablo Bay.

Sonoma Creek Watershed

The Sonoma Creek Watershed covers an area of approximately 170 square miles. The watershed is roughly rectangular in shape, stretching about 25 miles from north to south and about 10 miles east to west at its widest point (SFEI and SEC, 2000). Sonoma Creek originates north of the project area at an elevation of about 2,700 feet and flows south toward San Pablo Bay via a number of circular sloughs that have, over the last 150 years, been highly modified by dredging, levees, and re-alignment. Mountain ridges bound the creek drainage to the east and west.

Tributaries to Sonoma Creek that are located in the project vicinity include Rodgers Creek (spanned in Segment 1 between Poles 42 and 43), Felder Creek (paralleled for approximately 0.75 miles and then spanned in Segment 2 between Poles 96 and 97), Carriger Creek (spanned in Segment 2 between Poles 101 and 102), and Sonoma Creek (spanned in Segment 17 between Poles 107 and 108). Key creeks and streams are shown in **Figures 1-4(a) through 1-4(d).** Pole 115 would span Fryer Creek, a small concrete-lined tributary to Nathanson Creek in Segment 17. Many of these creeks are seasonal and are either dry or reduced to a series of disconnected pools in the summer.

Petaluma River Watershed

The Petaluma River watershed covers an area of about 146 square miles and flows into the northwestern portion of San Pablo Bay. The watershed comprises a hilly and mountainous headwater section, a central valley section, and a flat tidelands section near the bay (SSCRCD, 2005). The Lakeville Substation and a portion of Segment 1 are located just above the tidelands section of the watershed. Tributaries to Petaluma River include two branches of an unnamed ephemeral creek crossed between Poles 14 and 15 and 35 and 36 located near the Lakeville Substation. These tributaries are dry or reduced to disconnected pools in the summer.

Ponds, Reservoirs, and Wetlands

Both watersheds contain a number of ponds and reservoirs; however, only two ponds (both livestock ponds) located in Segment 1 are crossed by the project. These ponds, located in the Petaluma River watershed northeast of the Lakeville Substation, are spanned by Poles 25 and 26 and 36 and 37. ~~Pole 26 is a proposed new pole whereas Poles 36 and 37 would remain in their current location. The new Pole 26 would be constructed at a 100-foot setback from the stock~~

~~ponds.~~ Poles 26, 36, and 37 would remain approximately in their current locations. These three poles would be constructed at least 100 feet away from the stock ponds.

Natural depressions in the two watersheds accumulate runoff and hillside seepage during wet periods, forming intermittent streams and seasonal ponds. Wetlands are located in the project area adjacent to some of the surface water bodies and near isolated springs. Section 2.4, *Biological Resources*, describes these wetland areas in more detail.

Flooding and Storm Water Management System

The Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during a 100-year flood event (1 percent chance of occurring in a single year). Of the areas mapped within the project area, Segment 17 of the transmission line is located within the FEMA 100-year floodplain where the alignment crosses Felder Creek, Carriger Creek, and Sonoma Creek.

The City of Sonoma maintains piped storm drain systems to contain and direct storm water runoff from impervious surface areas such as roads and buildings. Most of these pipes and channels redirect runoff into the natural creeks, some of which have been partially improved to accommodate flood flows. Storm drain systems in the more urban parts of Sonoma are typically maintained by the City. In County areas outside of these drain systems, runoff is either infiltrated into surface soils or directed through overland flow into the aforementioned creeks and other smaller drainages. Public storm drain system improvements are designed in accordance with the Sonoma County Water Agency. Standards for private storm drain systems are set by the City Community Development Department and are based on the Sonoma County Water Agency Flood Control Design Criteria.

Surface Water Quality

The majority of stream flow in the creeks along the project route originates as storm water runoff. In the more urbanized sections, storm water runoff can entrain urban pollutants generated by residential, commercial, industrial, and transportation land uses. These pollutants typically include sediment, oil and grease, heavy metals, pesticides, treatment plant discharges, and debris. Although some of these contaminants are deposited into the streambed, most are discharged directly into San Pablo Bay, adding to the overall pollutant load. Sediment is transported from steep erosive areas, and agricultural operations may add contaminants from livestock manure and chemical fertilizers. Rural residential areas can potentially add pollutants from malfunctioning septic tanks. Additionally, sediments from erosion in the upper tributaries of the watershed decrease the capacity of downstream and tidal waterways.

Groundwater Quality and Use

Sonoma County receives its water supply from both surface waters and groundwater supply wells. Channel flow in the Russian River is the primary source of domestic water; however, Sebastopol, Rohnert Park, and Petaluma supplement their supply with groundwater (Sonoma County PRMD, 1989). Groundwater is recharged through existing natural waterways and

permeable alluvial materials. The principal water-bearing materials in Sonoma County are the alluvial deposits of the valleys as well as some of the volcanic rocks and local deposits of sand. The shallow water table, which fluctuates seasonally with precipitation recharge, varies in depth across the project site.

2.8.2 Regulatory Context

Federal

The legislation governing the water quality aspects of the project is the Federal Clean Water Act (CWA) and within California, the Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation. The objective of this legislation is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The California legislature has assigned the primary responsibility to administer regulations for the protection and enhancement of water quality to the California State Water Resources Control Board (SWRQB) and the Regional Water Quality Control Boards (RWQCB). The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal regulations. The nine RWQCBs adopt and implement water quality control plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with the National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. In November 1990, the U.S. Environmental Protection Agency (US EPA) published final regulations that establish storm water permit application requirements for discharges of storm water to waters of the United States from construction projects that encompass five or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999 expanded the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one acre and less than five acres (small construction activity).

State

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all storm water discharges associated with construction activity.[1] This General Permit requires all dischargers where construction activity disturbs one acre or more, to:

[1] State Water Resources Control Board (SWRCB) Order No. 99-08-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000002.

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.

- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation.

- Perform inspections of all BMPs.

This General Permit is implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs). Dischargers are required to submit a Notice of Intent to obtain coverage under this General Permit and submit annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected. Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance.

On August 19, 1999, the State Water Resources Control Board (SWRCB) reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ referred to as "General Permit"). In September 2000, a court decision directed the SWRCB to modify the provisions of the General Permit to require permittees to implement specific sampling and analytical procedures to determine whether Best Management Practices (BMPs) implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt, and (2) preventing other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. The monitoring provisions in the General Permit have been modified pursuant to the court order.

Local Water Quality and Grading Requirements

The City of Santa Rosa and the County of Sonoma are legally bound to implement the mandates of a 1987 amendment to the federal Clean Water Act. In 1997, these two agencies joined with Sonoma County Water Agency (owner of the areas major storm drain system facilities) to obtain a National Pollutant Discharge Elimination System (NPDES) Permit. As part of the permit, these jurisdictions prepared a Storm Water Management Plan (SWMP) which laid out the steps each jurisdiction took to eliminate or reduce to the maximum extent practicable the pollution entering our local creeks from the storm drain system. The Permit was issued by the North Coast Regional Water Quality Control Board (Sonoma County, 2003)[2].

The first five-year NPDES Permit reached its time limit and the City, County, and Water Agency reapplied. They rewrote the Storm Water Management Plan to match increasing requirements from the State and Federal Governments about reducing water pollution. The Storm Water Management Plan was adopted June 26, 2003 as part of the NPDES Permit issued by the North Coast Regional Water Quality Control Board (Sonoma County, 2003).

[2] North Coast Regional Water Quality Control Board, Order No. R-1-2003-0062, NPDES No. CA 0025054.

Sonoma County NPDES and Stormwater Management Plan

The County's legal authority required to implement and enforce the municipal storm water management plan is provided in the Federal Clean Water Act, California Water Code, Fish and Game Code, Health and Safety Code, Penal Code and the Sonoma County Code. The California Environmental Quality Act and Subdivision Map Act provide municipalities legal authority to establish conditions on development projects. Sonoma County has adopted local ordinances to supplement Federal and State legal authority to fulfill the National Pollutant Discharge Elimination System for storm water discharge (NPDES) requirements and implement the Storm Water Management Plan (SWMP). These local ordinances are codified in the Sonoma County Code, and many of the provisions of the ordinances relating to storm water are codified in Chapter 11 (Drainage and Storm Water Management) of the Sonoma County Code (Sonoma County, 2003).

Grading Permit Issuance

Development/construction projects in County jurisdiction are subject to the Uniform Building Code (UBC) grading provisions, Chapter 7 of the Sonoma County Code (SCC) as it relates to erosion and sediment control provisions, and Chapter 11 of the SCC for drainage requirements. With respect to grading, the UBC provisions require a grading permit for any project that involves moving more than 50 cubic yards of earth material (with exceptions for certain specified types of excavations), creating cut slopes greater than 2 feet, or importing fill greater than one foot in depth. (In flood prone urban areas, any importation of fill requires a grading permit and engineered plans.) The UBC specifies certain thresholds for requiring engineered grading plans (e.g., volume of earth material being moved). Not all grading plans are engineered grading plans. If an engineered grading plan is required, the applicant's engineer must submit a report certifying that the project, including any erosion and sediment control facilities, has been constructed as designed, prior to final inspection by the Sonoma County Permit and Resource Management Department (Sonoma County, 2003).

2.8.3 Hydrology and Water Quality Impacts and Mitigation Measures

a) Violate any water quality standards or waste discharge requirements: ***less than significant impact.***

~~*Proposed Project*~~

Potential water pollutants would be generated during the construction phase of the project and could include soil sediment and petroleum based fuels and lubricants. Disturbing soils while establishing staging areas and pull and tension sites, installing poles, and grading necessary temporary and permanent access roads to pole sites, could cause soil erosion and the eventual release of excess sediment into water courses. Excess sediment in water courses can alter and degrade the aquatic habitat in streams. If construction equipment or workers inadvertently release pollutants such as hydraulic fluid or petroleum to the surface, these materials could be entrained by storm water and

discharged into surface water features causing water quality degradation. Potential pollutant sources would be present during the construction phase of the project only and would not be an issue following project completion.

~~When compared to a subsurface utility installation project that requires extensive trench excavations and soil handling over many miles, the proposed~~ The linear overhead portion of the proposed transmission line project would require a relatively minor amount of soil disturbance and mechanized equipment. Soil disturbance and equipment use for this project would take place in several localized areas including individual pole sites and temporary staging areas. Establishing construction staging areas and pull and tension sites would require some grubbing (removal of vegetation by mechanized equipment) and soil grading by mechanized equipment to level the near-surface soils. New temporary roads (1.52 miles) and permanent roads (1.35 miles) for access would require standard grubbing and grading of the surface soil to achieve grade and slope. Each pole installation (approximately 99) would require equipment access to an area approximately 50 feet in diameter and would require soil removal to excavate and construct the concrete pier foundation. Preparation at each pole site may require minor grubbing and surface soil disturbance but the major source of soil disturbance would be drilling the pier foundation. Soil generated from the pole locations would not be left at each pole site, rather, it would be off-hauled and disposed ~~or stockpiled for reuse in the staging areas~~.

The underground portion of the proposed project would require excavation and stockpiling of subsurface materials from Pole 108a to the Sonoma Substation. This work would begin in the vicinity of Sonoma Creek and require dry boring underneath Fryer Creek (EDAW, 2005). Pollutant discharges associated with this construction activity are similar to those discussed above and include soil sediment generated from soil disturbance and localized release of petroleum-based fuels and lubricants from construction equipment. Temporary stockpiles may also be placed near the work area, which could become a sediment pollutant source to streams if not properly protected and covered.

PG&E would implement specific erosion control and surface water protection methods for each construction activity conducted as part of the project. These stormwater protection methods, or Best Management Practices (BMPs), are standard in the construction industry and are commonly used to reduce water quality degradation. As discussed in the Regulatory Context section above, the project would be required to comply with the NPDES Construction Activities Permit and therefore, be required to employ specific BMPs for the protection of surface water. PG&E is required to provide details as to the design and monitoring of the BMPs in the Stormwater Pollution Prevention Plan (SWPPP), which they would prepare under the NPDES permit requirements. Examples of standard BMPs, which PG&E would implement as part of the SWPPP and the typical application of those BMPs are discussed below.

- Site grading operations necessary to develop temporary staging areas and pull and tension sites would be required to protect surface water sources from entrainment of sediment using appropriately-placed silt fencing. Surfaces of these staging areas would be graveled during wet weather use to minimize erosion and sediment laden runoff. Temporary staging areas would be returned to pre-project conditions and revegetated.

- Silt fencing is proposed as part of the project and is a standard BMP to control erosion and siltation from loose or disturbed soil. Silt fencing would be placed as appropriate at each pole installation site, especially those adjacent to natural surface water bodies. Stockpiled soil generated from the excavation of pier foundations or boreholes would not be left at the site. Loose soil would be loaded and used elsewhere or stockpiled in staging areas. Soil stockpiled at the staging area would be managed as required in the SWPPP and be appropriately covered, vegetated, or protected by berms during rainy periods to ensure that eroded sediments do not runoff to surface water resources.

- As part of the project, access roads would be sloped, as appropriate, providing effective surface sheet flow to avoid formation of erosive gullies caused by concentrated runoff. Where necessary, flow diversions, known as water bars, would be used on roadways exceeding gradients of 10 degrees. Water bars divert runoff from roads before gullies can form. Where necessary, all-weather roads would be covered with gravel base material. The gravel base would reduce the erosive energy to reduce erosion.

- The NPDES requires that the SWPPP show BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and waste. The SWPPP must also describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage or service areas. The SWPPP would require PG&E to identify equipment storage, cleaning and maintenance areas.

Temporary construction activities required for the Proposed Project could generate soil sediment and other petroleum-based pollutants from construction equipment, that, if discharged to surface water could degrade water quality. PG&E is required by federal and local laws to comply with the National Pollutant Discharge Elimination System General Permit, which requires it to develop a SWPPP to address stormwater pollution. The intent of the SWPPP is to reduce or eliminate pollutant discharges to surface water. Through the NPDES general permit process and use of the BMPs prescribed under the SWPPP to manage, reduce, and eliminate pollutant discharges to streams, the potential impacts associated with violations of water quality standards or waste discharge requirements would remain less than significant.

~~*Mitigation Measure 2.1-1*~~

~~Implementation of Mitigation Measure 2.1-1 would require excavation and stockpiling of subsurface materials from Pole 108 to the Sonoma Substation. This work would begin in the vicinity of Sonoma Creek and require dry boring underneath Fryer Creek (EDAW, 2005). Pollutant discharges associated with construction activity required to implement this mitigation measure are similar to those discussed under the Proposed Project (above) and include soil sediment generated from soil disturbance and localized release of petroleum-based fuels and lubricants from construction equipment. Temporary stockpiles may also be placed near the work area, which could become a sediment pollutant source to streams if not properly protected and covered. As discussed above, construction activities associated with the Proposed Project would be required by the NPDES permit to prepare a SWPPP and outline BMPs which would manage stormwater and reduce or eliminate pollutants (sediment and petroleum) from entering surface water resources. Implementation of Mitigation Measure 2.1-1 would comply with the NPDES permit and through the requirements of NPDES, temporary impacts associated with violations of water quality standards or waste discharge requirements would remain less than significant.~~

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted): *less than significant impact.*

~~*Proposed Project*~~

The depth to the groundwater varies across the project area and some foundation excavations would be above the water table. It is possible, however, in areas where the water table is shallow, that some groundwater seepage may occur in some pole excavations and concrete pier foundation excavations requiring dewatering on a one-time basis immediately prior to pole placement or concrete pouring. Minor groundwater seepage may also occur during excavation of the underground portion of the line along Leveroni Road from approximately Fifth Street West to the Sonoma Substation. The dewatering process would be temporary, yielding only a small volume of groundwater and therefore would be an insignificant impact to the groundwater supply. If dewatering occurs in an area requiring storm sewer discharge, a discharge permit would be obtained from the local Publicly Owned Treatment Works (POTW). Discharging excavation water to open ground would require standard BMPs as outlined for stormwater control in the SWPPP. Project impacts associated with dewatering and its affects to the groundwater resource would be less than significant.

Concrete footings, pier foundations, paved roads, and substation improvements required for the project would result in a minor net increase in impervious surfaces (approximately

0.39 acres across the entire project site). This area of impervious surfaces would not cause a measurable reduction in surface infiltration or a decrease in deep percolation to the underlying aquifers. Potential impacts associated with groundwater recharge would be less than significant.

~~*Mitigation Measure 2.1-1*~~

~~Implementation of Mitigation Measure 2.1-1 would require excavation and stockpiling of subsurface materials from Pole 108 to the Sonoma Substation. As described for the Proposed Project, although Mitigation Measure 2.1-1 may require some temporary dewatering, the impact to the groundwater resource would be less than significant.~~

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation on- or off-site: *less than significant impact.*

~~*Proposed Project*~~

The Proposed Project would not significantly alter drainage patterns or the course of any creeks resulting in erosion on or offsite. All proposed replacement poles located in the vicinity of drainages and waterways would be located at a further setback than currently exists (i.e., from 50 feet to 100 feet). In addition, the total footprint of each newly installed pole would not occupy enough area to cause alteration of drainage patterns or diversion of surface water in such a way that would concentrate flow and cause erosion. The undergrounded portion of the new line would not result in any changes to topography or existing drainage ways. The substation modifications would require the construction of small concrete foundation pads for equipment within the existing substation property and would not contribute to surface erosion. The BMPs developed under the SWPPP as described in a), above, would ensure that runoff and drainage impacts related to temporary construction would remain less than significant.

~~*Mitigation Measure 2.1-1*~~

~~Implementation of Mitigation Measure 2.1-1 would involve placing a portion of the transmission line underground and would not result in any changes to topography or existing drainage ways.~~

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site: *less than significant impact.*

Proposed Project

The Proposed Project would not alter drainage such that it would cause flooding on or off-site. As mentioned above, the net increase in impervious surfaces (approximately 0.39 acres) would be negligible. In addition, the total footprint of each newly installed pole

would vary from a two-foot diameter for wood poles to a 7-foot diameter for the tubular pole foundation. The total footing and foundation areas proposed under the project would not occupy an area that would alter drainage areas or divert surface waters in flood prone areas. The undergrounded portion of the new line would not result in any changes to topography, existing drainage ways, or flood flow patterns. The substation modifications would require the construction of small concrete foundation pads for equipment within the existing substation property. The area occupied by these foundation pads would not be enough to alter existing drainage patterns or cause offsite flooding. Impacts associated with alteration of drainage area and potential flooding would remain less than significant.

~~Mitigation Measure 2.1-1~~

~~Implementation of Mitigation Measure 2.1-1 would involve placing a portion of the transmission line underground and would not result in any changes to topography, existing drainage ways, or flood flow patterns.~~

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff: *less than significant impact.*

As discussed in a), above, the SWPPP required under the NPDES permit would ensure that excess runoff generated by the temporary construction phase of the project would be managed by BMPs, which would reduce or eliminate the potential for polluted runoff. As discussed in c) and d), above, the area of impervious surface resulting from the proposed project is minor and would not result in excessive runoff. Much of the project area is not serviced by stormwater drainage systems. The SWPPP and project characteristics would ensure that impacts associated with excessive surface water would remain less than significant.

f) Otherwise substantially degrade water quality: *less than significant impact.*

The project would not result in additional surface water pollution above that discussed in a), above.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map: *no impact.*

The project does not propose to place housing in the project area and therefore, the project would not result in any impacts related to the placement of housing within a 100-year flood hazards area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows: *less than significant impact.*

No new poles would be placed in a 100-year floodplain as determined by the Flood Insurance Rate Map that identifies 100-year flood zones along Sonoma Creek, Felder Creek, or Carriger Creek. Existing poles located in flood zones would not impede or redirect flood flows because the area they occupy is not adequate to impede flow; water flows around the poles with minimal diversion. The Lakeville and Sonoma Substations are both located outside of the flood zone boundaries. Impacts associated with pole locations in flood zones remain less than significant.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam: *less than significant impact.*

All construction activities would be located outside of known 100-year flood zones. No reservoirs or dams exist in the project vicinity; however, failure from the Suttenfield Dam, located more than 5 miles from the project boundaries, could impact Sonoma Creek where the transmission line transects it (ABAG, 2005). Under existing conditions, a catastrophic failure of Suttenfield Dam could be observed in the proposed project area. The proposed project would not change that condition. Because the distance from the dam and the ability of the water energy to attenuate over the distance, a dam failure may cause a temporary increase in the water surface in Sonoma Creek but it would not cause substantial flooding in the project area. There are no characteristics of the project that would increase the flooding hazard and therefore, impacts associated with catastrophic flooding would be less than significant.

j) Inundation of seiche, tsunami, or mudflow: *no impact*.

Although within a seismically-active region, the Proposed Project is not located in an area that would be impacted by a seiche, tsunami, or mudflow.

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2.9 Aesthetics *(see Section 2.1 for Land Use and Planning)*

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
AESTHETICS—Would the proposed project:					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d)	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

2.9.1 Setting

Visual or aesthetic resources are generally defined as both the natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Depending on the extent to which a project's presence would alter the perceived visual character and quality of the environment, visual or aesthetic impact may occur. This analysis of potential visual effects is based on review of a variety of data, including project maps and drawings, aerial and ground level photographs of the project area, planning documents, and visual simulations of the existing conditions and of proposed aboveground project elements.

Regional and Local Setting

The project area, consisting of portions of Sonoma County, is characterized by rolling hills with vast expanses of vineyards, agricultural fields and open space, including the Sonoma Mountains. The project area is located just outside of the city limits of the City of Petaluma, traversing along Adobe Road, continuing cross country through valley oak woodlands of the Sonoma Mountains and along Leveroni Road into the City of Sonoma. The City of Sonoma, where the eastern end of the transmission line is located, contains suburban developments, a small neighborhood park, and commercial buildings.

Urban Setting

The western portion of the project (the Lakeville Substation) is outside the Petaluma city limits (to the east), in Sonoma County. The eastern portion of the transmission line (along Leveroni Road) and the Sonoma Substation are located within the "Four Corner/Southwest Sonoma" area of the City of Sonoma. The area is characterized by a mix of uses including multi-family residential development, open space, and generous landscaping with a complementary pedestrian feel.

Major Arterial Thoroughfares

Major thoroughfares from which views of the project route are visible are characterized by varying degrees of development ranging from open space/agricultural to commercial/residential development. Views observed from these thoroughfares can shape an individual's impression of an area. Therefore, these roadways can be key vantage points from which to view the project area. Views from several of the project area's major arterial roadways are described below.

Frates Road

Frates Road, as it leaves the city limits of the City of Petaluma and enters unincorporated Sonoma County, is characterized by a golf course, a few residences, and the Lakeville Substation. A clear and unobstructed view of both the Lakeville Substation and the transmission line is available from Frates Road. Numerous transmission lines enter the Lakeville Substation at this location. These facilities dominate the visual character of the area at this location.

Adobe Road

Adobe Road parallels the northeast side of the Lakeville Substation before it turns ninety degrees and heads east as it parallels the transmission line. Similar to Frates Road, Adobe Road offers a clear and unobstructed view of the Lakeville Substation and the numerous transmission lines in the area. Abode Road is designated as a "county scenic corridor" in the Sonoma County General Plan. See **Figure 2.9-1(a)**.

Felder Road

Felder Road is characterized by a few single-family residences mingled amongst open space, agricultural lands, vineyards, and dense riparian vegetation associated with Felder Creek. Views of the transmission line are sporadic and often obscured by the riparian vegetation in the foreground. See **Figure 2.9-1(b)**.

Arnold Drive

Along Arnold Drive, the area is mostly undeveloped and characterized by open space and agriculture lands and vineyards with the exception of a larger residential development, Temelec, just south of Leveroni Road. Views of the transmission line are available from Arnold Drive and the Temelec residential area; however, these views are obscured by vineyards in the foreground and the Sonoma Mountains in the background. Arnold Drive is designated as a "county scenic corridor" in the Sonoma County General Plan.

Leveroni Road

Leveroni Road, which parallels the transmission line from the intersection of Arnold Drive east to the terminus of the route at the Sonoma Substation, is characterized by open space, agricultural lands, and vineyards until it enters the City of Sonoma where residential development mixed with commercial development are prevalent. Views of the transmission line are in the foreground and are clear and unobstructed. The City of Sonoma General Plan designates the intersection of Broadway/Highway 12 at Leveroni/Napa Road as the Four Corners Gateway and the intersection of Sonoma Creek and Leveroni Road as the Sonoma Creek Gateway. Additionally, a scenic vista

has been designated on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway. See **Figure 2.9-1(c)**.

Fifth Street West

Fifth Street West is characterized by residential development on the eastern side and open space, including views of the Sonoma Creek, agricultural lands, and vineyards on the western side. Western views of transmission line as they run along Leveroni Road are clear and unobstructed until they become obscured by the riparian vegetation of the Sonoma Creek. Eastern views are partially obscured by residential development. See **Figure 2.9-1(d)**.

Highway 12 / Broadway

Highway 12, as it enters the City of Sonoma and turns to Broadway (i.e., the "Four Corners" area), is characterized by various commercial developments, restaurants, a convenience store, and residences (single-family and apartments). The City of Sonoma General Plan designates the intersection of Broadway/Highway 12 at Leveroni/Napa Road as the Four Corners Gateway.

Napa Road

Similar to Highway 12/Broadway, Napa Road is characterized by various commercial and residential developments. Obscured views of the Sonoma Substation are visible where Napa Road enters the "Four Corners" area of the City. Napa Road is designated as a "county scenic corridor" in the Sonoma County General Plan. Additionally, the City of Sonoma General Plan designates the intersection of Broadway/Highway 12 at Leveroni/Napa Road as the Four Corners Gateway.

Scenic Resources

The Sonoma County General Plan defines scenic resources under three open space categories, which include community separators, scenic landscape units, and scenic highway corridors (**Figure 2.9-2**). Community separators are areas that are separate and identifiable cities/communities intermixed with large areas of open space that lead to the avoidance of corridor-style urbanization. The project area is not within any of the eight areas identified by the County General Plan as a community separator.

The Sonoma Mountains as well as the Sonoma Valley between Arnold Drive and Sonoma Creek are designated as scenic landscape units. Scenic landscape units are areas that are open, provide important visual relief from urban densities, and have little capacity to absorb very much development without significant visual impact. Additionally, Adobe Road, Arnold Drive, Napa Road, and Highway 116 are designated as scenic highway corridors. Scenic corridors are rural roads from which the community, as well as tourist, can view the variety and beauty of the many landscapes of Sonoma County including: orchards, forest covered hills, rolling dairy lands, and scenic valleys planted with vineyards.

The California Department of Transportation (Caltrans) administers the California Scenic Highway Program (Streets and Highways Code, Section 260 et. Seq.) to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. A highway may be designated scenic depending upon the amount of the natural

Figure 2.9-1a - Existing view looking south at Lakeville Substation along Adobe Road

Figure 2.9-1b - Existing view looking southwest at Segment 2 from Felder Road

SOURCE: EDAW (2004)

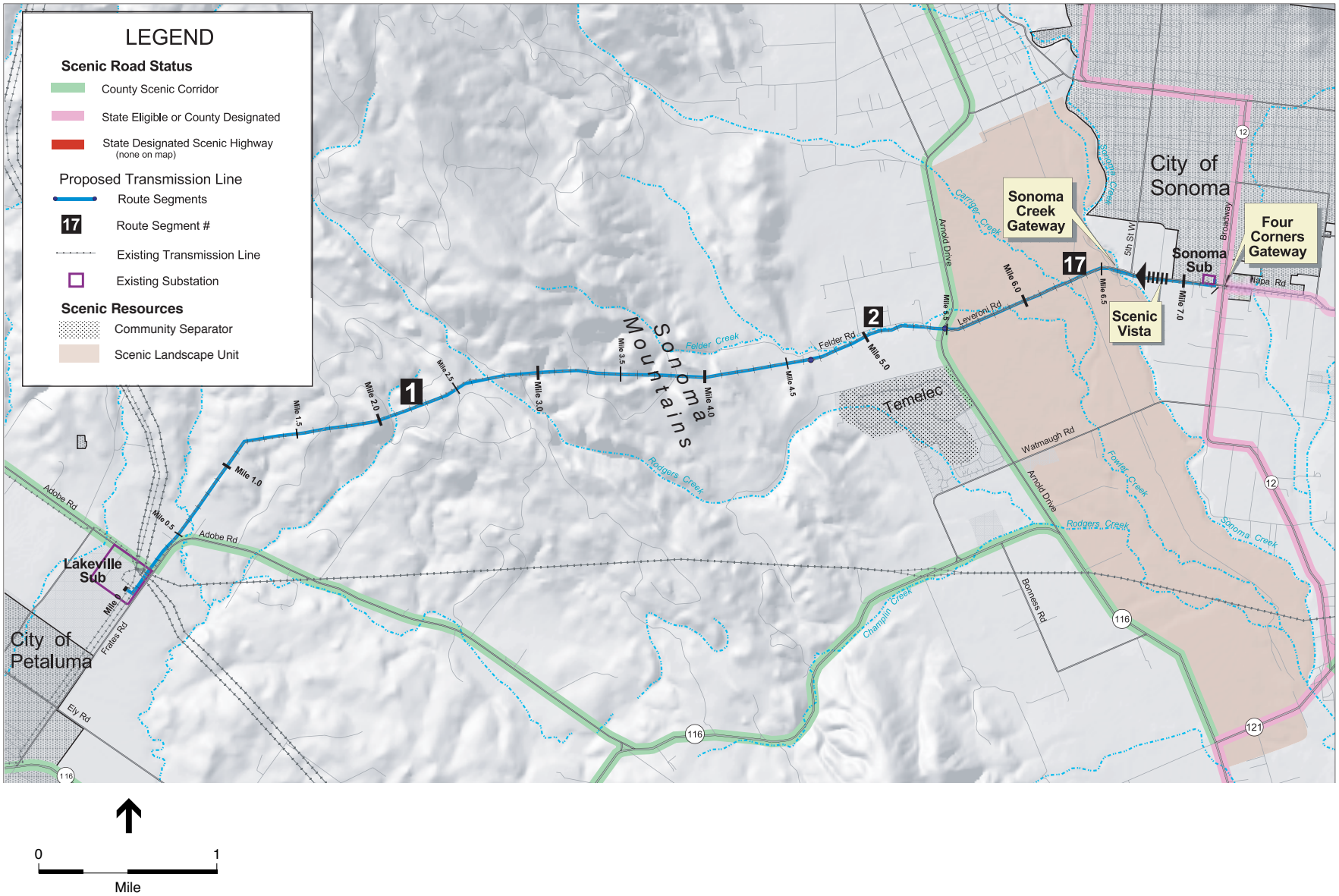
Figure 2.9-1a and 2.9-1b
Project Photos

Figure 2.9-1c - Existing view looking east at Segment 17 along Leveroni Road

Figure 2.9-1d - Existing view looking west from Leveroni Road at Sonoma Creek crossing

SOURCE: EDAW (2004)

Figure 2.9-1c and 2.9-1d
Project Photos



0 1
Mile

SOURCES: EDAW (2004), Sonoma County PRMD (1989); and City of Sonoma (1995)

Figure 2.9-2
Scenic Resources

landscape that can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. There are no officially designated California scenic highways or roadways in the study area; however, Highway 12, in the City of Sonoma, just east of the Sonoma Substation is "eligible" for a state scenic highway designation (Caltrans, 1999).

Open Space and Agricultural Land

The expansive open space through which the transmission line traverses is the cornerstone of the project area's visual resources. Views of rolling hills, agricultural fields, and vineyards capture the observer's attention and provide a visual relief from urbanization and are considered a special type of scenic border - a community separator. Major open space features include the Sonoma Mountains, Sonoma Creek, agricultural lands/vineyards, and valley floors.

Sonoma Mountains

The Sonoma Mountains provide scenic backdrops to the local communities and visual relief from urban densities. These are highly valuable scenic lands that clearly define the eastern edge of the Santa Rosa plain between Petaluma and Sonoma.

Sonoma Creek

Sonoma Creek is characterized by riparian forest, characterized by a mixture of deciduous and evergreen tree species, which provide food, water, migration and dispersal corridors, breeding sites, and thermal cover for wildlife and can support many resident and migratory wildlife species.

Agricultural Lands/Vineyards

Viticultural and agrarian landscapes characterize the majority of the viewsheds within the project area. These areas are an important break in landscape from the adjacent urban areas. Vineyards and agricultural lands are inter dispersed within the project area, but mostly within the areas of the County of Sonoma just outside the city limits of the City of Petaluma and the City of Sonoma, in the valley floors, discussed below.

Valley Floors

The valley floors of the Sonoma Mountains are generally located on the eastern edge of the City of Petaluma and the western edge of the City of Sonoma as the topography of the Sonoma Mountains drops to create these valleys. The valley landscape, as discussed above, is relatively flat and fertile, therefore lending itself to the presence of vineyards and other agriculture.

Petaluma Adobe State Park

The Petaluma Adobe State Park is located to the northeast of the Lakeville Substation and affords views of the existing Lakeville–Sonoma transmission line, although it is located behind a 230 kV lattice tower transmission line (approximately 120 feet tall) and wood distribution lines that are more visually prominent**.** The number of visitors to the Petaluma Adobe State Park is relatively low compared to other more popular state parks (Skinner, 2004). Very few rural residences (about

10-15 homes[1]) have views of this portion of the transmission line. The only development immediately adjacent to the transmission line is an agricultural complex located at milepost 0.7.

2.9.2 Regulatory Context

State

California Public Utilities Commission

California Public Utilities Code Section 320 requires that all new or relocated electric and communication distribution facilities within 1,000 feet of an officially-designated scenic highway and visible from that highway be buried underground where feasible. As discussed below, no portion of the existing transmission line corridor is visible from a designated scenic highway.

California Department of Transportation

The California Department of Transportation (Caltrans) has a State Scenic Highways program to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways (Sections 260 et seq. of the California Streets and Highways Code). The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code. The program entails the regulation of land use and density of development, attention to the design of sites and structures, attention to and control of signage, landscaping, and grading, and the undergrounding of utility lines within the view corridor of designated scenic roadways. The local jurisdiction is responsible for adopting and implementing such regulation. No portion of the existing transmission line is visible from a designated State Scenic Highway.

Local

Sonoma County General Plan

The Scenic Resources section of the Sonoma County General Plan Open Space Element contains the following policies that would be applicable to the Proposed Project.

- Goal OS-2: Retain the largely open, scenic character of important scenic landscape units.
- Policy OS-2.1: Retain a rural, scenic character in scenic landscape units with very low intensities of development. Avoid their inclusion within spheres of influence for public service providers.
- Policy OS-2d: Apply the Scenic Resources Combining District (see below) consistent with the Open Space Element to all lands located within scenic landscape units.
- Policy OS-3: Identify and preserve roadside landscapes which have a high visual quality as they contribute to the living environment of local residents and the county's tourism economy.

[1] This general estimate is based on review of aerial photos - see **Figure 1-4(a).**

- Policy OS-3a: Apply the Scenic Resources Combining District to those portions of properties within scenic corridor setbacks.

Additionally, the Sonoma County General Plan Public Facilities and Service Element which states that "certain public utilities, such as electricity, natural gas and telephone services, require transmission and maintenance facilities that may affect natural and scenic resources or neighborhood character" contains the following policies that would be applicable to the Proposed Project.

- Policy PF-2.10: Locate and design public utility transmission, distribution, and maintenance facilities to minimize adverse effects on natural and scenic resources.

- Policy PF-2t: Review proposals for new transmission lines or acquisition of easements for new transmission lines for consistency with general plan policies. Request wherever feasible that such facilities not be located within areas designated as community separators or biotic resource areas. Give priority to use of existing utility corridors over new corridors.

- Policy PF-2v: Consider requiring the undergrounding of new electrical transmission and distribution lines where appropriate in designated open space areas and in selected urban areas. Where feasible and under the Public Utility Commission (PUC) rules, convert existing overhead lines to underground facilities in urban areas.

- Policy PF-2w: Encourage consolidation of multiple utility lines into common utility corridors wherever practicable. (Sonoma County PRMD, 1989)

Sonoma County Zoning Ordinance

The project area encompasses lands that are designated by the Sonoma County Zoning Ordinance as Scenic Resources Combining Districts (see **Table 2.9-1**). Section 26-64-020 of the Zoning Ordinance sets forth the following criteria that are applicable to all structures located within this Combining District:

- Structures shall be sited below exposed ridgelines.

- Structures shall use natural landforms and existing vegetation to screen them from public roads. On exposed sites, screening with native, fire retardant plants may be required.

- Cuts and fills are discouraged and where practical, driveways are screened from public view.

- Utilities are placed underground where economically practical.

Under Section 26-64-030, all structures located within scenic corridors established outside of the urban service area boundaries of the General Plan Land Use Element are subject to the setbacks of thirty percent of the depth of the lot to a maximum of two hundred feet from the centerline of the road. Development within the setback is prohibited with the following exceptions, where such uses are allowed by the base district with which this district is combined:

TABLE 2.9-1
SCENIC RESOURCES COMBINING DISTRICT PARCELS WITHIN PROJECT AREA

Map ID[a]	APN	Location of Scenic Resource on Parcel
Segment 1		
1	017-140-010	200 foot strip abutting Adobe Road northwest from the intersection of Adobe Road and Frates Road (near the Lakeville Substation)
4	017-110-010	Vineyard lands northwest of Frates Road where the western portion of the transmission line veers west
6	017-120-003	Open space southeast of Frates Road and northeast of Adobe Road
8	017-100-007	Lands located at approximately milepost 1.75 to 2.5
Segment 2		
14	142-032-006	Triangular property bordered by Leveroni Road, Arnold Drive and Rickford Creek
Segment 17		
16	128-011-006	North of Leveroni Road, between Arnold Drive and Sonoma Creek
17	128-301-024	Sonoma Creek on the northeastern corner just south of Leveroni Road
28	128-311-045	L-shaped area bordering Leveroni Road and Broadway

[a] See Figure 2.1-2.

SOURCES: Sonoma County Assessor (2005)

- Maintenance, restoration, reconstruction or minor expansion of existing structures;
- Other new structures provided they are subject to design review and
  - they are associated with existing structures;
  - there is no other reasonable location for the structure;
  - the location within the setback is necessary for the use; or
  - existing vegetation and topography screen the use. (Sonoma County PRMD, 2004)

City of Sonoma General Plan

The Community Development and Environmental Resources Elements of the City of Sonoma General Plan contain the following policies that would be applicable to the Proposed Project.

- CDE-6 Policy 20: Important scenic vistas shall be protected.
- CDE-6 Policy 26: The following locations shall be designated as gateways and shall be developed and improved with landscaping and other improvements to clearly mark the entrances to Sonoma:
  - Leveroni Road and Sonoma Creek
  - Broadway/Napa Road and Leveroni Road (Four Corners Gateway)

- ERE-2 Policy 10: The City shall work closely with the County and the Sonoma Valley Citizens Advisory Commission to monitor hillside development in areas within the City's viewshed.

The Environmental Technical Appendix of the General Plan notes that:

> "the General Plan does not refer to scenic units as such. The hillside backdrop and the large areas of agricultural land surrounding the city, the two areas which could fall into this category, are protected. The hillside backdrop is recognized as a distinct and important visual resource. Development on hillside areas is addressed at the policy and implementation level to limit development. The agricultural lands surrounding the city are protected by concentrating future development within and adjacent to the city. The City of Sonoma General Plan includes policies protecting existing agricultural and open space lands and encouraging agricultural activities. Taken together, these policies combine in the General Plan to refer to the hillside backdrop and the surrounding agricultural lands as a greenbelt to be protected and maintained." (City of Sonoma, 1995)

Figure 2.9-3 shows hillside (slope of 30 percent or greater) and ridge top areas within the project area, located within the City of Sonoma, as well as Sonoma County, that would be traversed by the transmission line.

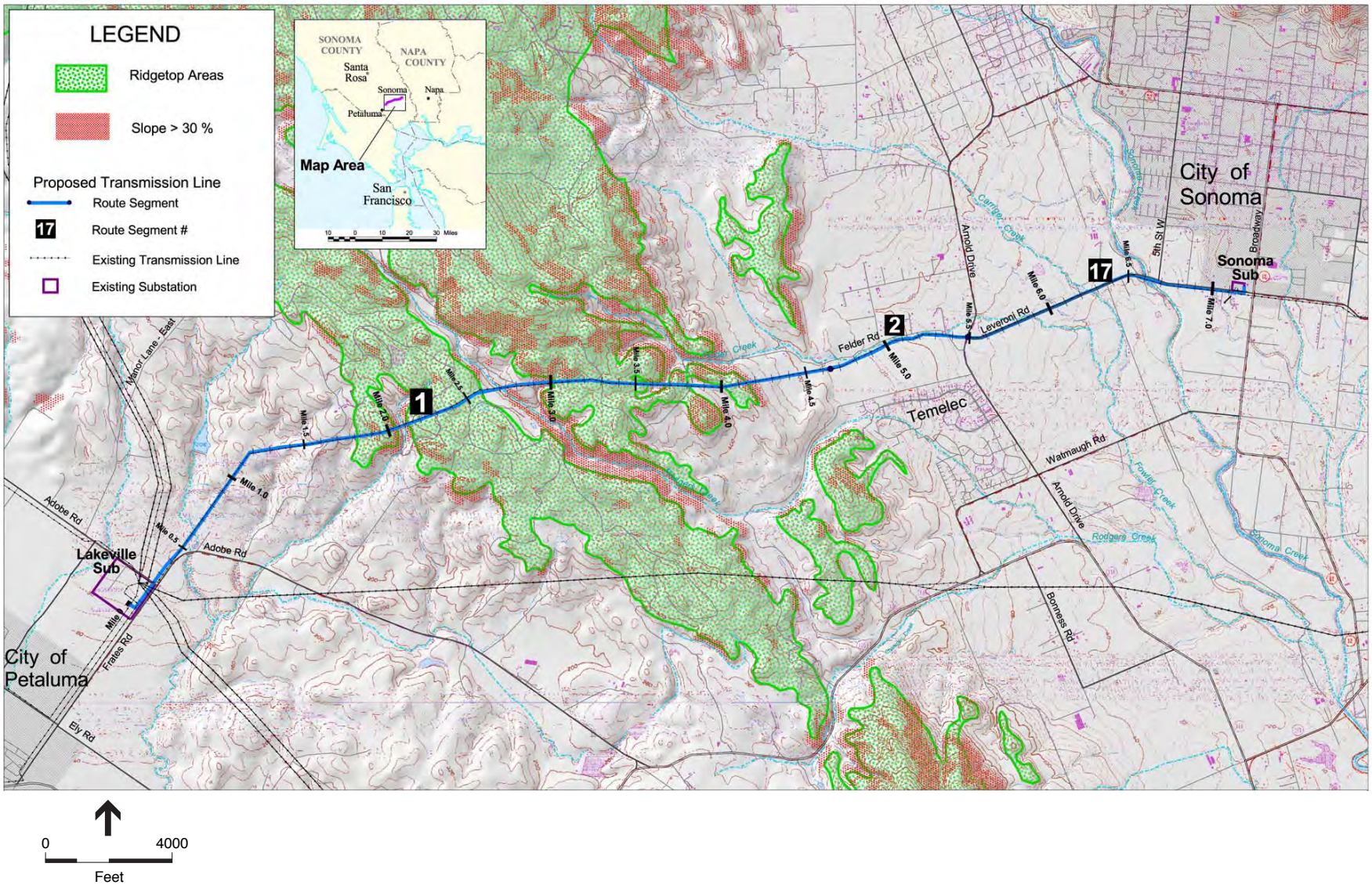
2.9.3 Aesthetics Impacts and Mitigation Measures

a) Have a substantial adverse effect on a scenic vista: *less than significant impact*.

The transmission line would mainly be seen by motorists as they stop or slow down to view the "scenic vista" as designated by the Sonoma County General Plan on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway. The natural landscape encompassed within this scenic vista is diverse with a variety of features including vineyards, agricultural lands, grazing lands, oak woodlands, and creeks with dense riparian vegetation as well as the backdrop of the Sonoma Mountains. Included in this vista is the existing transmission line traversing the hillside and ridgeline, approximately 2 miles away, which has been a part of this view shed since the transmission line was constructed nearly 100 years ago.

With the installation of the new tubular steel poles, motorists and persons at nearby residences may see a noticeable change from the existing darker wood poles to the new poles. The new poles would be a lighter shade of matte gray; however, these poles are made of self-weathering steel, which would oxidize to a natural-looking rust color within about one year (see **Figure 2.9-4**). Additionally, an incremental change, due to height of the new poles, may be noticeable to motorists and residences.

Because the new transmission line would be constructed underground along Leveroni Road from approximately Fifth Street West to the Sonoma Substation, there would be no change in the visual character in that portion of the scenic vista. In other portions of the scenic vista, ~~Because~~ existing transmission lines are currently seen ~~from a "scenic vista"~~



SOURCE: EDAW (2004)

Figure 2.9-3
Ridges and Hillsides

SOURCE: PG&E (2005)

Figure 2.9-4
Weathered TSP

~~view point,~~ and the Proposed Project would result in only an incremental change in the character of the existing view. ~~and therefore~~Therefore, the Proposed Project would not substantially degrade the visual quality of the scenic vista on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway or its surroundings.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway: *no impact*.

There are no designated state scenic highways within the project area. Therefore, the Proposed Project would not result in any significant impacts to scenic resources within a state scenic highway corridor.

c) Substantially degrade the existing visual character or quality of the site and its surroundings: *less than significant with mitigation incorporated.*

Construction

The Proposed Project would result in temporary impacts to the visual character of the area during project construction. Motorists traveling along Frates/Adobe Road on the western end of the project and pedestrians and motorists along Leveroni Road in the City of Sonoma would be most likely to notice this temporary change. Visual impacts to motorists traveling along Felder Road would be limited because the construction activity would be shielded by the dense riparian vegetation that is characteristic of Felder Creek.

Substation

Although construction activities at the substations would be visible along Frates/Adobe Road (County) and Leveroni Road (City), existing vegetation is expected to largely screen views of these construction activities. It is anticipated that substation-related construction effects would be less noticeable as compared to the proposed transmission line work since the substation modifications would occur within an area that is currently occupied by existing facilities and where maintenance and repair equipment routinely operates.

Overhead Transmission Line Portion

Construction-related impacts to visual quality would result from the presence of construction equipment, materials, and work crews along the transmission line corridor and on local access roads and staging areas. Crews would be required to maintain clean work areas as they proceed along the line and would not leave any debris behind at any stage of the project. The construction impacts to visual quality would be relatively short-term (approximately 19 months spread out along different portions of the transmission line alignment).

Two 10-acre areas, one off Adobe Road near the Lakeville Substation (**Figure 1-4(a)**) and one off of Leveroni Road near the Sonoma Substation (**Figure 1-4(d)**), are designated staging areas for project construction activities. PG&E would secure the areas with fences and locked gates. These areas would be used to provide space for equipment

storage, crew parking, temporary offices and materials delivery, storage, and preparation. These areas would also be used as helicopter landing areas. If construction activities take place during the winter, PG&E would install a rock surface in the yards where heavy traffic is expected. Once the staging areas are leased by PG&E, the appropriate grading, electrical, traffic control, and other permits would be obtained for potential leveling, ingress/egress, drainage, fencing, temporary construction postings, electrical service, and any other pertinent activities. The staging areas are expected to be used for approximately 19 months.

In addition, temporary pull/tension sites would be staged at approximately 7~~8~~ locations (see **Figures 1-4(a)** through **1-4(d)**) along the transmission line alignment. These sites would vary in size, but would typically be about 200 feet by 200 feet. A gravel pad would be installed over fabric (likely geotextiles comprised of UV stabilized polypropylene silt film). Each pull site would be cleaned up and restored to preconstruction condition after construction. The staging areas and pull/tension sites 2a, 2b, 3a, 3b, 6a, 6b, 7a, and 7b~~, and 8a~~ would be visible from Adobe, Felder, and Leveroni Roads. While the staging areas and pull/tension sites would only be used on a temporary basis, adverse visual impacts associated with operation of these temporary sites could occur during the approximately 19-month construction period.

Impact 2.9-1: Use of temporary construction staging areas and pull sites 2a, 2b, 3a, 3b, 6a, 6b, 7a, 7b, and 8a (see Figures 1-4(a) through 1-4(d) for exact locations) during the approximately 19-month construction period could result in adverse, albeit temporary, impacts to visual quality. This would be a less than significant impact with implementation of Mitigation Measure 2.9-1.

> **Mitigation Measure 2.9-1:** Although PG&E would prepare the pull/tension sites during the dry season to minimize impacts, equipment shall not be placed on such sites any sooner than two weeks prior to the required use. After each pull/tensions site is no longer being used, PG&E and/or its contractor(s) shall clean up the site and restore in accordance with the SWPPP Plan.

Significance after Mitigation: Less than significant.

~~Mitigation Measure 2.1-1~~Underground Transmission Line Portion

~~With the implementation of **Mitigation Measure 2.1-1,**~~The underground transmission line installation work would occur from the eastern edge of Sonoma Creek (Pole 108a) east along Leveroni Road to the Sonoma Substation~~ (see **Figure 2.1-4**). The extra proposed 75-foot tubular steel pole on the Sonoma Substation property would not be required~~. The existing 115 kV single-circuit transmission line, distribution lines, and communication wires would remain aboveground along Leveroni Road (these components are part of the existing transmission line and therefore, are a part of existing conditions for purposes of this ~~Initial Study~~ Mitigated Negative Declaration). Although urban development would limit public views from land surrounding the portion of the project located within the City of Sonoma, views of the construction activities would occur from the Sonoma Creek Gateway and Four Corners Gateway, as well ~~as~~ a

designated scenic vista on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway. Construction-related impacts to visual quality would result from the presence of construction equipment, materials, and work crews along Leveroni Road. While these effects would be noticeable to motorists traveling to and from the City of Sonoma as well as local residents, the construction period would be relatively short. In the long-term, there would be little change to the existing visual character of the area since the new transmission line would located underground beneath Leveroni Road. Therefore, these impacts would be less than significant.

Operations

As discussed above, the substations and transmission line would mainly be seen by motorists as they travel on Frates/Adobe Road, Felder Road, and Leveroni Road. Residents from the Temelec neighborhood and those scattered homes along these rural roads would also have views of the new transmission line. While the surrounding natural landscape is rich and diverse with a variety of features including vineyards, agricultural lands, grazing lands, oak woodlands, creeks with dense riparian vegetation, as well as the backdrop of the Sonoma Mountains, the existing transmission line has been a part of this view shed since it was constructed nearly 100 years ago. Motorists and persons at these residences are accustomed to seeing the transmission line as it currently exists; however, visual change resulting from implementation of the Proposed Project may be noticeable.

A key is provided in **Figure 2.9-5** that shows representative viewpoints within the project area that are shown in **Figure 2.9-6** through **Figure 2.9-18**. These figures provide “before and after” panoramic views of the existing transmission line and surrounding landscape and computer-generated visual simulations of what the replacement transmission line would look like after it is constructed. Some of the simulations have been magnified and have arrows added to aid the viewer to see the transmission line when it is in the distance or gets lost against a backdrop of rolling hills or vegetation.

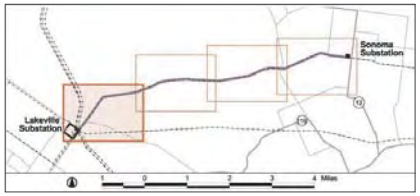
Substations

Figure 2.9-6(a) shows the existing view from Adobe Road looking south approximately 1/4 mile from the Lakeville Substation. **Figure 2.9-6(b)** is a visual simulation of the same area after completion of the Proposed Project. **Figure 2.9-6(c)** and **Figure 2.9-6(d)** provide a “before and after” perspective magnified by 126 percent. Due to the existing character of the facilities at the Lakeville Substation and vicinity, the installation of new equipment, which includes a 60-foot high tubular steel pole, galvanized structures, circuit breaker, air switches, aluminum bus, control room, control/protection equipment, insulators, and some limited additional lighting near Frates Road, would result in a less than significant impact on visual quality. Since this new equipment would be of the same nature as the existing facilities, it would blend in with the existing view which includes not only the Lakeville Substation facilities, but also facilities within an existing utility corridor not related to this project. An existing chain link fence would be moved slightly closer to Frates Road on the southeast side of the substation; however, it would remain screened by existing vegetation.

0 4000
Feet

SOURCE: EDAW (2004)

Figure 2.9-5
Key Observation Points (KOP) for Visual Simulations



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-6(a)

KOP 1-Existing View

View Looking South at Lakeville Substation along Adobe Road

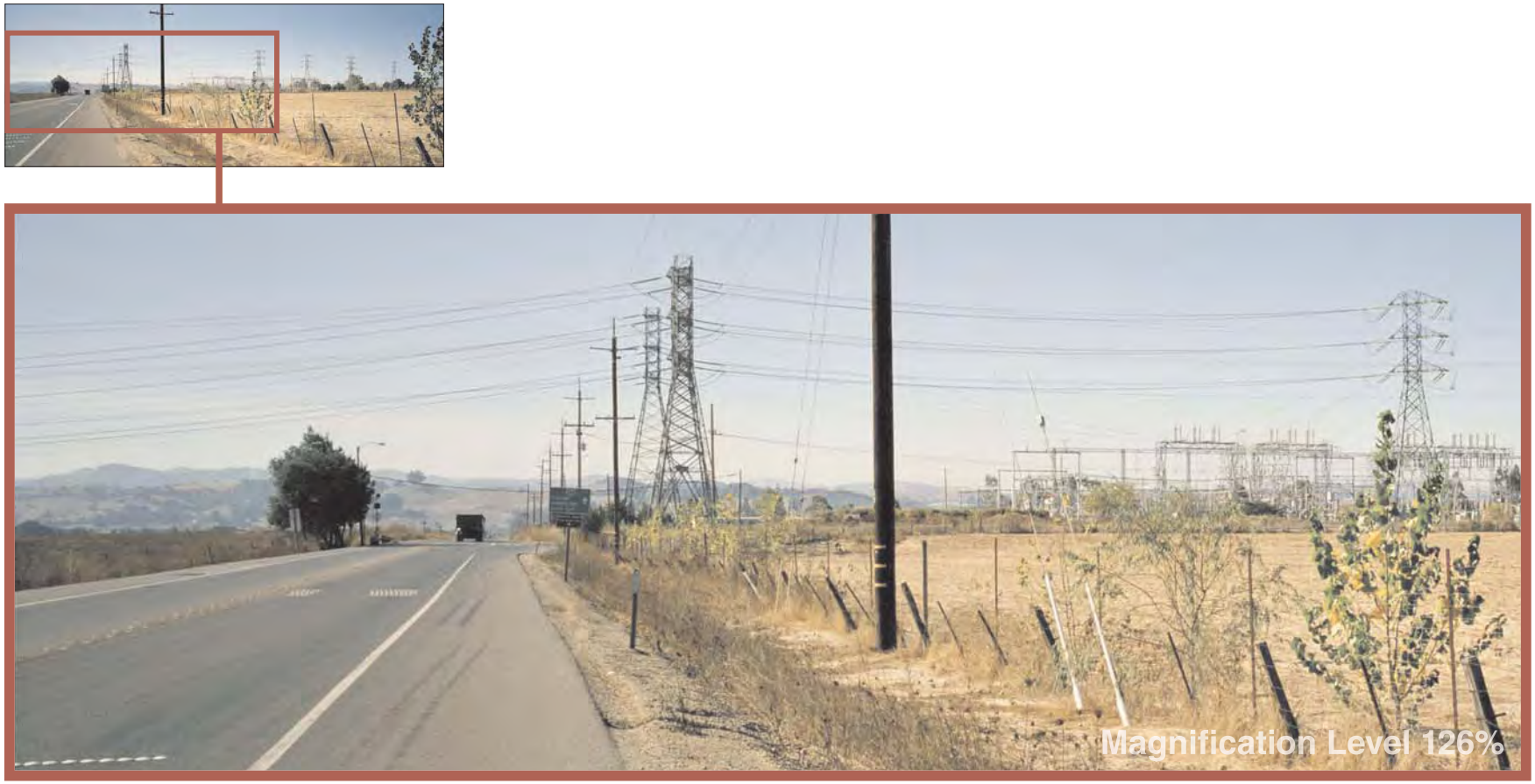
Arrows indicate pole/equipment locations

SOURCE: EDAW (2004)

Figure 2.9-6(b)

KOP 1-Visual Simulation

View Looking South at Lakeville Substation along Adobe Road



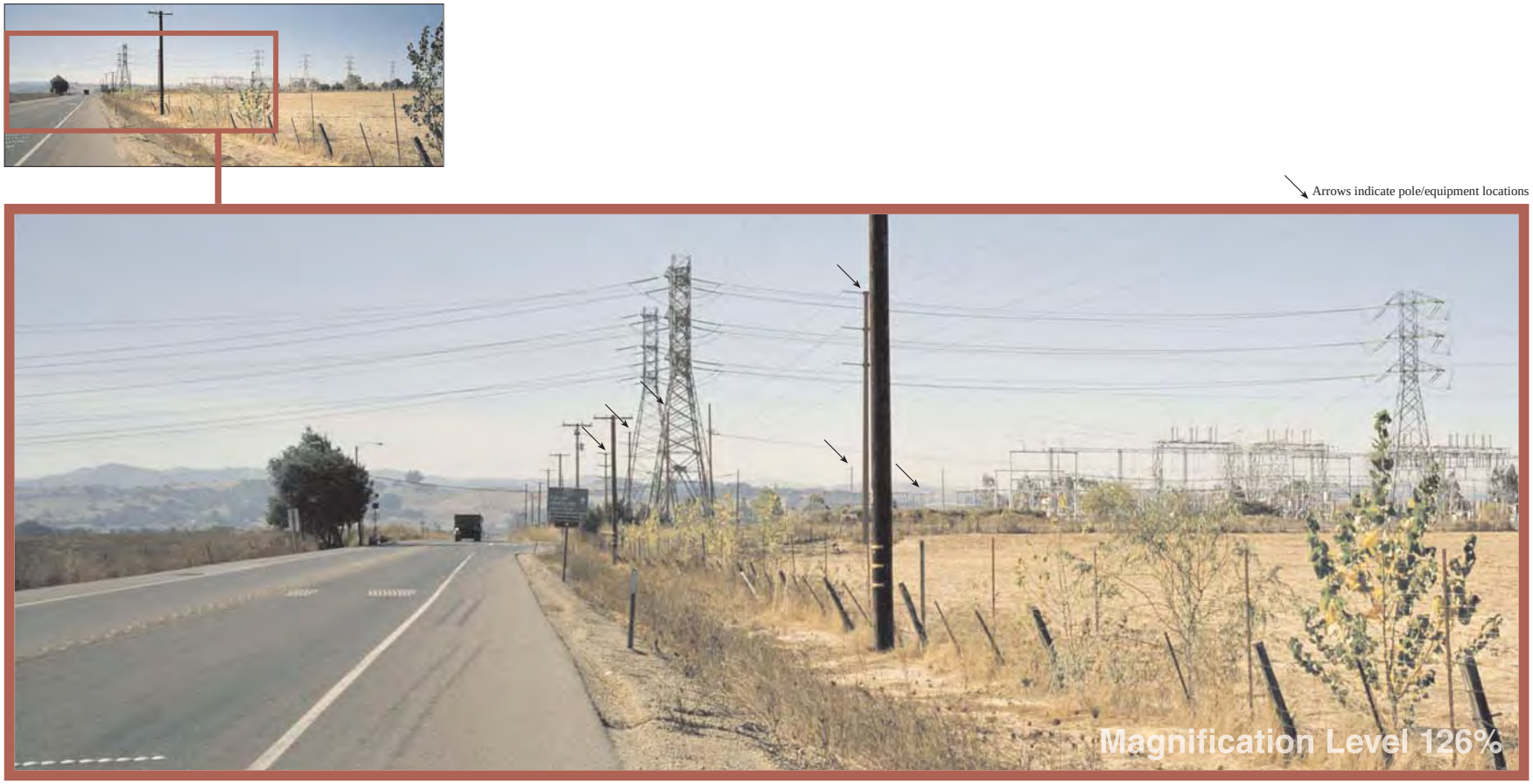
Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-6(c)

KOP 1-Existing View-Magnified

View Looking South at Lakeville Substation along Adobe Road



Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-6(d)

KOP 1-Visual Simulation-Magnified

View Looking South at Lakeville Substation along Adobe Road

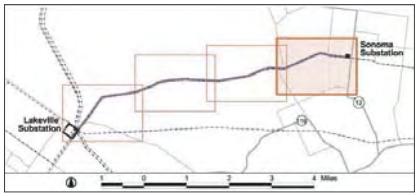
Figure 2.9-7(a) shows the existing view of the Sonoma Substation looking north from Leveroni Road. **Figure 2.9-7(b)** is a visual simulation of the same area after completion of the Proposed Project. Activities at the Sonoma Substation would include the installation of new equipment including a 115 kV line position, bus modification to include galvanized steel, 115 kV circuit breakers, 115 kV air switches, surge arrestors, ~~an approximately 40-foot high aluminum bus,~~ and a relay protection, as well as an extension to the existing control room and some additional lighting. ~~A 75-foot tubular steel pole would replace an existing 70-foot wood pole inside the substation, and another existing wood pole would be moved over several feet.~~ Consistent with City of Sonoma General Plan Policy 26, which identifies the Four Corners area as a designated gateway to "be developed and improved with landscaping and other improvements to clearly mark the entrances to Sonoma, landscaping along Leveroni Road would be installed. The new substation ~~end structure and extra side arms for the new circuit are somewhat more prominent than the existing structures, but these~~ features continue to be of the same nature as the existing facilities because they blend into the viewshed. Therefore, modifications to the Sonoma Substation would result in a less than significant impact on visual quality of the site and surrounding area.

Additionally, only ~~a few~~ one new pole (108a), the existing transmission poles 109-119, and the Sonoma Substation would be visible, and only for a short duration, as motorists continue down SR 12 toward downtown, passing the Sonoma Substation ~~and new transmission line, which would be located approximately 300 feet west of the intersection~~. Therefore, this ~~moderate~~ minor incremental change to the existing visual quality would have a less than significant effect on the "Four Corners" gateway to the City of Sonoma.

Transmission Line

As discussed above, impacts to the existing visual quality of the areas would be most noticeable from major arterial thoroughfares where the transmission line is part of the foreground. In locations where the transmission line is effectively screened from public views by the Sonoma Mountains, Felder Creek, Sonoma Creek, and other natural and urban features, the impacts to the visual quality is expected to be less noticeable.

Figure 2.9-8(a) and **Figure 2.9-8(b)** show the "before and after" visual perspective looking north along Adobe Road after passing the Lakeville Substation and just before the road turns east. Although the taller transmission poles near the road would be more visible, after Pole 14, the transmission line would begin to blend in with the trees and hillside backdrop. As the transmission line goes further into the hillside, it would become less and less noticeable due to its distance from Adobe Road and the vegetation that offers screening of the poles, thus reducing impacts to visual quality. The taller poles near the road (Poles 11, 12, and 14), although more visible than those in the background, would have only a moderate impact on the viewshed as the incremental difference in height would be small as the existing transmission line is a part of the existing viewshed. Visual impacts from Frates Road would be similar to those from Adobe Road.



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-7(a)

KOP 13-Existing View

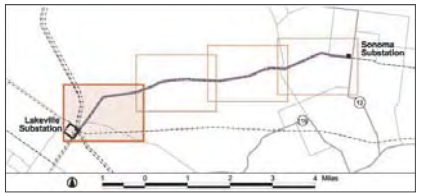
View Looking North at Sonoma Substation from Leveroni Road

SOURCE: EDAW (2004)

Figure 2.9-7(b)

KOP 13-Visual Simulation

View Looking North at Sonoma Substation from Leveroni Road



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-8(a)
KOP 2-Existing View
View Looking North at Segment 1 along Adobe Road

SOURCE: EDAW (2004)

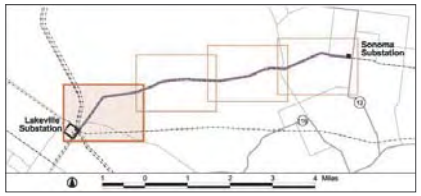
Figure 2.9-8(b)
KOP 2-Visual Simulation
View Looking North at Segment 1 along Adobe Road

Although no portion of the Proposed Project traverses a designated State Scenic Highway, the project does cross two "county scenic corridors", Adobe Road and Arnold Drive, as designated in the Sonoma County General Plan (**Figure 2.9-2)**. The taller poles near the road (Poles 7 through 13 and 88 through 91), although more visible than those in the background, would result in a minimal incremental impact on this viewshed because the difference in height from the existing transmission line would be small. Additionally, tree cover and dense riparian vegetation would continue to screen the new transmission line from view. Therefore, impacts to visual quality from these designated "scenic corridors" would be less than significant. Impacts to Felder Road would be similar as discussed above and would similarly be screened by existing vegetation along Felder Road; therefore, this would be a less than significant.

The Petaluma Adobe State Park, located to the northeast of the Lakeville Substation, affords views of the existing Lakeville–Sonoma transmission line. **Figure 2.9-9(a)** and **Figure 2.9-9(b)** provide a "before and after" perspective from the entrance of this public park. **Figure 2.9-9(c)** and **Figure 2.9-9(d)** provide the same perspective magnified by 126 percent. The new transmission line would be located behind an existing approximately 120 foot tall, 230 kV lattice tower transmission line and existing wood pole distribution lines. The existing transmission lines are visually more prominent since they are closer to the roadway. One pole would skyline (be visible above the horizon); however, it would remain lower than the existing distribution line. Additionally, the new transmission line would blend in with its backdrop, the heavily vegetated Sonoma Mountains. Therefore, impacts to the visual quality from the Petaluma Adobe State Park would be less than significant.

As discussed above, open space is an important part of the visual quality of Sonoma County. **Figure 2.9-10(a)** and **Figure 2.9-10(b)** provide a "before and after" perspective from a vineyard west of the transmission line as it traverses open space over the valley floor. Views from the valley floor would remain effectively the same because the new poles would blend with their existing landscape including a vineyard, rolling hills and tress in the foreground, and heavily vegetated hills in the background.

The City of Sonoma General Plan ERE-2 Policy 10 states that "the City shall work closely with the County and the Sonoma Valley Citizens Advisory Commission to monitor hillside development in areas within the City's viewshed." The hillsides and ridge tops traversed by the transmission line within both the jurisdiction of the City of Sonoma and County of Sonoma are delineated on **Figure 2.9-3**. The distance between the City of Sonoma and the transmission line that would be located on hillsides and ridge tops is large enough that any changes to the existing transmission line corridor would not be significant because they would be difficult to see from most vantage points. Also, the Proposed Project does not propose a change in the existing use (a transmission line) and therefore, there is no change in the existing conditions. Additionally, the project would result in the replacement of the existing wood poles with TSPs which would oxidize to a natural-looking rust color within about one year causing a minimal change to the visual quality of the existing environment and surrounding areas. Therefore, impacts to the



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-9(a)
KOP 3-Existing View
View Looking Northeast at Segment 1
from Entrance to Petaluma Adobe State Park

Arrows indicate pole locations

SOURCE: EDAW (2004)

Figure 2.9-9(b)
KOP 3-Visual Simulation
View Looking Northeast at Segment 1
from Entrance to Petaluma Adobe State Park

Magnified view represents real-world scale if page is held 10" from eye

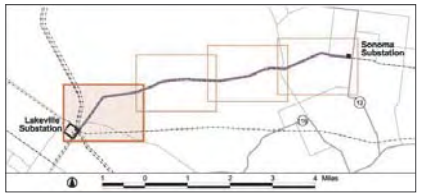
SOURCE: EDAW (2004)

Figure 2.9-9(c)
KOP 3-Existing View-Magnified
View Looking Northeast at Segment 1
from Entrance to Petaluma Adobe State Park

Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-9(d)
KOP 3-Visual Simulation-Magnified
View Looking Northeast at Segment 1
from Entrance to Petaluma Adobe State Park



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-10(a)
KOP 4-Existing View
View Looking East at Segment 1
from Vineyard West of the Line

SOURCE: EDAW (2004)

Figure 2.9-10(b)
KOP 4-Visual Simulation
View Looking East at Segment 1
from Vineyard West of the Line

visual quality of ridgelines and hillsides from the City of Sonoma would be less than significant.

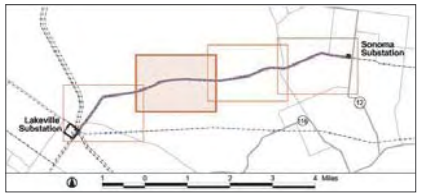
Goal OS-2 of the Sonoma County General Plan is to "retain the largely open, scenic character of important scenic landscape units." The Sonoma Mountains, the lands between Arnold Drive and Sonoma Creek, including Sonoma Creek, are identified as a "scenic landscape unit." Additionally, under Section 26-64-020 of the Sonoma County Zoning Ordinance, the following criteria are applicable to all structures located within a scenic landscape unit, a community separator or Scenic Resources Combining Districts:

- Structures shall be sited below exposed ridgelines.
- Structures shall use natural landforms and existing vegetation to screen them from public roads. On exposed sites, screening with native, fire retardant plants may be required.
- Cuts and fills are discouraged and where practical, driveways are screened from public view.
- Utilities are placed underground where economically practical.

Figures 2.9-11(a) through **Figure 2.9-11(d)** provide a "before and after" perspective and a magnified perspective from a hillside north of the transmission line as it would traverse open space over the Sonoma Mountains. With the new transmission line, the view within the Sonoma Mountains would change moderately as one pole would skyline and the transmission line would become more noticeable as it traverses through a stand of trees that would no longer provide screening due to the increased pole height. However, for the portion of the project within the Sonoma Mountains, there are few public views or public roads that provide access to the project area or areas that provide views. Therefore, because access to views of this portion of the transmission line would be limited and because the viewshed would not be substantially altered, impacts to visual quality would be less than significant.

Implementation of the Proposed Project would result in a less than significant impact on the views within the "scenic landscape unit" along Leveroni Road, from Arnold Drive to and including, Sonoma Creek. In general, the new poles would skyline in a few locations, but overall, the Proposed Project would not substantially degrade the existing visual quality of the area because the new transmission line would be located in a corridor in which there is already an existing transmission line. The project would alter views because the transmission line would be constructed with different materials and the new poles would be taller. However, this change would not substantially alter the viewshed and therefore would not have a substantial impact on the existing visual quality. In addition, dense riparian habitat of Sonoma Creek would continue to provide visual screening for the new transmission line.

Figures 2.9-12(a) through **Figure 2.9-12(d)** provide a "before and after" perspective and a magnified perspective looking west at the Sonoma Mountains from a pathway



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-11(a)
KOP 5-Existing View
View Looking Southeast at Segment 1
from Hillside North of the Line

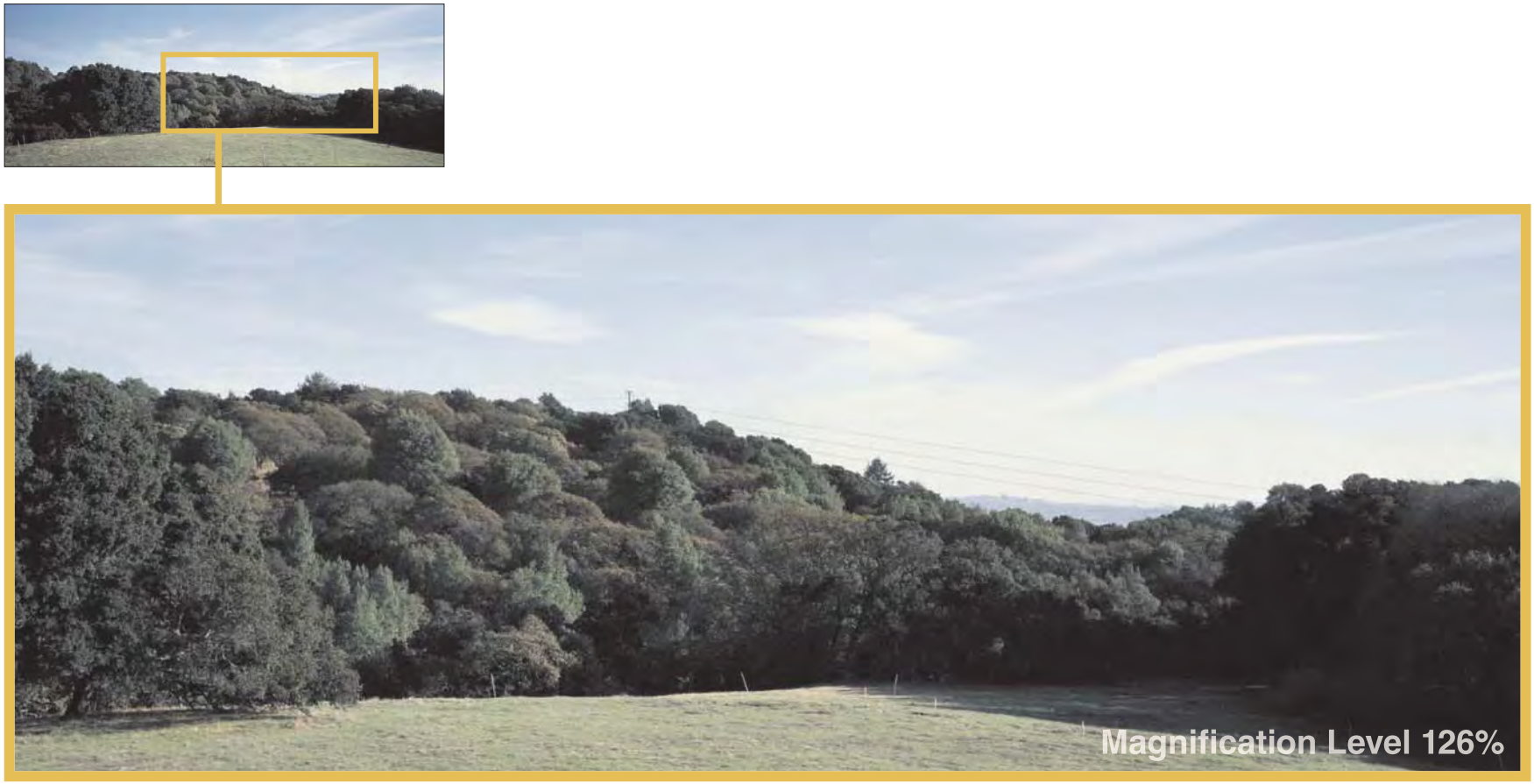
SOURCE: EDAW (2004)

Figure 2.9-11(b)
KOP 5-Visual Simulation
View Looking Southeast at Segment 1
from Hillside North of the Line

Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

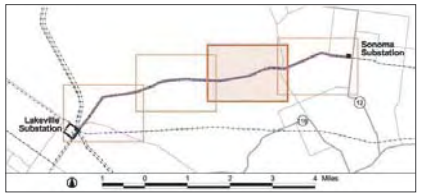
Figure 2.9-11(c)
KOP 5-Existing View-Magnified
View Looking Southeast at Segment 1
from Hillside North of the Line



Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-11(d)
KOP 5-Visual Simulation-Magnified
View Looking Southeast at Segment 1
from Hillside North of the Line



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-12(a)
KOP 6-Existing View
View Looking West at Segment 2
from Temelec Residential Development Walkway

Arrows indicate pole locations

SOURCE: EDAW (2004)

Figure 2.9-12(b)
KOP 6-Visual Simulation
View Looking West at Segment 2
from Temelec Residential Development Walkway

Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-12(c)
KOP 6-Existing View-Magnified
View Looking West at Segment 2
from Temelec Residential Development Walkway

Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

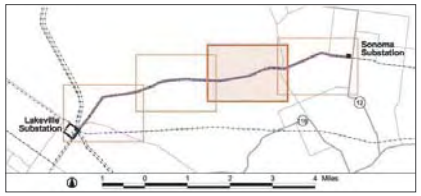
Figure 2.9-12(d)
KOP 6-Visual Simulation-Magnified
View Looking West at Segment 2
from Temelec Residential Development Walkway

bordering the Temelec residential development. The existing transmission line is located about 1/2 mile from the pathway. As shown in **Figure 2.9-12(b)** and **Figure 2.9-12(d)**, the new poles would be far enough away to not substantially impact the visual quality of the viewshed from the pathway. Also, the poles would blend in with the natural landscape of the Sonoma Mountains as well as the screening provided by the riparian vegetation of Felder Creek. However, two poles would skyline immediately before the transmission line would begin to traverse down the backside of a hill, no longer visible from this vantage point. Impact to views shown in **Figures 2.9-13(a)** through **Figure 2.9-14(d)** are similar to those discussed above. Therefore, since an existing transmission line is in the viewshed and the changes to the viewshed caused by the Proposed Project would be minimally incremental, impacts to the visual quality of the this portion of the project area would be less than significant.

Figures 2.9-15(a) ~~through~~ and **2.9-~~18~~15(b)** provide a "before and after" perspective as the transmission line traverses Leveroni Road after leaving the open space of the Sonoma Mountains, and ~~entering~~ enters the valley lands ~~while continuing into~~ as it approaches the City of Sonoma. ~~The City of Sonoma General Plan has designated the intersection of Leveroni Road and the Sonoma Creek as a "gateway" to the City of Sonoma as well as a "scenic vista" on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway.~~ With implementation of the Proposed Project, the new poles would skyline in a couple of locations and the additional arms used to hold the transmission line would be more prominent in some locations, but overall, the Proposed Project would not substantially degrade the existing visual quality of the area because motorists are accustomed to seeing the transmission line which has existed within the viewshed since 1906. ~~Additionally, Sonoma Creek's dense riparian vegetation would continue to screen the new transmission line.~~ Therefore, the moderate incremental change to the existing viewshed would be less than significant. ~~With the implementation of Mitigation Measure 2.1-1 (see Section 2.1),~~

The City of Sonoma General Plan has designated the intersection of Leveroni Road and the Sonoma Creek as a "gateway" to the City of Sonoma as well as a "scenic vista" on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway. There would be no permanent impacts to the visual quality ~~of~~ within the "gateway" portion of the project area from the eastern edge of Sonoma Creek (Pole 108a) east along Leveroni Road to the Sonoma Substation ~~would occur~~ since this portion of the project would be installed underground.

Eight properties (see **Table 2.9-1**) within the project area are designated by the Sonoma County Zoning Ordinance as Scenic Resource Combining Zone Districts. These properties are generally located within open space areas flanking the Sonoma Mountains. Impacts to visual resources would be minimal as a transmission line already exists on these properties. Additionally, changes to the viewshed would be barely perceptible as they would blend into the backdrop of the Sonoma Mountains. Therefore, changes to this portion of the viewshed would be minimal, and thus, less than significant. One property



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-13(a)
KOP 7-Existing View
View Looking North at Segment 2
from Temelec Residential Development Walkway

Note: This visual simulation shows the poles with an additional 10-foot height increase pursuant to the CPUC's policies on low-cost measures to reduce electric and magnetic fields (EMF). Pole heights may be more or less depending on final EMF mitigation measures by the CPUC.

SOURCE: EDAW (2004)

Figure 2.9-13(b)
KOP 7-Visual Simulation
View Looking North at Segment 2
from Temelec Residential Development Walkway

Magnified view represents real-world scale if page is held 10" from eye

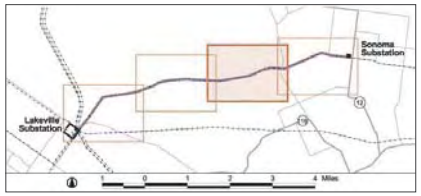
SOURCE: EDAW (2004)

Figure 2.9-13(c)
KOP 7-Existing View-Magnified
View Looking North at Segment 2
from Temelec Residential Development Walkway

Note: This visual simulation shows the poles with an additional 10-foot height increase pursuant to the CPUC's policies on low-cost measures to reduce electric and magnetic fields (EMF). Pole heights may be more or less depending on final EMF mitigation measures by the CPUC.

SOURCE: EDAW (2004)

Figure 2.9-13(d)
KOP 7-Visual Simulation-Magnified
View Looking North at Segment 2
from Temelec Residential Development Walkway



Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

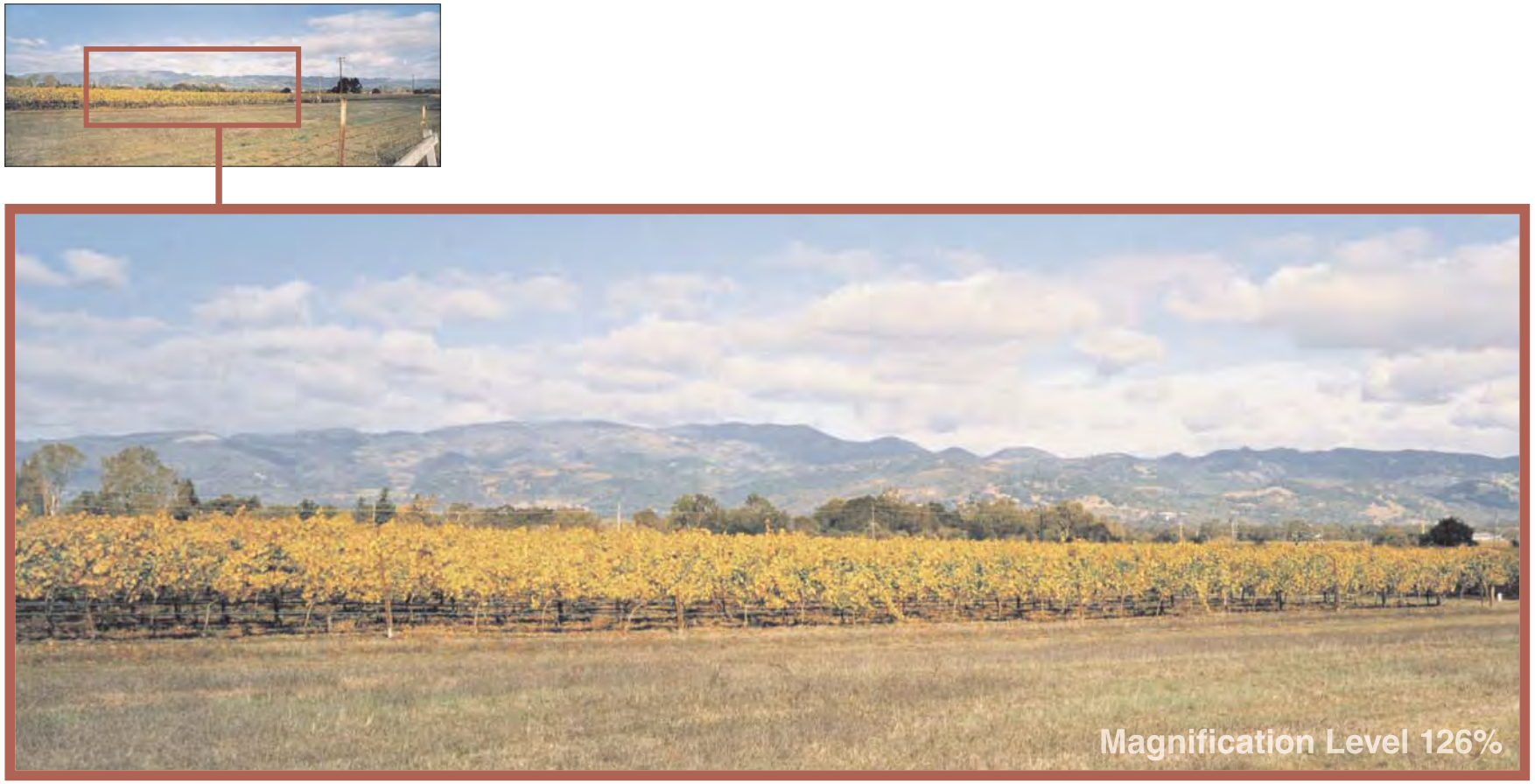
Figure 2.9-14(a)
KOP 8-Existing View
View Looking East at Segment 2
from Edge of Temelec Residential Development

Arrows indicate pole locations

Note: This visual simulation shows the poles with an additional 10-foot height increase pursuant to the CPUC's policies on low-cost measures to reduce electric and magnetic fields (EMF). Pole heights may be more or less depending on final EMF mitigation measures by the CPUC.

SOURCE: EDAW (2004)

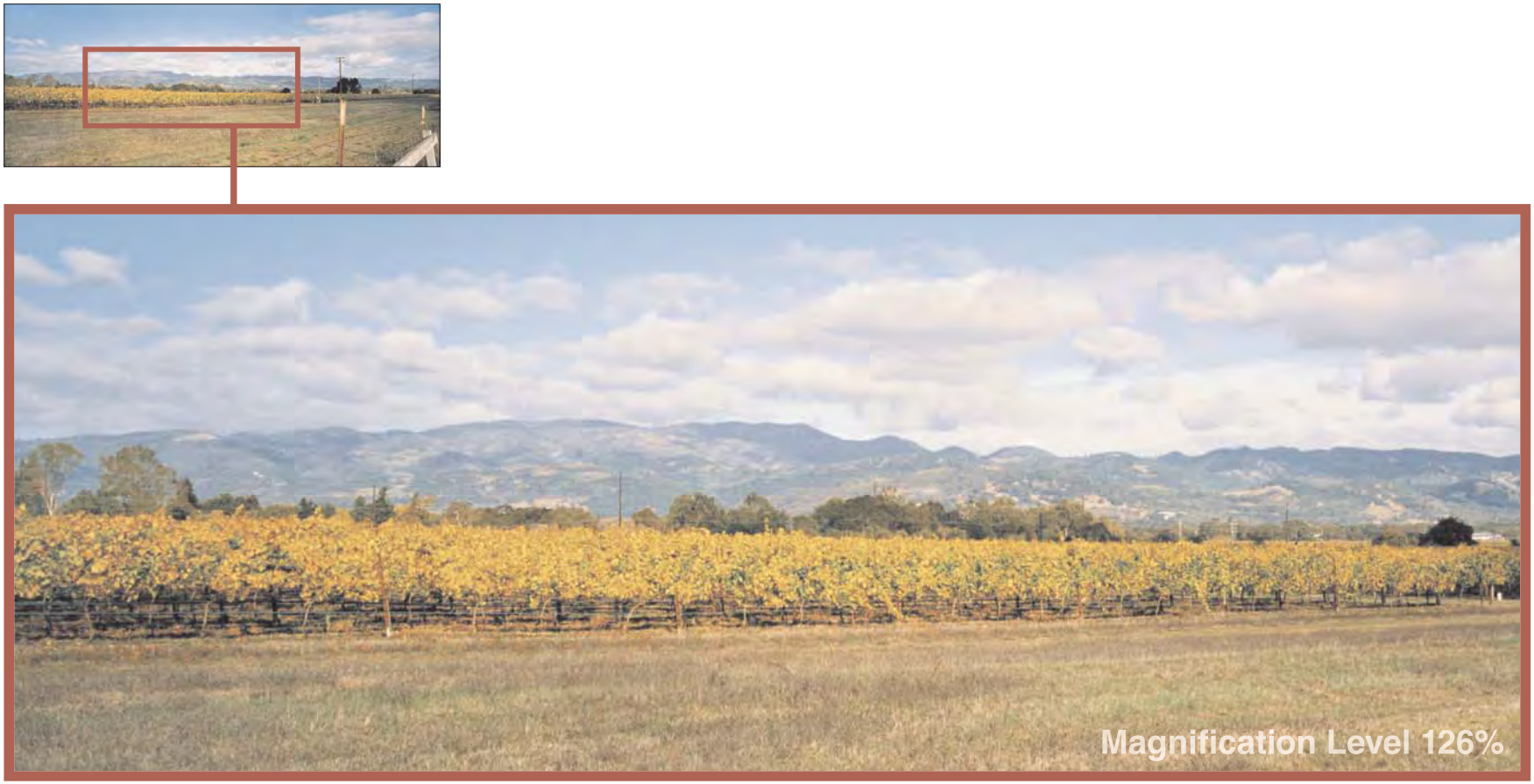
Figure 2.9-14(b)
KOP 8-Visual Simulation
View Looking East at Segment 2
from Edge of Temelec Residential Development



Magnified view represents real-world scale if page is held 10" from eye

SOURCE: EDAW (2004)

Figure 2.9-14(c)
KOP 8-Existing View-Magnified
View Looking East at Segment 2
from Edge of Temelec Residential Development

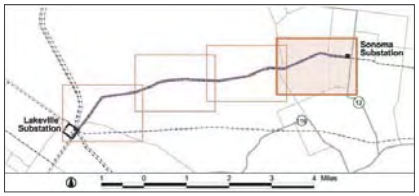


Magnified view represents real-world scale if page is held 10" from eye

Note: This visual simulation shows the poles with an additional 10-foot height increase pursuant to the CPUC's policies on low-cost measures to reduce electric and magnetic fields (EMF). Pole heights may be more or less depending on final EMF mitigation measures by the CPUC.

SOURCE: EDAW (2004)

Figure 2.9-14(d)
KOP 8-Visual Simulation-Magnified
View Looking East at Segment 2
from Edge of Temelec Residential Development



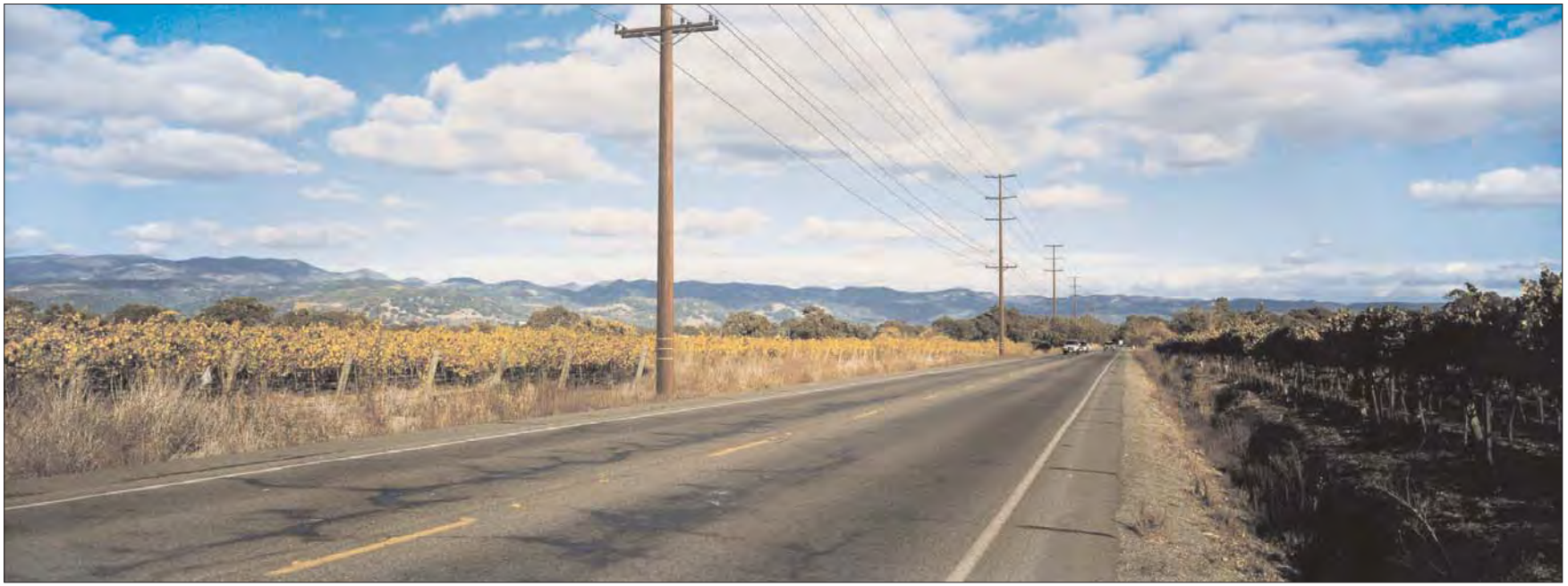
Study Area

Vicinity Map

Viewpoint Location

SOURCE: EDAW (2004)

Figure 2.9-15(a)
KOP 9-Existing View
View Looking East at Segment 17
along Leveroni Road



SOURCE: EDAW (2004)

Figure 2.9-15(b)
KOP 9-Visual Simulation
View Looking East at Segment 17
along Leveroni Road

is located at the intersection of Broadway/Leveroni, the "Four Corners" gateway. Impacts to this property are discussed in more detail above.

Construction crews would use existing roads along most of the transmission line corridor to access pole sites; these include paved roads, ranch and vineyard roads, and fire access roads. Temporary access roads would be cleared and then restored to their previous condition after construction. However, in a few areas where existing roads are not available, new access roads would be needed. Although the construction of new access roads would change the visual character of the area, these types of roads are a normal part of this landscape due to the agrarian nature of the area. Additionally, many of these new

roads would tuck up in the Sonoma Mountains and would not be visible from any major thoroughfares; therefore, the impact to visual quality due to the construction of new access roads would be less than significant.

While the use of staging areas and pull/tension sites during construction would result in temporary impacts to the visual quality of the project area, long-term visual impacts could also result from the Proposed Project. Also, while the installation of the underground portion of the project would create less than significant temporary impacts to the visual quality of the project area, long-term visual impacts to the area surrounding Leveroni Road could also result from the Proposed Project.

Impact 2.9-2: After construction activities have been completed, if staging areas, ~~and~~ pull/tension sites, and the undergrounded portion of the project area along Leveroni Road have not been restored to preexisting conditions, then the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area. This would be a less than significant impact with implementation of Mitigation Measures 2.9-2.

> **Mitigation Measures 2.9-2:** PG&E and/or its contractors shall clean up and restore each staging area, ~~and~~ pull/tension site~~s~~, and the undergrounded portion of the project area along Leveroni Road to preconstruction conditions after construction activities in accordance with the SWPPP Plan.

Significance after Mitigation: Less than significant.

~~*Mitigation Measure 2.1-1*~~

~~With the implementation of **Mitigation Measure 2.1-1** the transmission line would be installed underground from the eastern edge of Sonoma Creek (Pole 108) east along Leveroni Road to the Sonoma Substation where it would emerge through a substation riser structure and terminate on a substation bus structure (see **Figure 2.1-4**). The extra proposed 75-foot tubular steel pole on the Sonoma Substation property would not be required. The existing 115 kV single-circuit transmission line, distribution lines, and communication wires would remain above ground along Leveroni Road as these~~

~~components are part of the existing transmission line and therefore, a part of existing conditions for purposes of this Initial Study. Since the transmission line would be underground, there would be no impacts on visual quality to the Sonoma Creek Gateway, Four Corners Gateway as well as the scenic vista on Leveroni Road at Harrington Drive looking west toward the Sonoma Creek Gateway.~~

~~While the installation of the underground portion of the project would create less than significant temporary impacts to the visual quality of the project area, long-term visual impacts to the area surrounding Leveroni Road could also result from the Proposed Project.~~

~~**Impact 2.9-3: After construction activities have been completed, if the portion of the project area encompassed under Mitigation Measure 2.1-1 has not be restored to preexisting conditions, the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area. This would be a less than significant impact with implementation of Mitigation Measures 2.9-3.**~~

> ~~**Mitigation Measures 2.9-3:** PG&E and/or its contractors shall clean up and restore the Leveroni Road construction area encompassed under Mitigation Measure 2.1-1 to preconstruction conditions after construction activities in accordance with the SWPPP Plan.~~

~~**Significance after Mitigation:** Less than significant.~~

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d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area: *less than significant impact*.

Construction

No nighttime construction is proposed. If lighting is used for security purposes at the staging areas and pull/tension sites, lighting would face downward and would be shielded. Therefore, construction activities are not expected to introduce a new source of light or glare that would adversely affect day or nighttime views in the area.

Operations

As discussed above, new equipment would be installed at both substations including: tubular steel poles, galvanized structures, circuit breakers, air switches, aluminum bus, control room, control/protection equipment, insulators, a 115 kV line position, bus modification to include galvanized steel, and surge arrestors. Additional lighting would be installed near Frates Road at the Lakeville Substation and would be required for periodic use when personnel are on-site for activities such as inspections and maintenance at the Sonoma Substation.

Since the new equipment and lighting to be installed at the substations is of the same nature as the existing substations, it would blend in with the existing facilities. Additionally, this equipment is already visible to nearby residents and motorists traveling along the major thoroughfares adjacent to the substations. Existing vegetation at the Lakeville Substation would continue to provide screening from potential glare created by the new equipment and lighting that could adversely affect day or nighttime views in the area. Low maintenance landscaping would be added along Leveroni Road at the Sonoma Substation to provide additional screening from potential glare created by the new equipment and lighting. Therefore, the installation of new equipment at the substation would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

Additionally, as discussed above, the new poles would be a lighter shade of matte gray and would oxidize to a natural-looking rust color within about one year; therefore, the installation of poles along the transmission line corridor would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

References – Aesthetics

California Department of Transportation (Caltrans), 1999. *California Scenic Highway Mapping System*, http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, updated December 28, 1999.

City of Sonoma, 1995. *1995-2005 General Plan*, adopted August 30.

Pacific Gas and Electric Company (PG&E), 2004. *Proponent's Environmental Assessment, Lakeville-Sonoma 115 kV Transmission Line Project*, November 2004. *Prepared by EDAW*.

Sonoma County Assessor, *County Assessor's Parcel Maps*, viewed on June 5, 2005.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 2004. *Sonoma County Zoning Regulations*, as updated March 23, 2004.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

Skinner, Sara, 2004. Petaluma Adobe State Park, personal communication with EDAW, March 17, 2004.

2.10 Mineral Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
10.	**MINERAL RESOURCES—Would the project:**				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

2.10.1 Setting

Existing Mineral Resources

The most significant mineral resource in the project area is non-metallic minerals such as broken and crushed rock products.

The California Geological Survey (CGS) has classified the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act of 1975 (SMARA). Mineral Resource Zones (MRZs) delineated by CGS identify the presence and significance of mineral deposits within the project area. In general, areas subject to pressures of urbanization are zoned by the CGS, while those areas outside these areas are not. MRZ categories defined by the CGS are presented below:

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2: Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.
- SZ: Areas containing unique or rare occurrence of rocks, minerals, or fossils that are of outstanding scientific significance.

Most of the project area is outside a classified MRZ. Local areas along Sonoma Creek are zoned MRZ-2 and MRZ-3 based upon sand and gravel reserves. The western and eastern edges of Sonoma Valley are zoned MRZ-1. The western boundary of this zone intersects segment 2 of the proposed project route (PG&E PEA, 2004).

Sand and Gravel Quarries

Extraction operations exist outside the project area. Sonoma Volcanics, the result of a volcanic event that happened millions of years ago, have been quarried for block and paving stone in the past and are currently being extracted. Basalt is being extracted in Petaluma west of Highway 101 and at a quarry in Napa. A small quarry is located along the north side of Highway 116, about a mile and one-half south of the central portion of Segment 1. The Proposed Project would not cross areas presently being used for mineral extraction, nor is the project within an area identified by the Sonoma County Aggregate Resources Management Plan as a potential future aggregate resource extraction site.

Oil and Minerals

There are no known oil and mineral resources within the project alignment (DOGGR, 2001).

Geothermal Resources

Geothermal resources in the project area exist as a widely-distributed, moderately-shallow, low-temperature source. The resource is characterized as a liquid-dominated hydrothermal convection system that ascends into fractures and faults within permeable units of the Sonoma Volcanics. The hydrothermal area northeast of the project and north of Sonoma is located in an area designated “most likely geothermal production zone” by the USGS. A number of wells with elevated temperatures are located outside this main hydrothermal area and are located south of the project area (Youngs et al., 1983).

2.10.2 Regulatory Setting

Surface Mining and Reclamation Act

The primary State law concerning conservation and development of mineral resources is the California Surface Mining and Reclamation Act (SMARA) of 1975, as amended to date. SMARA is found in the California Public Resources Code (PRC), Division 2, Chapter 9, Sections 2710, et seq.

Depending on the region, natural resources can include geologic deposits of valuable minerals used in manufacturing processes and the production of construction materials. SMARA was enacted in 1975 to limit new development in areas with significant mineral deposits. SMARA calls for the state geologist to classify the lands within California based on mineral resource availability. In addition, the California Health and Safety Code requires the covering, filling, or fencing of abandoned shafts, pits and excavations (California Health and Safety Code Sections 24400-03.). Furthermore, mining may also be regulated by local government, which has the authority to prohibit mining pursuant to its general plan and local zoning laws.

SMARA states that the extraction of minerals is essential to the continued economic well-being of the State and to the needs of society, and that reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety. The reclamation of mined lands will permit the continued mining of minerals and will

provide for the protection and subsequent beneficial use of the mined and reclaimed land. Surface mining takes place in diverse areas where the geologic, topographic, climatic, biological, and social conditions are significantly different, and reclamation operations and the specifications therefore may vary accordingly (California Public Resources Code Section 2711).

Sonoma County

Sonoma County has adopted the Aggregate Resources Management (ARM) Plan, a plan for obtaining future supplies of aggregate material (this is now the predominate mineral mined in Sonoma County). This plan serves as the state-mandated mineral management policy for the county and is intended to accomplish the mandated purposes. During the process of adoption of the plan, the County considered the aggregate resource areas subsequently classified as MRZ-2 by the State Geologist and transmitted by the Board in compliance with the Act in February, 1985. (Aggregate resources are mapped in the ARM Plan). Policies that could be applicable to the Proposed Project include:

- Policy RC-11a: Consider lands designated in the Aggregate Resources Management Plan (ARM) as priority sites for aggregate production and mineral extraction and review requests for additional designations for conformity with the general plan and the ARM plan.

- Policy RC-11b: Review projects for environmental impact and land use conflicts and consider the following minimum factors when approving mining permits: topsoil salvage, vegetation, fisheries and wildlife impacts, noise, erosion control, roadway conditions and capacities, reclamation and bonding, air quality, energy consumption, engineering and geological surveys, aggregate supply and replenishment, drainage, and the need for economical aggregate materials.

- Policy RC-11c: Review projects which are on or near sites designated "Mineral Resources" in the ARM Plan for compatibility with future mineral extraction.

2.10.3 Mineral Resources Impacts and Mitigation Measures

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state: *no impact.*

Extraction operations exist outside the project area. There are no known economically viable sources of rock materials in the immediate project area. In addition, there are no unique geologic features identified within project area. Therefore, the potential for the project to result in the loss of mineral or unique geologic features is low and this impact would be less than significant.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan: *no impact.*

The pole replacement activities from the proposed project affect only a very small area and would not result in the any loss of availability of locally-important minerals as the transmission line alignment crosses no areas currently used to extract known mineral

resources. The only portion of the alignment that does cross a known mineral resource occurs between poles 107 and 108 where the route crosses a portion of Sonoma Creek that is designated MRZ-2 for aggregate materials. There is no aggregate extraction occurring at this point and neither the existing poles nor the reconfigured poles in the proposed project would obstruct or impact on any future ability to access the Creek for any purpose. Thus, the Proposed Project would not result in any impacts to mineral resources.

References – Mineral Resources

Division of Oil, Gas and Geothermal Resources (DOGGR), 2001. *Oil, Gas, and Geothermal Fields within California*, 2001.

Pacific Gas and Electric Company (PG&E), 2004. *Proponent's Environmental Assessment, Lakeville-Sonoma 115 kV Transmission Line Project*, November 2004. *Prepared by EDAW*.

Youngs, Leslie G., Rodger H. Chapman, Gordon W. Chase, Stephen P. Bezore, and Hasu H. Majmundar, 1983. *Investigation of Low-Temperature Geothermal Resources in the Sonoma Valley Area, Sonoma and Napa Counties, California*, USGS Open-File Report OFR 83-13, 1983.

2.11 Noise

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
11.	**NOISE—Would the project result in:**				
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

2.11.1 Setting

Noise Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).[1]

Noise Exposure and Community Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. In fact, community noise varies continuously with time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment varies the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

L_x: The sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level.

DNL: The energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises. DNL is sometimes referred to as L_{dn}.

[1] All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

CNEL: Similar to the DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response;
- a change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. A ruler is a *linear* scale: it has marks on it corresponding to equal quantities of distance. One way of expressing this is to say that the ratio of successive intervals is equal to one. A *logarithmic* scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1, 10, 100, 1000, 10000, etc. doubling the variable plotted on the x-axis. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

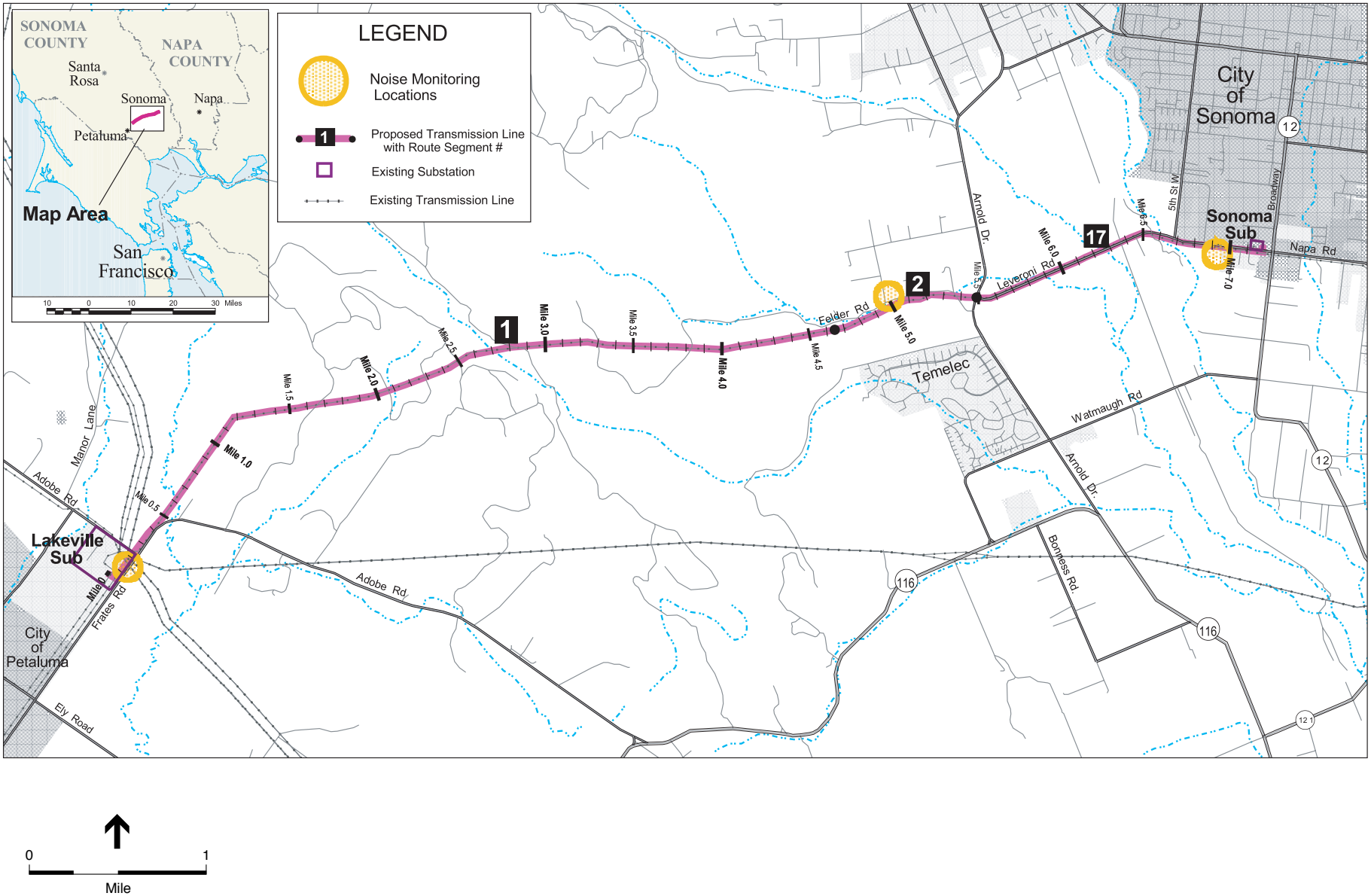
Stationary "point" sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 dBA to 7.5 dBA per doubling of distance from the source, depending upon environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling distance from the source (also dependent upon environmental conditions) (Caltrans, 1998). Noise from large construction sites (or a landfill with heavy equipment moving dirt and solid waste daily and trucks entering and exiting the main gate daily - activities similar to construction sites) would have characteristics of both "point" and "line" sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance.

Existing Ambient Noise Environment

The project area encompasses an approximately 7.23-mile corridor of residential, agricultural, commercial and open space areas. The primary contributors to the project area's noise environment include vehicle traffic on highways and city streets; airplane over flights; sounds emanating from residential neighborhoods, including voices, noises from household appliances, and radio and television broadcasts; and naturally occurring sounds such as wind and wind-generated rustling. Additional noise sources may include electrical and industrial devices and other man-made localized sources in the project area. Generally, intermittent short-term noises do not significantly contribute to longer-term noise averages.

Noise measurements were taken by PG&E at three locations in the project area to characterize the ambient noise environment along the transmission line route and at the substation sites. The measurements were taken during both weekend and weekday periods in September and October 2003. All measurements were taken for multiple 24-hour periods, and hourly average noise data were calculated for each measurement location. Long-term noise data were obtained using calibrated microphones and integrating sound level meters/statistical data loggers (Larson Davis, Models 820 and 700). Short-term noise measurements were obtained using a calibrated microphone and sound-level meter (Bruel and Kjaer, Type 2236), in conjunction with a digital audio tape recorder. Measurement locations were selected to best represent the typical noise environment along the alignment and at the two substations. In some cases, monitoring locations were also selected for ease and safety of access and the availability of PG&E-owned facilities and properties on which to mount long-term sound measuring devices, such as transmission poles and property line fences.

Figure 2.11-1 shows the locations in the project area at which noise measurements were taken, and **Table 2.11-1** shows the results of those noise measurements. **Table 2.11-1** summarizes noise monitoring results in terms of the average equivalent noise level (L_{eq}), minimum L_{eq}, and maximum L_{eq}; day-night noise equivalent (L_{dn}); and the statistical descriptors L_{50} and L_{90}. Values given in **Table 2.11-1** are representative of noise levels along the length of the route and at the Lakeville and Sonoma Substations. Noise measurements were taken at these locations during



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SOURCE: EDAW (2004)

Figure 2.11-1
Noise Monitoring Locations

TABLE 2.11-1
NOISE MEASUREMENT RESULTS (dBA)

Area Represented (Segments and Substations)	Monitoring Location	Average Hourly (L_{eq})	Minimum Hourly (L_{eq})	Maximum Hourly (L_{eq})	Average (L_{50})	Average (L_{90})	DNL
Segment 1 Lakeville Substation	Lakeville Substation	68.2	44.5	84.3	72.0	65.7	71.3
Segment 2	Felder Road	51.0	46.1	73.9	51.9	46.9	58.3
Segment 17 Sonoma Substation	Sonoma Substation	64.5	43.8	86.1	68.2	50.7	67.7

SOURCE: PG&E PEA (2004)

both weekend and weekday periods in September and October 2003. The measurements show that the baseline noise environment complies with applicable local noise standards discussed under the Regulatory Context below.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

Figures 1-4(a) through **1-4(d)** in Section 1 show sensitive receptor land uses and residential and commercial developments in the project area. Over the length of the transmission route, some sensitive receptors lie as close as 45 feet from the transmission line corridor. The majority of the route, however, traverses agricultural and open space areas, where the project would have no impact on sensitive receptors. Though few sensitive receptors lie close to the transmission line route or substation locations, project construction would include materials transport and other activities in direct proximity to many additional sensitive receptors.

The Sonoma Substation is located within the City of Sonoma in a commercial/residential land use area. At this location, the nearest the sensitive receptors are people in the adjacent apartment building, hotel, and a business office located approximately 300 feet away.

The Lakeville Substation site is located off Frates Road in an agricultural and open space area. Measurements were taken at the substation entrance on Adobe Road. The nearest sensitive receptor is located more than 800 yards from the substation location.

2.11.2 Regulatory Context

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans identify general principles intended to guide and influence development plans; local noise ordinances establish standards and procedures for addressing specific noise sources and activities. The City of Sonoma and the County of Sonoma have developed general plan policies, goals, and guidelines regarding the ambient noise environment, which would be applicable to the Proposed Project, as discussed below.

Sonoma County

Goal NE-1 of the Sonoma County General Plan Noise Element is to "[p]rotect people from the harmful effects of exposure to excessive noise and to achieve an environment in which people and land uses may function without impairment from noise." This goal aims to protect persons from existing or future excessive levels of noise that interfere with sleep, communication, relaxation, health or legally permitted use of property. Noise sensitive areas include residences, schools, hospitals, other medical care facilities and other uses deemed noise sensitive by the local jurisdiction.

To achieve this goal, the Noise Element contains the following policies that would be applicable to the Proposed Project:

- Policy NE-1a: Designate areas within Sonoma County as noise impacted if they are exposed to existing or projected exterior noise levels exceeding 60 dB L_{dn}, 60 dB CNEL, or the performance standards of Table NE-2 of the Noise Element shown below as **Table 2.11-2**.

TABLE 2.11-2
SONOMA COUNTY NOISE LEVEL PERFORMANCE STANDARDS

	Maximum Exterior Noise Level Standards, dBA		
Category	**Cumulative Duration of Noise Event in any one-hour period**	**Daytime 7 a.m. to 10 p.m.**	**Nighttime 10 p.m. to 7 a.m.**
1	30 - 60 minutes	50	45
2	15 – 30 minutes	55	50
3	5 – 15 minutes	60	55
4	1 – 5 minutes	65	60
5	0 – 1 minute	70	65

NOTE:
- If the ambient noise level exceeds the standard in Table NE-2, adjust the standard to equal the ambient level.
- Reduce the applicable standards in Table NE-2 by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
- Reduce the applicable standards in Table NE-2 by 5 decibels if they exceed the ambient level by 10 or more decibels.

SOURCE: Sonoma County PRMD (1989)

- Policy NE-1b: Avoid noise sensitive land use development in noise impacted areas unless effective measures are included to reduce noise levels.

- Policy NE-1c: Control non transportation related noise from new projects such that the total noise level resulting from new sources and ambient noise shall not exceed the standards in Table NE-2 (**Table 2.11-2** in this Initial Study).

- Policy NE-1e: Establish building permit procedures to ensure that requirements based upon the acoustical analysis are implemented.

- Policy NE-1f: Require development projects which do not include or affect residential uses or other noise sensitive uses to include noise mitigation measures where necessary to maintain noise levels compatible with activities planned for the project site and vicinity.

- Policy NE-1g: Enforce the State Noise Insulation Standards and Chapter 35 of the Uniform Building Code concerning new multiple occupancy dwellings.

- Policy NE-1j: Encourage the California Highway Patrol to actively enforce sections of the California Vehicle Code relating to adequate vehicle mufflers and modified exhaust systems.

The General Plan Noise Element does not specifically address intermittent or short-term construction noises and the County currently does not have a noise control ordinance for short-term or long-term noise.

City of Sonoma

The goal of the City of Sonoma General Plan Noise Element is to "[a]chieve noise compatibility between new and existing developments to ensure the continuation of the prevailing quiet country atmosphere that residents associate with living in Sonoma. Relevant policies contained in the Noise Element include:

- Policy 1: To achieve this, the following standards for maximum L_{dn} will apply to citywide development:

  45 L_{dn} – For interior environments in all residential units (consistent with Title 24 standards)

  60 L_{dn} – Exterior environments around all residential developments and outdoor public facilities

  65 L_{dn} – Exterior environments around commercial and public buildings

  70 L_{dn} – Exterior environments around industrial buildings.

- Policy 2: The city may impose more restrictive noise standards in neighborhood that may be sensitive to noise levels below the accepted State standards. (City of Sonoma, 1995)

The City Sonoma's Municipal Code 9.56.011 states that "no person, firm or corporation shall cause, or permit to be caused, any noise or sound which, by reason of its raucous or nerve wracking nature or intensity, disturbs the peace or comfort or is injurious to the health of any person or persons." The Code restricts construction activity to the hours of 8:00 a.m. to 7:00 p.m. local time during weekdays and weekends (City of Sonoma, 1986).

2.11.3 Noise Impacts and Mitigation Measures

Equipment noise during project construction is the primary concern in evaluating short-term noise impacts. During operation, noise from corona discharge along high-voltage transmission lines during wet conditions and noise from operation of additional circuit breakers at substations would contribute incrementally to the ambient noise environment.

Temporary impacts during construction are considered significant if they would substantially interfere with affected land uses. Substantial interference could result from a combination of factors including: the generation of noise levels substantially greater than existing ambient noise levels; construction efforts lasting over long periods of time; or construction activities that would affect noise-sensitive uses during the nighttime. For assessment of temporary construction noise impacts, "substantially greater" means more than three dBA (hourly L_{eq}, DNL, or CNEL) resulting in noise levels above 65 dBA-L_{eq} in residential areas, or above 70 dBA-L_{eq} in commercial areas, at the nearest sensitive receptor.

The project's operational impact on the ambient noise environment would be considered substantial if it would result in ambient noise levels above 60 dBA (DNL) if the existing noise environment is below 60 dBA. In areas where the existing ambient noise environment is already greater than 60 dBA, an ambient noise level increase of 3 dBA or more at a sensitive receptor would be considered substantial.

Evaluation of potential noise impacts from project construction and operation included reviewing relevant city and county noise standards and policies, characterizing the existing noise environment throughout the project area, and projecting noise from construction and operation of project facilities. Noise monitoring was conducted at three locations throughout the project area to accurately represent the area's ambient noise environment. Following the characterization of the project area noise environment, published construction-and operation-related noise data was used to determine construction and operational impacts. Impacts were assessed by comparing the published noise levels of construction equipment and operational activities to the ambient noise environment and significance criteria, based on applicable noise regulations.

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies: *less than significant impact with mitigation incorporated*. See discussion under d).

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project: *less than significant impact with mitigation incorporated*.

~~*Proposed Project*~~

Potential noise impacts associated with project construction and operation include noise from construction equipment, corona discharge associated with high-voltage transmission lines, and operation of additional circuit breakers at the substations.

Construction

The project would involve temporary noise sources associated with construction along the transmission line alignment and at the Lakeville and Sonoma Substations. Construction of the transmission line would include installation of new tubular steel poles, installation of wood poles, removal of existing wood poles and conductor, topping of some existing wood poles, excavation for the underground portion of the new line along Leveroni Road from approximately Fifth Street West to the Sonoma Substation, installation / removal of safety structures at road crossings, and stringing of new conductor for the 115 kV circuits. The majority of the transmission line construction activities would take place in open space and agricultural areas and vineyards, though some construction activities would be in and adjacent to residential areas. The entire alignment is expected be constructed over a period of nineteen months while work at each of the substations would take fourteen months.

Construction noise sources are typically regulated on the local level through enforcement of noise ordinances, implementation of general plan policies, and imposition of conditions of approval for permits. Sonoma County does not have any standards in the General Plan or the Municipal Code that addresses construction noise. The City of Sonoma Noise Ordinance requires construction to be limited to the hours of 8:00 a.m. to 7:00 p.m.

Construction of transmission lines and upgrading of substations would require a variety of equipment. During the construction period, noise levels generated by project construction would vary depending on the particular type, number, and duration of use of various pieces of construction equipment. Equipment would not be operated at night except as necessary, such as ~~operation of generators as emergency power back-up contingencies for essential safety purposes~~ when work must be performed during line outages that are only available outside of normal work hours. Typical noise levels for construction equipment at 45 feet (15 yards) from the source are listed in **Table 2.11-3**.

As shown in **Table 2.11-3**, intermittent and continuous use of construction equipment would generate noise levels in excess of 65 dBA in or adjacent to residential areas. The duration of noise impacts would be relatively brief, approximately one to three days at any one location along the construction routes. Given this short duration of impacts at any location, construction noise would not be considered significant by affected

residences if the residents are given advance notice and if construction is limited to daytime hours. Implementation of the Mitigation Measures 2.11-1a and 2.11-1b would ensure that the impact of construction noise would be less than significant.

TABLE 2.11-3
TYPICAL NOISE LEVELS GENERATED BY CONSTRUCTION EQUIPMENT

Equipment	Range of Noise Level (dBA) at 45 feet
Earthmoving	
Front loaders/Excavators	72–84
Backhoes	72–93
Tractors, dozers	76–96
Scrapers/ graders	80–93
Pavers	86–88
Trucks	82–94
Helicopter	110–113
Materials Handling	
Concrete mixers/Millers	75–88
Concrete pumps/Spreaders	81–83
Cranes (movable)	75–86
Cranes (derrick)	86–88
Stationary	
Pumps	69–71
Generators	71–82
Compressors	74–86
Drill rigs	70–85

SOURCE: WIA (1998)

Impact 2.11-1: The project could generate noise levels in excess of local standards during project construction. This would be a less than significant impact with implementation of Mitigation Measures 2.11-1a and 2.11-1b.

Mitigation Measure 2.11-1a: Construction activity shall be limited to the least noise-sensitive daytime hours between 8:00 a.m. and 7:00 p.m., with some exceptions (as approved by the CPUC) as required for safety considerations or certain construction procedures that cannot be interrupted.

Mitigation Measure 2.11-1b: The following noise reduction and suppression techniques shall be employed during project construction to minimize the impact of temporary construction-related noise on nearby sensitive receptors:

- Comply with manufacturers' muffler requirements.

- Notify residences in advance of the construction schedule and how many days they may be affected. Provide a phone number for a construction supervisor who would handle construction noise questions and complaints.
- Minimize idling of engines; turn off engines when not in use, where applicable.
- Shield compressors and other small stationary equipment with portable barriers when within 100 feet of residences.
- Route truck traffic away from noise-sensitive areas where feasible.

Significance after Mitigation: Less than Significant.

Operation

Project operation would include the operation and maintenance of project facilities, including transmission lines and substations. Operation of project facilities would include maintaining voltage across transmission lines and substations, which generate noise associated with corona discharge. In addition, maintenance activities would include the occasional use of light-duty trucks and ATVs to transport maintenance workers to and from the project and the occasional use of landscaping equipment, such as mechanical trimmers, mowers, and chainsaws, for vegetation management along the transmission line route.

Operation of the transmission line would generate random crackling or hissing noise associated with corona discharge, which occurs under high voltages. Corona discharge occurs when the voltage of the line exceeds the insulating capability of air. Corona is higher on misty days because the air has a lower insulating ability when wet. Also, particles such as dust or water droplets that may come in contact with a conductor tend to increase corona discharge. Therefore, the potential for noise from corona discharge is greatest during wet weather. The sound generated by a 115-kV transmission line during adverse weather conditions such as fog or rain is typically between 30 and 40 dBA at 30 yards from the outer conductor. In this case, noise generated from corona activity could be as high as 46 dBA at the closest sensitive receptors (45 feet distance) under adverse weather conditions (WIA, 1998). As operation of the transmission lines would not result in the generation of noise levels above 60 dBA L_{dn} or an increase in existing ambient noise levels of 3 dBA or more at a sensitive receptor, this would constitute a less than significant impact.

Operation of the Lakeville and Sonoma substations would not result in any appreciable increase to the existing average ambient noise levels at either substation site. The operation of additional circuit breakers at each site would result in only momentary noise as they are activated. This momentary noise would not result in a statistical increase to ambient noise levels and would therefore not be a significant impact.

Operation of the underground portion of the transmission line along Leveroni Road would not increase ambient noise levels in the vicinity. Corona noise for the underground transmission line would not be audible.

~~*Mitigation Measure 2.1-1*~~

~~As a result of the Land Use analysis (see Section 2.1), Mitigation Measure 2.1-1 would require the new 115 kV single-circuit transmission line to be undergrounded beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see **Figure 2.1-4**). The underground portion of the transmission line would be about 1/2 mile in length.~~

~~Implementation of Mitigation Measure 2.1-1 would extend the construction schedule by about 2.5 months. Residential uses along Leveroni Road are located just 45 to 50 feet from the transmission line corridor and would experience increased noise due to the extended construction schedule. Several businesses at the intersection of Leveroni Road and Broadway would also experience extended construction noise. This could create a temporary but potentially significant impact to nearby residents and workers. However, implementation of Mitigation Measures 2.11-1a and 2.11-1b would reduce additional noise impacts to a less than significant level. Operation of the underground portion of the transmission line along Leveroni Road would not increase ambient noise levels in the vicinity. Corona noise for the underground transmission line would not be audible.~~

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels: ***less than significant impact.***

~~*Proposed Project*~~

The use of blasting and/or pile drivers would not be included as part of the project. The project would involve temporary sources of groundborne vibration and groundborne noise during construction from operation of heavy equipment. During project construction, operation of heavy equipment would generate localized groundborne vibration and groundborne noise that could be perceptible at residences or other sensitive uses in the immediate vicinity of the construction route. However, since the duration of impact at any one location would be very brief (from one to three days) and since the impact would occur during less sensitive daytime hours, the impact from construction-related groundborne vibration and groundborne noise would not be significant. Implementation of Mitigation Measures 2.11-1a and 2.11-1b would further ensure that this impact would remain less than significant.

~~*Mitigation Measure 2.1-1*~~

~~As stated above, implementation of Mitigation Measure 2.1-1 would extend the construction schedule by about 2.5 months. Residential uses and businesses along Leveroni Road would experience increased noise due to the extended construction schedule. While the construction period for undergrounding this portion of the~~

~~transmission line would be longer than under the Proposed Project, construction would only occur during daytime hours and the 2.5-month construction period would still be relatively short. Implementation of Mitigation Measures 2.11-1a and 2.11-1b would ensure that impacts from construction-related groundborne vibration and groundborne noise would be less than significant.~~

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project: *less than significant impact*.

As discussed in a), above, the only permanent noise source that would be introduced by the project would be the hissing or crackling noise associated with corona discharge during wet weather conditions. However, this increase would not be considered significant, as it would not increase ambient noise levels by 3 dBA or more. Therefore, the long-term impact of the project on ambient noise levels in the project area would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels: *no impact*.

The project does not involve the development of a noise-sensitive land uses, and thus, would not expose people to excessive aircraft noise.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels: *no impact*.

The project does not involve the development of a noise-sensitive land uses, and thus, would not expose people to excessive aircraft noise.

References – Noise

Caltrans, 1998. *Technical Noise Supplement*, 1998.

City of Sonoma Community Development Department, 1995. *City of Sonoma 1995-2005 General Plan*, adopted August 30, 1995.

City of Sonoma, 1986. *City of Sonoma Municipal Code*, Chapter 9.56 “Excessive Noise,” Sections 9.56.011 “Disturbing or Injurious Noise” and 9.56.020, “Penalty for violation,” 1986.

Pacific Gas and Electric Company (PG&E), 2004. *Proponent’s Environmental Assessment, Lakeville-Sonoma 115 kV Transmission Line Project*, November 2004. *Prepared by EDAW*.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

Wilson, Ihrig & Associates, Inc. (WIA), 1998. Northeast San Jose Transmission Reinforcement Project Proponents Environmental Assessment, 1998.

2.12 Population and Housing

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
12.	**POPULATION AND HOUSING— Would the project:**				
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c)	Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

2.12.1 Setting

Population

As of 2000, the U.S. Census Bureau estimated Sonoma County's resident population at 458,614. This figure marked an 18 percent increase in population for Sonoma from 388,222 residents in 1990 (U.S. Census Bureau, 2005). The Association of Bay Area Governments (ABAG) estimates the 2005 population of the County to be approximately 477,700. The projected 2015 population for Sonoma County is estimated at 521,200 (a 9.1 percent increase from 2005) (ABAG, 2004). Population and housing statistics are summarized in **Table 2.12-1**.

TABLE 2.12-1
SONOMA COUNTY POPULATION AND HOUSEHOLDS, 2005–2020

	2005	2010	% Change 2005–2010	2015	% Change 2010–2015	2020	% Change 2015–2020
Population	477,700	508,000	6.3%	521,200	2.6%	534,100	2.5%
Households	182,500	193,160	5.8%	200,430	3.8%	205,840	2.7%

SOURCE: ABAG (2004)

Housing

As of 2005, Sonoma County has approximately 182,500 total housing units with a vacancy rate of less than 6 percent. Of the total housing units, approximately 36 percent of those units are rental units. The projected 2010 household numbers for Sonoma County are estimated to increase by about 5.8 percent to 193,160. Housing units are projected to increase approximately 13 percent from year 2005 to 205,840 by 2020 (ABAG, 2004). Population and housing statistics are summarized in **Table 2.12-1**, above.

2.12.2 Regulatory Context

CEQA Guidelines Section 15126.2 requires a discussion of the ways in which a proposed project could directly or indirectly foster economic development or population growth, and how that growth would, in turn, affect the surrounding environment. The following regulatory context is provided to set forth the planning framework that is anticipated under the General Plans of the cities and counties of Napa and Sonoma. In terms of growth inducement, these agencies would be affected by the Proposed Project since the 115 kV transmission line would improve reliability and transmission capacity in the Napa-Sonoma area.

City of Sonoma

The Community Development Element (Land Use Element) of the City of Sonoma General Plan states that, "Sonoma retains its small town feeling by controlling growth and maintaining a tight sphere of influence." The Community Development Element also identifies buildout capacities which represent the theoretical development capacity of the General Plan (City of Sonoma, 1995). However, the actual rate of growth within the City of Sonoma is controlled by a Growth Management Ordinance, as well as planning and environmental constraints that become known during the planning process. The City's Growth Management Ordinance, adopted in 1980, limits residential development within the City of Sonoma to an average of 100 units per year.

As required by the General Plan, the City of Sonoma has recently conducted a review of the Growth Management Ordinance and has discussed issues and options associated with potential changes to the Ordinance. A revision to the Ordinance adopted by the City Council on October 20, 2004, reduces the maximum annual average of allowed development from 100 units per year to 88 units per year, and also provides additional incentives for affordable housing. The revised ordinance states that "a residential growth level averaging 88 dwelling units per year is consistent with the current and projected availability of water and sewer treatment capacity and will result in a reduction in the environmental impacts caused by increased growth" (City of Sonoma, 2004).

County of Sonoma

Water and sewer capacity are among the constraints that limit growth potential in unincorporated Sonoma County, as evidenced in the goals, objectives, and policies contained in the existing Sonoma County General Plan (Sonoma County PRMD, 1989). The County of Sonoma is also in the process of updating its general plan. The draft General Plan (General Plan 2020) considers water and sewer capacity, as well as other constraints that would limit future growth in unincorporated parts of the County.

City of Napa

The City of Napa General Plan (Envision Napa 2020) establishes a Rural/Urban Limit line (RUL), the City's urban growth boundary established through City and County policy, and voter-approved initiatives. The RUL has remained in place, virtually unchanged, for more than 20 years, and is intended to define the extent of urban development through the year 2020. A theme running throughout the City of Napa General Plan is the need to conserve and enhance the natural resources, both inside and outside the RUL, which define the City of Napa (City of Napa, 1998).

County of Napa

The Napa County General Plan contains a Growth Management System Element, which describes the growth control measures required by Measure A, a Slow Growth Initiative adopted by voters in November 1980. Specifically, the Growth Management System Element describes the 109 dwelling unit annual allocation, the division of the annual allocation into housing type categories, the timing and methods used for issuing building permits, and the required provisions for affordable housing units. One of the land use goals (LU-4.1) contained in the Sonoma County General Plan is to "[m]aintain adequate public services in both rural and urban service areas to accommodate projected growth" (Napa County, 1992).

2.12.3 Population and Housing Impacts and Mitigation Measures

The analysis of the potential impacts to population and housing were derived from the available statistical data published for the area. To determine the significance of the impacts anticipated from the proposed project, the project's effects were evaluated as provided under the CEQA Guidelines. These guidelines are summarized in the checklist provided at the beginning of this section.

CEQA Guidelines Section 15126.2 requires a discussion of the ways in which a proposed project could directly or indirectly foster economic development or population growth, and how that growth would, in turn, affect the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or through the stimulation of economic activity within the region. Induced growth is considered a significant impact only if it directly or indirectly affects the ability of agencies to provide needed public services, if the expected growth inducement directly conflicts with adopted policies limiting growth, or if it can be demonstrated that the potential growth, in some other way, could significantly affect the environment. Under CEQA, induced growth is not considered necessarily detrimental or beneficial.

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure): *less than significant impact.*

Project construction activities are expected to last approximately ~~eighteen~~ nineteen months. During peak construction times, PG&E would employ an average of 38 people (PG&E employees plus contract workers); the project would require about 71 people total. Some need for temporary accommodations could arise at times during construction. This would result in a less than significant impact due to the existence of numerous hotel and motel accommodations within the project area.

No direct growth-inducing impacts would occur because the project would not result in the significant increase of local population or housing, and would not indirectly induce growth by creating new opportunities for local industry or commerce. The project involves construction of a new transmission line, which would have the effect of increasing transmission capacity in the area, which could accommodate additional

economic or population growth. Electric demand in cities of Napa and Sonoma is approximately 200 MW and is expected to grow at or near an annual rate of 2 percent over the next five to ten years. The project is required to meet established North American Electric Reliability Council ("NERC")/Western Electricity coordinating Council ("WECC") Planning Standards beginning in 2006 (CAISO, 2004). Therefore, the project is designed to increase reliability and accommodate existing and planned electrical load growth, rather than to induce or accommodate growth.

Growth in the area is planned and regulated by city and county general plans, which contain land use policies to protect the region's vineyards, open spaces and agricultural traditions, and to control urban development. The project is designed to meet immediate and projected electrical power needs in the Napa-Sonoma service area based on current and projected future demand. Like other utilities and public service providers, PG&E plans and upgrades electrical facilities incrementally based on growth projections provided by local government agencies. These growth projections reflect economic and urban developments that are planned and approved by city and county governments, which have authority over land uses. Local planning policies and zoning regulations have the biggest influence in controlling the pace and ultimate amount of growth in this area. In addition, electricity is not a key factor in land use planning in this area and is not the main obstacle to growth. The availability of electrical capacity by itself does not normally ensure or encourage growth within a particular area. Other factors such as economic conditions, land availability, population trends, water supply availability, sewer capacities, and local planning policies have a more direct effect on growth than the availability of services.

Therefore, the Proposed Project would not induce substantial population growth in the project area and this impact would be less than significant impact.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere: *no impact.*

The proposed transmission line would traverse an existing PG&E transmission line corridor paralleling county and city roads and traveling through open space, vineyards, ranches, and agricultural lands. Construction activities at the substations would occur within the boundaries of each parcel. Therefore, the Proposed Project would not result in the displacement of existing housing.

c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere: *no impact.*

The proposed transmission line would traverse an existing PG&E transmission line corridor paralleling county and city roads and traveling through open space, vineyards, ranches, and agricultural lands. Construction activities at the substations would occur within the boundaries of each parcel. Therefore, the Proposed Project would not result in the displacement of people.

References – Population and Housing

Association of Bay Area Governments (ABAG), 2004. *Projections 2005*, December 2004.

California Independent System Operator (CAISO), 2004. *Memorandum Re: Approval of the Lakeville-Sonoma 115 kV Transmission Line Project*, June 18, 2004.

City of Napa, 1998. *City of Napa General Plan: Envision Napa 2020*, December 1, 1998.

City of Sonoma, 2004. *City Council Agenda Item Summary, Item 6b - Introduction and First Reading of Amendments to the Growth Management Ordinance*, October 6, 2004.

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Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

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2.13 Public Services

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
13. PUBLIC SERVICES—Would the proposed project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i) Fire protection?	☐	☒	☐	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

2.13.1 Setting

The Lakeville Substation and a majority of the proposed transmission line corridor are within Sonoma County's jurisdiction. The Sonoma Substation and the 0.5-mile easternmost segment of the tranmsision line corridor are within the City of Sonoma. Therefore, this section describes the public services and facilities within the City of Sonoma and Sonoma County.

Fire Protection and Emergency Medical Services

City of Sonoma

The Sonoma Fire Department (SFD) provides fire protection and prehospital medical services in the City of Sonoma. SFD's current staffing consists of the fire chief, two assistant chiefs, three captains, eight firefighters/paramedics, one firefighter/emergency medical technicians (EMTs), three paramedics, and three EMTs. The SFD is also staffed with 20 volunteer firefighters and 45 part-time paramedics and EMTs (City of Sonoma, 2005a).

Sonoma County

Sonoma County contracts with various municipal and district fire agencies to provide backup services to volunteer companies (Sonoma County PRMD, 1989). The Sonoma County Fire Services Division coordinates all fire service activities in the unincorporated areas of Sonoma County. The Division responds to emergency incidents as part of the Hazardous Materials Response Team, Fire Investigation Task Force, Emergency Operations Center staff and for fire ground supervision, along with local fire agencies and the State Department of Forestry (Sonoma County, 2005a). The Schellvista Fire District provides fire protection services to the

unincorporated portions of the City of Sonoma planning area that includes the project area. Due to the size of the area and the all-volunteer nature of the Schellvista Fire District, first vehicle response time is usually seven to fifteen minutes (City of Sonoma, 1995). Lakeville Station and Rancho Adobe Station provide fire protection and emergency medical response services to the project area that covers the transmission line alignment (Chase, 2005).

Police Protection

City of Sonoma

The City of Sonoma Police Department provides police protection services in the City of Sonoma that includes the project area (City of Sonoma, 1995). The Sonoma Police Department provides a base staffing level of eleven sworn deputies, including the Chief of Police, two sergeants, and eight officers. Additional support staff includes one secretary and two community service officers (City of Sonoma, 2005b). The closest Sonoma Police Department station to the project area is located at 175 First Street West in the City of Sonoma. The Department provides police services through a contract with the Sonoma County Sherriff's Department; therefore all police dispatches are conducted from the Sonoma County Sherriff's Office in Santa Rosa (Meininger, 2005).

Sonoma County

The Sonoma County Sherriff's Department provides police protection services and is responsible for primary law enforcement services of the unincorporated Sonoma County area. These law enforcement services are provided by approximately 135 deputy sheriffs in the Patrol Bureau, 48 deputies in the Investigations Bureau, and 35 deputies assigned to the Court Security and Transportation Bureaus (Sonoma County, 2005b). The Sonoma Valley Police Substation located at 16715 Sonoma Highway in Sonoma currently provides police services to the project area (Mikan, 2005).

Schools

Sonoma Valley Unified School District provides public school education services in the vicinity of the project area. Nearby schools in the City of Sonoma include Creekside High School located at 950 Broadway (approximately 0.6 miles to the north of the Sonoma Substation), Adele Harrison Middle School located at 1150 Broadway (approximately 0.3 miles to the north of the Sonoma Substation), Prestwood Elementary School located at 343 East MacArthur (approximately 0.6 miles to the northeast of the Sonoma Substation), Sassarini Elementary School located at 652 Fifth Street West (approximately 0.8 miles to the northeast of the Sonoma Substation), and Sonoma Valley High School located at 20000 Broadway (approximately 0.5 miles to the northeast of the Sonoma Substation. Casa Grande and Sonoma Mountain High Schools in the City of Petaluma are located over a mile to the west of the Lakeville Substation.

Parks and Recreation

Parks located in the project area within the City of Sonoma are Hertenstein Park, Carter Park, Nathanson Creek Park / Roland Hauk Nature area, and Madera Park. See Section 2.14, *Recreation*, for additional information.

2.13.2 Regulatory Context

City of Sonoma

The City of Sonoma General Plan Public Safety Element (PSE) (1995) lists the following goals and policies that could be applicable to the Proposed Project.

- Goal PSE-2: Minimize hazards posed by fires, hazardous materials, and medical incidents and maintain a level of protection which safeguards life and property at a reasonable cost.

- Policy 6: The City Fire Department shall review and evaluate all development proposals in terms of adequacy of fire protection using, at a minimum, the following criteria applicable to the proposed project:

  - Acceptable response time;
  - Adequate emergency access, water supply, and fire flow;
  - Proper vegetation clearance and visible addressing.

- Goal PSE-4: Ensure that essential emergency and public services will function effectively in a disaster.

- Policy 16: The City of Sonoma shall use the Standardized Emergency Management System as the basis of its emergency planning (City of Sonoma, 1995).

Sonoma County

The Public Facilities (PF) element in the Sonoma County General Plan (1989) provides the following goals and objectives that could be applicable to public services related to the Proposed Project.

- Goal PF-2: Assure that park and recreation, public education, fire suppression and emergency medical, and solid waste services, and public utility sites are available to the meet future needs of Sonoma County residents.

- Objective PF-2.5: Promote cooperation among fire and emergency service agencies in the area of public education and awareness, especially in those areas isolated from emergency service providers either by distance or topography.

- Objective PF-2.7: Encourage more effective use of existing fire protection services by emphasizing an integrated countywide response system.

- Objective PF-2.8: Continue to coordinate fire protection services and planning with all other related agencies.

- Objective PF-2a: Plan, design, and construct park and recreation, fire and emergency medical, public education, and solid waste services and public utilities in accordance with projected growth.

- Objective PF-2b: Work with the cities to provide park and recreation, public education, fire and emergency medical, and solid waste services, and public utilities.

2.13.3 Public Services Impacts and Mitigation Measures

a.i) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection: *less than significant impact with mitigation incorporated*.

As discussed earlier, Schellvista Fire Station in the City of Sonoma, and Lakeville and Rancho Adobe fire stations in Sonoma County, provide fire and emergency medical services in the project area. The Proposed Project would not result in a substantial adverse impact to the provision of fire and emergency medical services. Increases in demand for fire services are typically associated with substantial increases in population. As further described in Section 2.12, *Population and Housing*, the Proposed Project would require an average of 38 workers, which would not result in a substantial increased demand for fire protection services.

Impact 2.13-1: Fire and emergency medical services could be required in the event of an accident or emergency during project construction or operation. This would be a less than significant impact with implementation of Mitigation Measures 2.13-1a and 2.13-1b.

Construction and operation phases of the Proposed Project could involve emergency situations related to worker injury that would require emergency response services. This would be a significant impact that would be less than significant with implementation of Mitigation Measurse 2.13-1a and 2.13-1b.

> **Mitigation Measure 2.13-1a:** PG&E shall prepare a Health and Safety Plan that would address emergency medical services in the case of an emergency. The manual shall list procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations. PG&E shall prepare this manual and distribute it to all PG&E and contract workers involved in the project prior to construction and operation of the Proposed Project.

Mitigation Measure 2.13-1b: Water tanks shall be sited in the project area that would be available to protect against fire. All vehicles shall carry fire suppression equipment. PG&E shall contact and coordinate with the City of Sonoma and Sonoma County fire departments to determine minimum amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks. PG&E shall submit verification of its consultation with the local fire departments and the CPUC mitigation monitor shall ensure these measures are implemented.

Significance after Mitigation: Less than Significant.

Impact 2.13-2: Project construction and/or operation traffic could affect fire department response times. This would be a less than significant impact with implementation of Mitigation Measure 2.13-2.

Mitigation Measure 2.13-2: PG&E shall coordinate with the City of Sonoma and Sonoma County emergency personnel prior to construction to ensure that construction activities and associated lane closures would not significantly affect emergency response vehicles.

Significant after Mitigation: Less than significant.

The Proposed Project would not result in substantial adverse impacts to fire protection and emergency medical response services.

a.ii) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection: *less than significant impact*.

The Proposed Project would not result in a substantial adverse impact to the provision of police protection services. Increases in demand for police services are typically associated with substantial increases in population. As further described in Section 2.12, *Population and Housing*, the Proposed Project would require an average of 38 workers, which would not result in a substantial increased demand for police protection services. Police stations in the project area include the City of Sonoma police dispatch that is conducted from the Sonoma County Sherriff's Department in Santa Rosa and the County's Sonoma Valley Substation in Sonoma Valley (Meininger, 2005).

The Proposed Project involves a 115 kV transmission line, which can attract vandalism or terrorism activities, that would require police protection or response, requiring additional police protection services. To minimize vandalism and/or terrorism, PG&E has adopted various precautionary measures. All equipment would be locked and secured when left unattended at the most secure locations available. Contract security would be made

available for use at active pull/tension sites, laydown, and storage areas outside work hours. All open holes would be covered and secured once activity at that location stops (after hours). Anchor bolts on foundations without structures would be capped. Safety structures would be placed at road crossings during overhead wire installation activity to protect traffic/pedestrians.

Currently, the Lakeville-Sonoma 115kV Transmission Line is inspected by a Maintenance Troubleman who looks for any vandalism, safety, maintenance or reliability issues along the alignment. The PG&E protection scheme detects disturbances on the line. When a disturbance is detected by the relays, the location of the disturbance is identified by the relays and the Troubleman visits the disturbed area to determine the cause of disturbance. On both tubular steel poles and wood poles the first climbing steps or pegs are located 10 to 12 feet above the ground to prevent unauthorized structure access from the ground. Under the Proposed Project, PG&E would continue to implement this existing protection scheme. Because as part of the Proposed Project, PG&E would incorporate precautionary measures to attempt to prevent vandalism to the transmission line facilities and would continue to employ a Maintenance Troubleman to inspect the facilities, any impacts to police services would be less than significant.

a.iii) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools: *less than significant impact*.

The Proposed Project would not result in substantial adverse impacts to school facilities in the project area. The project would involve an average of 38 employees and would not substantially increase the local population nor would it provide additional housing opportunities. Most of the contractor crews that would be used would most likely already reside in the vicinity of the project area. As a result, there would be no substantial increased demand for additional school facilities and impacts to public school services would be less than significant.

a.iv) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks: *less than significant impact*.

The Proposed Project would not substantially increase population or permanently close or restrict use of parks and impacts to parks would be less than significant. See Section 2.14, *Recreation*, for additional information.

a.v) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered

governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities: *less than significant impact.*

For a discussion of impacts related to road closures and potential impacts to public roadways, see Section 2.15, *Transportation and Traffic*. No other public facilities would be impacted by the construction or operation of the Proposed Project.

References – Public Services

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Sonoma County Department of Emergency Services, 2005a. http://www.sonoma-county.org/des/fire_service.htm, accessed May 19, 2005.

Sonoma County Sherriff's Department, 2005b. http://www.sonomasheriff.org/aboutus_overview.php, accessed May 19, 2005.

2.14 Recreation

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
14.	**RECREATION:**				
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☒	☐	☐
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

2.14.1 Setting

Parks and Recreational Facilities

State

The only state recreational facility in the vicinity of the project area is the Petaluma Adobe State Historical Monument located at the east edge of the city of Petaluma, off Highway 116 and Adobe Road, approximately 1/4mile to the northeast of the Lakeville Substation. The monument contains authentic furniture and exhibits depicting early rancho life and also includes a park with a picnic area.

Sonoma County

There are no public parks located in the immediate vicinity of the Proposed Project that are within the jurisdiction of Sonoma County.

City of Sonoma

There are four neighborhood parks located in the immediate vicinity of the transmission line and Sonoma Substation within the City of Sonoma: Hertenstein Park, Carter Park, Nathanson Creek Park / Roland Hauk Nature Area, and Madera Park.

Hertenstein Park is located approximately 0.5 mile to the north of the transmission line corridor (along Leveroni Road) and is about 0.8 acres in size. Hertenstein Park includes picnicking areas, a children's play area, and a winter creek. An important feature of this park is the Class 1 bikeway connection between the park and the Fryer Creek bike path. Carter Park is located 0.03 miles to the north of the transmission line corridor (along Leveroni Road), is about 1 acre in size, and includes a half basketball court, lawn and picnic areas, and play equipment. Carter Park also includes a bike path which leads to a bridge crossing to the bike path on the west side of Fryer Creek. The Nathanson Creek Park / Roland Hauk Nature Area is located approximately 0.35 miles to the northeast of the Sonoma Substation and includes picnicking areas, a children's playground, and a natural creek area. Nathanson Park is about 0.8 acres and the nature area is

about 2.0 acres. Madera Park is located immediately adjacent to the north of the transmission line corridor on Leveroni Road between Harrington Drive and Fryer Creek Drive. Madera Park is part of about 2.9 acres set aside for open space. Madera Park is oriented toward picnicking and passive recreational activities and also includes a Class 1 bike path on the east side of Fryer Creek, with a bridge crossing to the bike path on the west side of the creek (City of Sonoma, 1995).

Trails

Sonoma County

Highway 116 is a designated state bicycle touring route in Sonoma County. Adobe Road and Highway 116 (from Adobe Road to Arnold Drive) is a designated Class III bikeway (Sonoma County PRMD, 1989).

City of Sonoma

The City of Sonoma has a variety of multi-purpose paths which function as combination bicycle, jogging, par-course, and walking trails. Within the vicinity of the Proposed Project, the City has Class 1 bike paths from Third Street West and Arroyo Way to Leveroni Road (along Fryer Creek), in Hertenstein Park, connecting to the Fryer Creek path, and in Carter Park extending south to Leveroni Road along Fryer Creek.

2.14.2 Regulatory Context

Sonoma County General Plan

The Open Space (OS) Element in the Sonoma County General Plan (1989) provides the following goals and objectives that could be applicable to the Proposed Project:

- Goal OS-7: Establish a countywide park and trail system which meets future recreational needs of the county's residents while protecting agricultural uses. The emphasis of the trail system should be near urban areas and on public lands.

- Objective OS-7.1: Provide for adequate parklands and trails primarily in locations that are convenient to urban areas to meet the outdoor recreation needs of the population, while not affecting agricultural uses.

- Goal OS-8: Establish a Bikeways Network that provides a safe and supportive environment for bicyclists in Sonoma County, recognizing that bicycling is a viable mode of transportation and popular form of recreation.

In addition, the Sonoma County General Plan Public Facilities Element provides a standard of 2.5 acres of parkland per 1,000 persons (Sonoma County PRMD, 1989).

City of Sonoma General Plan

The City of Sonoma General Plan does not contain any recreation policies that would be applicable to the Proposed Project (City of Sonoma, 1995).

2.14.3 Recreation Impacts and Mitigation Measures

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated: *less than significant impact with mitigation incorporated*.

~~*Proposed Project*~~

Increases in demand for recreational facilities are typically associated with substantial increases in population. As further described in Section 2.12, *Population and Housing*, the Proposed Project would require an average of 38 workers, which would not result in a substantial increased demand for recreational facilities or adversely affect City of Sonoma or Sonoma County park/population standards.

Temporary alteration of parks and recreation facilities due to the project would not likely constitute a substantial adverse physical impact to the provision of or need for new or physically altered public parks. However, project construction activities could result in temporary disruptions to existing recreational facilities, including the Madera Park and the Fryer Creek bike path, which cross the transmission line corridor (at Leveroni Road). Nevertheless, implementation of mitigation measures specified below would lessen the potential impacts of temporary alterations to these areas to a less than significant level.

Impact 2.14-1: Construction activities could result in temporary adverse impacts to the Madera Park and the Fryer Creek bike path, which terminates at Leveroni Road. This would be a less than significant impact with implementation of Mitigation Measures 2.14-1a and 2.14-1b.

Mitigation Measure 2.14-1a: Construction activities that occur along Leveroni Road from Harrington Drive to Fryer Creek Drive shall only occur during the weekdays or as otherwise permitted by the City of Sonoma. PG&E and/or its contractor(s) shall ensure that Madera Park and the Fryer Creek bike path are fully accessible during weekends, as well as any holidays observed by the City of Sonoma. PG&E shall prepare a work plan to implement this measure and shall provide the work plan to CPUC staff for approval prior to the start of construction. Compliance with this measure shall be monitored by the CPUC mitigation monitor.

Mitigation Measure 2.14-1b: PG&E shall provide signage that alerts bicyclists to walk their bicycles through the construction area. PG&E shall also provide notices to local residents of any planned disruption to Madera Park and/or the Fryer Creek bike path (properties within 300 feet of Madera Park). The notices and signage shall include the following details:

- Expected dates of Madera Park and/or Fryer Creek bike path disruption.
- Description and map of temporary relocation of park facilities.
- Name and phone numbers of persons to contact at PG&E and the City of Sonoma.

The notices shall be sent to residents and signage posted at least 14 days in advance of any planned construction activities along Leveroni Road between Harrington Road and Fryer Creek Drive. The CPUC mitigation monitor shall verify the posting of signage and notification prior to construction.

Significance after Mitigation: Less than significant.

~~Mitigation Measure 2.1-1~~

~~Implementation of Mitigation Measure 2.1-1 would not result in any additional impacts to recreational facilities as described in Impact 2.14-1, above.~~

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment: *no impact*.

The Proposed Project does not include any plans for the addition of any recreational facilities nor would it require the construction or expansion of recreational facilities. Therefore, the Proposed Project would not result in any adverse physical effects on the environment from construction or expansion of additional recreational facilities.

References – Recreation

City of Sonoma Community Development Department, 1995. *City of Sonoma 1995-2005 General Plan*, adopted August 30, 1995.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

2.15 Transportation and Traffic

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
15.	**TRANSPORTATION / TRAFFIC— Would the project:**				
a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☒	☐
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e)	Result in inadequate emergency access?	☐	☒	☐	☐
f)	Result in inadequate parking capacity?	☐	☐	☒	☐
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☒	☐

Transmission line installation activities would temporarily disrupt transportation and circulation patterns along the project corridor. This ~~Initial Study~~ Mitigated Negative Declaration determined that the Proposed Project would significantly affect roadway segments and intersections on transmission line segments if the construction zone were to reduce the number of travel lanes during peak traffic periods. Potential conflicts along the project corridor could occur between construction traffic and alternative modes of transportation. Temporary effects on the potential for traffic accidents, emergency access, and disruptions to transit service could also occur. A temporary change in air traffic patterns due to helicopter use during construction would also occur. All transportation impacts would be less than significant with implementation of Mitigation Measures 2.15-1a though 2.15-1g and 2.15-2.

~~In addition, the transportation and traffic impacts that could result from implementation of Mitigation Measure 2.1-1 are addressed in this section.~~

2.15.1 Setting

Sonoma County is considered a rural, low-density region. Major trip attractors are dispersed throughout the County and therefore, the dominant mode of transportation is the private automobile (SCTA, 2001). The roadway network that would be affected by the project is located

in southeastern Sonoma County, in and immediately southwest of the City of Sonoma. The transportation system in the project region is composed of an interconnected network of federal, state, county, and city roadways, local transit systems, bicycle facilities, and rail right-of-ways. Major project area roadways are described below.

Roadway Network

Regional access to the project corridor is provided by Interstate 80 (I-80) and U.S. Highway 101 (U.S. 101). I-80 is approximately 25 miles southeast of the project and serves as a major route connecting the southern Sonoma region with the San Francisco Bay Area and the Central Valley. U.S. 101 is approximately 10 miles west and serves as a major route connecting the Sonoma region to the San Francisco Bay Area and the North Coast.

Regional access is also provided by two state highways, namely State Route 12 and State Route 116, each of which would be used to transport construction materials, equipment, and workers to and throughout the project corridor. The project corridor and surrounding roadway network is illustrated in **Figure 1-3**.

State Route 12 (SR 12) is a two-lane highway that passes along the eastern edge of the project area. SR 12 widens to include turning lanes in both directions at its intersection with Watmaugh Road, and widens to four lanes plus turning lanes in both directions at its intersection with Leveroni Road. The current travel pattern within the City of Sonoma is dominated by SR 12, which passes through downtown Sonoma and includes portions of Broadway, West Napa Street, and the Sonoma Highway. Traffic volumes are highest along SR 12 at West Napa Street (from Broadway to the Sonoma Highway), though traffic volumes on SR 12 are generally high along the project corridor as well. At Leveroni Road, southbound SR 12 has an annual average daily traffic (ADT) total of 15,400 vehicles per day (vpd) and a peak month ADT of 16,600 vpd, and northbound SR 12 has an annual ADT of 10,700 vpd and a peak month ADT of 11,700 vpd (Caltrans, 2004).[1]

State Route 116 (SR 116) is a two-lane highway that traverses the southern border of the project area and provides access to the area from areas south of Sonoma and areas southeast of the project site. At Arnold Drive, westbound SR 116 has an annual ADT of 15,400 vpd and a peak month ADT of 17,000 vpd and eastbound SR 116 has an annual ADT of 17,800 vpd and a peak month ADT of 18,900 vpd (Caltrans, 2004).

The local and county roadways that border, cross, or may be used to access the proposed transmission route are described below. Some would be affected by a single transverse crossing, generally between intersections, while others would be used for access throughout project construction.

[1] The peak-month daily traffic volume represents average conditions for the month of heaviest traffic flow; the Caltrans publication does not identify the specific month in which these higher traffic volumes occur. Likewise, Caltrans does not identify the specific hour in which the “peak hour” traffic volumes occur, but typically the peak-hour traffic volume occurs during the afternoon commute period.

Adobe Road is a two-lane roadway with shoulders. There are turning and acceleration lanes at the intersections. It receives high commuter traffic during the a.m. and p.m. peak hours.

Arnold Drive is a two-lane roadway with shoulders. There are turning and acceleration lanes at the intersections. It receives high commuter traffic during the a.m. and p.m. peak hours.

Felder Road is a two-lane roadway with discontinuous narrow shoulders. Within the project corridor, there is vertical and horizontal curvature in the road and trees along the roadway corridor.

Frates Road is a two-lane roadway with shoulders. There are turning and acceleration lanes at the intersections. It receives high commuter traffic during the a.m. and p.m. peak hours.

Leveroni Road is a two-lane roadway with discontinuous narrow shoulders. There are turning and acceleration lanes at major intersections and trees line the road.

Napa Road is a two-lane roadway with shoulders. There are turning and acceleration lanes at its intersection with SR 12. Napa Road becomes Leveroni Road in the project area.

Public Transit

Sonoma County Transit and Golden Gate Transit provide fixed-route service within Sonoma County. The project area is served by several Sonoma County Transit bus routes which provide service throughout the City of Sonoma, and between the City of Sonoma and the surrounding cities (SCTA, 2001).

In addition to fixed-route transit services, four paratransit services operate within Sonoma County. Three of the paratransit services (Sonoma County Paratransit, Petaluma People Services, and Whistlestop Wheels) provide service in the project area. Paratransit services operate on demand and provide curb-to-curb transportation for individuals with disabilities (SCTA, 2001).

Bicycle and Pedestrian Transportation

Bicycle facilities include bike paths, bike lanes, and bike routes. Bike paths are paved trails that are separated from the roadways. Bike lanes are lanes on roadways that are designated for use by bicycles by striping, pavement legends, and signs. Bike routes are roadways that are designated for bicycle use with signs, but no separate lane width. Within the vicinity of the project site, there are bike lanes on Arnold Drive north of the project corridor (SCTA, 2001).

The Countywide Bicycle Advisory Committee (CBAC) and Sonoma Bicycle Advisory Committee (SBAC) support bicycle- and pedestrian-related development in the project area and surrounding vicinity. The Sonoma County Transit Authority's (SCTA) *Comprehensive Transportation Plan* indicates that bike lanes are planned on Arnold Drive (from Country Club Drive to Petaluma Avenue) and on Leveroni Road (from Arnold Drive to Highway 12) (SCTA, 2004).

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. The project corridor currently contains pedestrian facilities within the City of Sonoma on Leveroni Road between Fifth Street West and Broadway.

2.15.2 Regulatory Context

The development and regulation of the project area transportation network primarily involves state and local jurisdictions. All roads within the project area are under the jurisdiction of state and local agencies. State jurisdiction includes permitting and regulation of the use of state roads, while local jurisdiction includes implementation of state permitting, policies, and regulations, as well as management and regulation of local roads. Project construction work would require encroachment permits prior to construction from all jurisdictions that manage or maintain roadways. Applicable state and local laws and regulations related to traffic and transportation issues are discussed below.

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. The project area includes two roadways that fall under Caltrans' jurisdiction (i.e., SR 12 and SR 116).

Caltrans' construction practices require temporary traffic control planning "during any time the normal function of a roadway is suspended" (FHA, 2003). In addition, Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance. Caltrans regulations would apply to project construction that would include installation of transmission poles immediately adjacent to roadways, as well as the transportation of construction crews and transmission equipment throughout the project area.

Sonoma County

Several of the roads that parallel or cross the transmission route are under the jurisdiction of Sonoma County. County policies and regulations regarding the design, use, or obstruction of roadways are detailed in the Sonoma County General Plan Circulation and Transit Element (Sonoma County PRMD, 1989). The majority of these goals and policy guidelines in the Circulation and Transit Element pertain to the development and planning of roadways and transit systems and therefore are not relevant to the Proposed Project.

The *2001 Countywide Transportation Plan* for Sonoma County provides further guidance for transportation planning and associated goals and policies (SCTA, 2001). This plan is currently being updated and is available in draft form. This plan, again, focuses on the design and implementation of improvements to the county circulation system, including roadways, bikeways, and rail service. The plan does not include policies relevant to the Proposed Project.

City of Sonoma

The City of Sonoma General Plan Circulation Element promotes alternative modes of transportation, roadway improvements, and traffic improvements throughout the planning area (City of Sonoma, 1995). As the plan focuses on the design and implementation of circulation system improvements, policies in this element do not directly relate to the Proposed Project.

In addition, Chapter 10.08 of the City of Sonoma Municipal Code details the City's regulations regarding the use of roads and the construction of utilities infrastructure, including encroachments. Numerous regulations are applicable to the proposed construction, including regulations regarding the use of roadways, the type of vehicles and load sizes allowable on given roadways, encroachment on private property, and the construction of utilities infrastructure (City of Sonoma, 2002). The municipal code applies to all roads within the City's jurisdiction, and project construction must adhere to all ministerial regulations presented in the Municipal Code.

California Joint Utility Traffic Control Committee

PG&E is a member of the California Joint Utility Traffic Control Committee, which in 1996 published the Work Area Protection and Traffic Control Manual (CJUTCC, 1996). The traffic control plans and associated text depicted in this manual conform to the guidelines established by the federal manual regarding basic standards for the safe movement of traffic upon highways and streets in accordance with Section 21400 of the California Vehicle Code (DMV, 2005). These recommendations include provisions for safe access of police, fire, and other rescue vehicles. In addition, the document requires a utility to apply for an Excavation Permit and a Special Traffic Permit from the applicable jurisdiction, as well as submit a Traffic Management Plan subject to agency review and approval.

2.15.3 Transportation and Traffic Impacts and Mitigation Measures

According to the CEQA *Guidelines*, a project would normally result in an impact to transportation and traffic if it would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. Occasional post-construction maintenance activities would briefly affect only local segments. Therefore, these impacts would be less than significant.

The duration of potentially significant impacts, related to short-term disruption of traffic flow and increased congestion generated by construction vehicles and/or loss of a travel lane to accommodate the construction work zone, would be limited to the period of time needed to complete construction of the project components. Therefore, mitigation measures identified below focus on reducing the short-term project construction effects; long-term mitigation measures are not needed.

This analysis relies upon available information and field reconnaissance of roadway characteristics (e.g., pavement widths and existence of on-street parking). Impacts to traffic and circulation that would result from increases in traffic volumes, loss of travel lanes and/or parking

areas, and potential safety effects associated with construction were evaluated. Construction characteristics, including proposed manpower and equipment, location of construction, and rate of construction were used to conservatively determine the potential number of vehicles that could be required for the proposed project.

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections): *less than significant impact with incorporated mitigation*. See discussion under b).

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways: *less than significant impact with incorporated mitigation*.

The Proposed Project would not introduce any new uses to the project corridor that would generate long-term changes in traffic. Thus potential traffic and transportation effects would be confined to construction of the transmission line.

Traffic-generating construction activities related to construction or modification of the new tubular steel and wood poles, the installation of the new transmission line, and the upgrade of the Lakeville and Sonoma Substations, would consist of the daily arrival and departure of constructions workers, trucks hauling equipment and materials to the construction site, and the hauling of excavated soils from, and importing of new fill to, each pole site. Approximately half of the poles would be located adjacent to Frates Road, Adobe Road, Felder Road and Leveroni Road. An estimated average of 38 workers per day would be used for the construction crew; however, up to 71 employees may be used during peak construction periods. Construction equipment used for the Proposed Project would include concrete trucks, and periodic delivery of poles, conductor spools, hardware and equipment, and a helicopter. Construction would include the transportation of oversize loads, such as pole trucks.

The proposed alignment would follow within and/or across several roadway rights-of-way. The placement of the transmission line on poles adjacent to the roadway would temporarily disrupt existing transportation and circulation patterns in the vicinity. Impacts would include direct disruption of traffic flows and street operations. Lane blockages during installation would result in a reduction in travel lanes. Installation work within and/or across high traffic volume regional arterials would notably affect traffic flow and operations at these locations.

Prior to transmission line construction, two staging areas would be prepared for materials delivery, storage, and preparation prior to construction. One staging area would be located off Adobe Road near the Lakeville substation, and the other would be near the Sonoma substation. The sites would also be used as helicopter landing areas. The

construction of the staging area would increase construction worker and truck trips along regional arterials near the staging areas.

Helicopter traffic to and from the staging areas may cause temporary distractions for drivers. Some of the helicopter landing areas are near roads (e.g., Adobe and Leveroni Roads), and traffic would be stopped when a loaded helicopter is within a specified distance of a roadway, which would cause traffic disruptions. To minimize impacts to less than significant, helicopter work would be performed according to the FAA Lift Plan (see Mitigation Measure 2.15-2).

Installation of transmission lines (conductors) would include installation of new conductors. Prior to stringing conductors, temporary clearance structures would be installed at 11 road crossings and other locations where the new conductors could accidentally come into contact with electrical or communication facilities, other transmission lines, and/or vehicular traffic during installation. The temporary clearance structures consist of a wood pole with a frame at the top that resembles a “Y” placed on each side of the road or transmission line being crossed; installation and removal of clearance structures is similar to that of wood poles, although less excavation is required and no foundation is required. The clearance structures would prevent the conductor from being lowered or falling into traffic or onto another transmission line.

Pole line construction includes several elements that have different crew requirements. The pole line crew is made up of the wood pole replacement crew, conductor installation crew, tubular steel pole foundation work crew, tubular steel pole crew, and the installation work crew. The wood pole replacement crew is estimated to consist of six members who would frame and prepare the site (generally working Monday through Thursday), and an additional three crews (roughly 24 people) would be needed for one day to replace four poles following site preparation (typically a Friday). The wood pole replacement is expected to take four weeks.

The conductor installation would require a line crew of about 16 people over a six-month period. A helicopter crew (three people) would be required to install the new circuit wire (approximately ten days).

A crew of six would establish the tubular steel pole foundation and would perform the work in two days. For more difficult foundations, due to accessibility issues, an additional crew of six and a two-person helicopter crew would be used. The foundation would take place over a five to six-month period. The installation of the tubular steel poles would require a six member tower crew and a three member contract crane crew over a two week period. The transferring and setting of the wires would require a crew of 15 to 20 people.

Based on the estimated average crew sizes and the staggering of the work schedule, construction worker trips traveling to and from the work site are not anticipated to exceed an average of 48 round trips (96 one-way trips) per day. However, construction crew trips

would reach an estimated 90 round trips (180 one-way trips) per day during peak construction periods.[2] Accounting for the delivery of construction components (which would be shipped on demand to the project site and the staging areas throughout the construction period) the peak number of off-site construction truck trips would be approximately 10 round trips (20 one-way trips) per work day.

If the construction zone were to reduce the number of travel lanes during peak traffic periods, the Proposed Project would significantly affect roadway segments and intersections on all segments adjacent to or in the roadway by causing either roadway or intersection levels of service to be unacceptable. The decrease in traffic volumes outside the peak periods typically, but not universally, is sufficient to allow the reduced number of travel lanes to accommodate the traffic flow without significant delays. Delays also would be experienced by drivers during off-peak hours, but because of the lower volume, fewer people would be affected by the delays during those periods.

Construction as planned would occur over a period of approximately 19 months during which temporary lane closures (for varying durations at different locations) would occur along the project corridor. Project construction would include temporary closure of one lane of traffic on Adobe Road, Leveroni Road, and Frates Road (Frates Road may be wide enough to place cones to create a three-lane pattern with the north shoulder and westbound lane closed). Lane closures would occur when poles along Frates Road and Adobe Road are being “topped” (tops cut off and only distribution lines remain). Installation of new poles along Leveroni Road would also require the temporary closure of one lane of traffic.

Substation modifications at Lakeville and Sonoma Substations would generate both construction worker and truck delivery trips. The estimated average crew size of nine at each substation is not anticipated to exceed 14 round trips (28 one-way trips) from construction workers traveling to and from each work site on an average day. Accounting for the delivery of construction components (which would be shipped on demand to the project site throughout the construction period), the total number of off-site construction truck trips would be approximately 10 round trips (20 one-way trips) per work day.

Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or level of service on any project roadways. The primary impacts from the movement of construction trucks would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles.

Proposed hours of construction are Monday through Friday, 7:00 a.m. to 5:00 p.m. for most segments adjacent to or in the road right-of-way. Most project-related hauling and deliveries would be dispersed throughout the day, thus lessening the effect on peak-hour traffic. Project truck traffic occurring weekdays during the hours of 7:00 to 9:00 a.m. and

[2] It should be noted that not all of these trips would be traveling to/from the same construction site because the Proposed Project is made up of several construction elements.

4:00 to 6:00 p.m. would coincide with peak-period traffic, and therefore, would have the greatest potential to impede traffic flow. However, the deliveries would be requested between the hours of 9:00 a.m. and 3:00 p.m. when the contractor would be ready to receive them.

As discussed above, project construction activities could generate up to 90 off-site construction worker vehicle round trips (180 one-way trips) and 10 off-site truck round trips (20 one-way trips) per day. Because not all construction-related trips would be assigned to the same construction location (i.e., crews would be assigned to different substations and pole alignment sections) and because the construction schedule is staggered, these project-generated trips would not be substantial relative to existing volumes on roadways in the affected areas, and would fall within the daily fluctuations of traffic volumes for these roadways. Therefore, this short-term increase in vehicle trips would not significantly affect level of service and traffic flow on roadways.

The undergrounding of the transmission line on Leveroni Road between the eastern edge of Sonoma Creek to the Sonoma Substation would include about 1/2 mile of transmission line to be installed in the public roadway. Undergrounding of the transmission line would generate daily construction trips from both crew workers and construction trucks.

The trench size for open-cut installation within paved roadways would be approximately two feet wide by up to ten feet deep with active work areas of about four feet on one side of the trench and 10 to 12 feet on the other side for access by trucks and loaders. The construction easement would allow only enough right-of-way for one-way alternate-flow traffic on Leveroni Road. It is expected that open trench construction within paved roadways would be completed in a three-month period.

It is estimated that 2,266 cubic yards (CY) of soil would be excavated along the section. It is estimated that with an average haul load of 10 CY per truck, the project would generate 10 to 20 truck haul round trips (20 to 40 one-way trips) per work day. Accounting for the delivery of construction components (which would be shipped on demand to the project site throughout the construction period), the total number of off-site construction truck trips would be approximately 10 round trips (20 one-way trips) per work day.

The project would significantly affect roadway segments and intersections on Leveroni Road if the construction zone were to reduce the number of travel lanes during peak traffic periods. The impacts during peak traffic periods would be significant because they would result in either roadway or intersection levels of service that would be unacceptable. The decrease in traffic volumes outside the peak periods typically, but not universally, is sufficient to allow the reduced number of travel lanes to accommodate the traffic flow without significant delays. Delays also would be experienced by drivers during off-peak hours, but because of the lower volume, fewer people would be affected by the delays during those periods.

Once constructed, the transmission line and substations would require routine maintenance trips, inspection, and vegetation management activities. Vegetation management in the right-of-way could include control of noxious weeds and trimming of shrubs or trees for safety upkeep and would be limited to seasonal and yearly traffic. Maintenance activities would not increase above existing levels that are employed to maintain the existing transmission line and therefore, would not result in an increase in traffic in the project area.

As specified under Mitigation Measure 2.15-1a, PG&E shall obtain all necessary local road encroachment permits prior to construction and would comply with all the applicable conditions of approval. In addition, Mitigation Measure 2.15-1b requires the contractor to prepare a traffic management plan in accordance with professional engineering standards prior to construction. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measures 2.15-1b through 2.15-1g. Implementation of Mitigation Measures 2.15-1a through 2.15-1g would ensure that potential impacts associated with temporary lane closures, and increases in construction traffic, would be less than significant.

Impact 2.15-1: Project construction activities could adversely affect traffic and transportation conditions in the project area. This would be a less than significant impact with implementation of Mitigation Measures 2.15-1a through 2.15-g.

Mitigation Measure 2.15-1a: PG&E shall obtain and comply with local road encroachment permits for roads that are affected by construction activities (i.e., Frates Road, Felder Road, and Leveroni Road).

The California Joint Utility Traffic Control Committee (of which PG&E is a member) published the Work Area Protection and Traffic Control Manual, which includes requirements to ensure safe maintenance of traffic flow through or around the construction work zone, and safe access of police, fire, and other rescue vehicles. In addition, the Traffic Management Plan (subject to local jurisdiction review and approval) required by Mitigation Measure 2.15-1b would direct how traffic flow is safely maintained during project construction.

Mitigation Measure 2.15-1b: PG&E shall prepare and implement a Traffic Management Plan subject to approval by the appropriate local jurisdiction (i.e., Sonoma County or City of Sonoma) prior to construction. The plan shall:

- Include a discussion of work hours, haul routes, limits on the length of open trench, work area delineation, traffic control and flagging;
- Identify all access and parking restriction and signage requirements;
- Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e.,

which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints;

- Include a plan to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers would be notified of the timing, location, and duration of construction activities. All roads would remain passable to emergency service vehicles at all times;

- Include the requirement that all open trenches be covered with metal plates at the end of each workday to accommodate traffic and access; and

- Specify the street restoration requirements pursuant to PG&E's franchise agreements with the local jurisdictions.

Mitigation Measure 2.15-1c: PG&E shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) would be used to minimize impacts to traffic flow.

Mitigation Measure 2.15-1d: PG&E shall develop circulation and detour plans to minimize impact to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.

Mitigation Measure 2.15-1e: PG&E shall encourage construction crews to park at substations to limit lane closures in the public right-of-way.

Mitigation Measure 2.15-1f: PG&E shall coordinate with Caltrans, Sonoma County, City of Sonoma, and any other appropriate entity, regarding measures to minimize the cumulative effect of simultaneous construction activities in overlapping areas.

Mitigation Measure 2.15-1g: PG&E shall consult with Sonoma County Transit at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.

Significance after Mitigation: Less than significant.

~~*Mitigation Measure 2.1-1*~~

~~The undergrounding of the transmission line on Leveroni Road between the eastern edge of Sonoma Creek to the Sonoma Substation, as stated in Mitigation Measure 2.1-1, would include about 1/2 mile of transmission line to be installed in the public roadway. Undergrounding of the transmission line would generate daily construction trips from both crew workers and construction trucks and would cause delays due to construction activities in the roadway.~~

~~The trench size for open-cut installation within paved roadways would be approximately two feet wide by five feet deep with active work areas of about four feet on one side of the trench and 10 to 12 feet on the other side for access by trucks and loaders. The~~

~~construction easement would allow only enough right-of-way for one-way alternate-flow traffic on Leveroni Road. It is expected that open trench construction within paved roadways would be completed in a three-month period.~~

~~It is estimated that 1,133 cubic yards of soil would be excavated along the section. It is estimated that with an average haul load of a 10 CY per truck, the project would generate a peak of 10 truck haul round trips (20 one-way trips) per work day. Accounting for the delivery of construction components (which would be shipped on demand to the project site throughout the construction period), the total number of off-site construction truck trips would be approximately 10 round trips (20 one-way trips) per work day.~~

~~The project would significantly affect roadway segments and intersections on Leveroni Road if the construction zone were to reduce the number of travel lanes during peak traffic periods. The impacts during peak traffic periods would be significant because they would result in either roadway or intersection levels of service that would be unacceptable. The decrease in traffic volumes outside the peak periods typically, but not universally, is sufficient to allow the reduced number of travel lanes to accommodate the traffic flow without significant delays. Delays also would be experienced by drivers during off-peak hours, but because of the lower volume, fewer people would be affected by the delays during those periods.~~

~~As specified under Mitigation Measure 2.15-1a, PG&E shall obtain all necessary local road encroachment permits prior to construction and would comply with all the applicable conditions of approval. In addition, Mitigation Measure 2.15-1b requires the contractor to prepare a traffic management plan in accordance with professional engineering standards prior to construction. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measures 2.15-1b though 2.15-1g. Implementation of Mitigation Measures 2.15-1a though 2.15-1g would ensure potential impacts associated with temporary increases in construction traffic and construction within the Leveroni Road right-of-way would be mitigated to a less than significant level.~~

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c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks: *less than significant impact with incorporated mitigation*.

~~Although there are no airports within two miles of the project,~~ The Petaluma Municipal Airport, located near the intersection of East Washington Street and Adobe Road, is within two miles of the Lakeville Substation, and helicopters would be used during the construction of the transmission line. Large helicopters (“skycranes”) would be used for the installation of some new poles. Small helicopters would be used for conductor removal and installation, as well as material, equipment and personnel transportation. A

helicopter would be used for poles at the substations and to install Poles 14, 26, 33-39, 41-49, 51, 53, 56, 58, ~~59~~ and ~~63~~ 64-~~66~~.

The Federal Aviation Administration (FAA) requires a Lift Plan for use of helicopters in populated areas. The Lift Plan includes identification of helicopter staging areas and flight paths with the least potential to affect populated areas within the distances specific by FAA. At elevations where damage from downdraft can occur, FAA regulations require that a skycrane cannot fly within 150 feet laterally of an occupied structure, including homes, buildings, and roads. A loaded skycrane (i.e., one carrying equipment or material) cannot fly within 300 feet laterally of an occupied structure. Structures are required to be unoccupied if the required distances cannot be maintained during the flight.

Impact 2.15-2: Operation of the "skycrane" helicopters could result in exposure of structures or persons to risk. This would be a less than significant impact with implementation of Mitigation Measure 2.15-2.

> **Mitigation Measure 2.15-2:** PG&E shall prepare and comply with a Lift Plan approved by the FAA prior to all "skycrane" construction helicopter operations. The need for short-term road closures, if any, shall be identified in the Lift Plan and shall be coordinated with the appropriate jurisdictions as described in Mitigation Measures 2.15-1a through 2.15-1g. The Lift Plan shall also discuss the potential to adversely affect to nearby residents.

Significance after Mitigation: Less than significant.

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d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment): *less than significant impact with incorporated mitigation*.

The project would not change the configuration (alignment) of area roadways, and would not introduce types of vehicles that are not already traveling on area roads. However, heavy equipment operating adjacent to or within a road right-of-way could increase the risk of accidents. Construction-generated trucks on project area roadways would interact with other vehicles. Potential conflicts also could occur between construction traffic and alternative modes of transportation (e.g., bicyclists and buses).

Impact 2.15-3: Project construction activities could increase potential traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways. This would be a less than significant impact with implementation of Mitigation Measures 2.15-1b through 2.15-1g.

> **Mitigation Measure 2.15-3**: Implement Mitigation Measure 2.15-1b through 2.15-1g.

Implementation of Mitigation Measure 2.15-1b requires the contractor (PG&E) to prepare a traffic management plan in accordance with professional engineering standards prior to construction, including compliance with roadside safety protocols, so as to reduce the risk of accidents. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measures 2.15-1b through 2.15-1g. Thus, implementation of Mitigation Measures 2.15-1b through 2.15-1g would ensure temporary increases in the potential for accidents would be mitigated to a less than significant level.

Significance after Mitigation: Less than significant.

e) Result in inadequate emergency access: *less than significant impact with incorporated mitigation*.

The Proposed Project would have temporary effects on traffic flow, particularly with routes within road rights of way. Transmission line pole installation within or across streets and temporary reduction in travel lanes could result in delays for emergency vehicle access in the vicinity of the work site.

Impact 2.15-4: Project construction activities could result in delays for emergency vehicles on project area roadways. This would be a less than significant impact with implementation of Mitigation Measure 2.15-1b.

Mitigation Measure 2.15-4: Implement Mitigation Measure 2.15-1b.

Implementation of Mitigation Measure 2.15-1b would require the construction contractor to establish methods for maintaining traffic flow in and along the project corridor and minimizing disruption to emergency vehicle access to land uses along the alignment, especially along Frates, Adobe, and Leveroni Roads, which are major thoroughfares. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measure 2.15-1b. Implementation of Mitigation Measure 2.15-1b would ensure potential impacts associated with temporary effects on emergency access would be mitigated to a less than significant level.

Significance after Mitigation: Less than significant.

f) Result in inadequate parking capacity: *less than significant impact with incorporated mitigation*.

The Proposed Project would create limited new, temporary parking demand for construction workers and construction vehicles as the crew moves along the installation alignment. The project would not generate a substantial number of construction workers along the alignment at any one location; therefore, the number of parking spaces required would not be substantial. Parking is not allowed on roadways in the project corridor; therefore, construction along the alignment would not displace on-street parking. Although some construction workers would park at a substation or staging area, some

would park near that day's construction site and would require additional construction zone to accommodate parking needs. Nonetheless, given the proposed rate of transmission line installation, impacts would be relatively brief at any one location along the alignment. Construction workers for the upgrades at the Lakeville and Sonoma Substation would park on-site.

Impact 2.15-5: Project construction activities could generate a demand for on-street parking spaces to accommodate construction worker vehicles on project area roadways. This would be a less than significant impact with implementation of Mitigation Measure 2.15-1e.

Mitigation Measure 2.15-5: Implement Mitigation Measure 2.15-1e.

Implementation of Mitigation Measure 2.15-1e would require the construction contractor to encourage construction crews to park at substations to limit lane closures in the public right-of-way, thus minimizing construction effects from on-street parking on area roadways. Implementation of Mitigation Measure 2.15-1e would ensure potential impacts associated with the temporary loss of roadway width because of parking in the roadway right-of-way would be mitigated to a less than significant level.

Significance after Mitigation: Less than significant.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks): *less than significant impact with incorporated mitigation*.

The Proposed Project would have no long-term impact on demand for alternative transportation or on alternative transportation facilities. However, transmission line installation could disrupt access to bus stops and slow bus movements for Route 40 operated by Sonoma County Transit. Route 40, which provides service between the Petaluma Depot and Sonoma Plaza, operates on Frates Road, Adobe Road, Leveroni Road and Fifth Street West.

Impact 2.15-6: Project construction activities could cause disruptions to transit service on project area roadways. This would be a less than significant impact with implementation of Mitigation Measure 2.15-1g.

Mitigation Measure 2.15-6: Implement Mitigation Measure 2.15-1g.

Implementation of Mitigation Measure 2.15-1g would require the construction contractor to establish methods for minimizing construction effects on transit service. Specific requirements that may be included in the traffic management plan are identified under Mitigation Measure 2.15-1g. Implementation of Mitigation Measure 2.15-1g would ensure potential impacts associated with temporary disruptions to transit service would be mitigated to a less than significant level.

Significance after Mitigation: Less than significant.

References – Transportation and Traffic

California Department of Motor Vehicles (DMV), 2005, Communications and Programs Division *California Vehicle Code*, January 2005.

California Department of Transportation (Caltrans), 2004. *Construction Manual*, last revised December 2004.

California Department of Transportation (Caltrans), Traffic and Vehicle Data Systems Unit, Traffic Operations Division, 2003. *Traffic Volumes*, 2003.

California Joint Utility Traffic Control Committee (CJUTCC), 1996. *Work Area Protection and Traffic Control Manual*, April 1996.

City of Sonoma Community Development Department, 1995. *City of Sonoma 1995–2005 General Plan*, adopted August 30, 1995.

City of Sonoma, 2002. *Sonoma Municipal Code*, 2002.

Federal Highway Administration (FHA), 2003. *Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways*, U.S. Department of Transportation, Office of Highway Safety, November 2003.

Sonoma County Transportation Authority (SCTA) 2004. *Comprehensive Transportation Plan*, 2004.

SCTA, 2001. *Countywide Transportation Plan of Sonoma County*. 2003.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *Sonoma County General Plan*, adopted March 23, 1989.

2.16 Utilities and Service Systems

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
16.	**UTILITIES AND SERVICES SYSTEMS— Would the project:**				
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐
h)	Contact and/or disturb underground utility lines and/or facilities during construction activities?	☐	☒	☐	☐

2.16.1 Setting

The substations and the transmission line corridor parallel numerous public utility and service systems, including water lines, sewer lines, electric lines, natural gas lines, and telecommunications lines. A variety of entities operate these systems and provide services to residents and businesses in the vicinity of the project area.

Water Service

Water service in Sonoma County is provided by the Sonoma County Water Agency (SCWA), which serves over 570,000 residents in Sonoma and Marin counties. SCWA's customers include eight cities and special districts in Sonoma and northern Marin Counties including the Valley of the Moon Water District (VMWD), which serves the Lakeville Substation and the City of Sonoma, which serves the Sonoma Substation (SCWA, 2005).

The VMWD serves a total area of approximately 7,200 acres and currently serves a population of about 23,000 persons with approximately 6,700 total accounts. Almost 90 percent of the water is purchased from the Sonoma County Water Agency via their Russian River facilities. The remaining water is produced from municipal wells used primarily in the summer months to supplement the purchased water during peak use periods (VMWD, 2005).

The City of Sonoma Public Works division is responsible for administering the City's public works program including the provision of domestic water service to its residents and businesses (City of Sonoma, 2005).

Sanitary Sewer Service

The SCWA is responsible for the management of Sonoma County's 11 sanitation zones and districts, which provide wastewater treatment, reclamation, and disposal for approximately 22,000 residences and businesses. The project area is within the Sonoma Valley County Sanitation District, which began operation in 1977 and serves an area of approximately 4,500 acres. The Sonoma Valley treatment plant is a secondary treatment plant with a design capacity of 10.5 million gallons per day (average daily dry weather flow) (SCWA, 2005).

Electric and Natural Gas Service

PG&E provides electric and natural gas service to residents and businesses in the city of Sonoma and unincorporated Sonoma County.

Cable and Telephone Service

Comcast provides cable service to residents and businesses in Sonoma County. SBC provides telephone service and access to local and long distance carriers to the project area.

Solid Waste and Recycling Service

Various entities have jurisdictional responsibility for solid waste management in Sonoma County. The Sonoma County Waste Management Agency (SCWMA), formed by a Joint Powers Agreement among the County and the Cities, provides public information and education programs, diversion programs, implement regional composting, and countywide household hazardous waste programs.

Sonoma Garbage Collector provides solid waste collection services to the City of Sonoma and service is provided to the unincorporated potions of the project area by Larry's Sanitary Service and Empire Waste Management.

There are currently two permitted disposal sites (Central Landfill and Santa Rosa Geothermal WMU Disposal Site) and six permitted transfer stations (Occidental Transfer Station, West College Transfer Station, Guerneville Transfer Station, Sonoma Transfer Station, Healdsburg Transfer Station, and Annapolis Transfer Station) operating in Sonoma County.

The project area is served by the Central Landfill and the Sonoma Transfer Station. The Central Landfill is located at 500 Mecham Road in Petaluma and has a permitted area of 398.5 acres. The Landfill is permitted to accept 2,500 tons per day and currently has an average daily loading of about 1,461 tons per day. The Sonoma Transfer Station is located at 4376 Stage Gulch Road in Sonoma and has a permitted area of 4.96 acres. Permitted daily capacity at the Sonoma Transfer Station is 760 tons per day; average daily loading is approximately 247 tons per day currently (SCWMA, 2003).

2.16.2 Regulatory Context

State

Assembly Bill 939

Assembly Bill 939 (AB 939), enacted in 1989, required each city and/or county's Source Reduction and Recycling Element to include an implementation schedule for the following: a 25 percent diversion of all solid waste from landfill disposal or transformation by January 1, 1995, through source reduction, recycling, and composting activities, followed by a 50 percent reduction to the waste stream by January 1, 2000. The Sonoma County Waste Management Agency, which includes the City of Sonoma and Sonoma County, currently has a diversion rate of about 35 percent (CIWMB, 2005).

Local

Sonoma County General Plan

The Sonoma County General Plan contains the following goals, objectives, and policies that could be applicable to the Proposed Project:

- Policy PF-1a: Plan, design and construct sewer and water services in accordance with projected growth…
- Policy PF-1f: Use water effectively and reduce water and wastewater system demand…
- Objective PF-2.9: Use the County Integrated Waste Management Plan as the policy document for solid waste management in the county.
- Objective PF-2.10: Locate and design public utility transmission, distribution, and maintenance facilities to minimize adverse effects on natural and scenic resources. (Sonoma County PRMD, 1989)

City of Sonoma General Plan

The City of Sonoma General Plan does not contain any applicable utilities and service systems policies.

Sonoma County Countywide Integrated Waste Management Plan

In accordance with AB 939, the SCWMA has prepared the Sonoma County Countywide Integrated Waste Management Plan to demonstrate reduction of the amount of solid waste disposed of in landfills, long-term ability to ensure the implementation of countywide diversion programs, and provision of adequate disposal capacity for local jurisdictions through the siting of disposal and transformation facilities. The following objectives contained in this Plan could be applicable to the Proposed Project:

- The SCWMA, County and the Cities will encourage innovative and creative methods and consider funding for waste prevention (source reduction), recycling, and education that will benefit the community and the environment.
- The SCWMA, County and the Cities will encourage and support the use of waste minimization practices for business, government agencies, and the public by distributing information on the availability of waste minimization options.
- The County and the Cities will achieve a 50 percent diversion of wastes being disposed of in County landfills by the year 2003 and a 70 percent diversion rate by 2015 based on 1990 rates.
- The SCWMA will encourage and support the recovery, repair, and resale of discarded items by distributing information on these waste management options.
- The SCWMA, County and the Cities will promote recycling of construction and demolition debris through education, regulation and economic incentives.
- The County will provide alternative disposal options for recyclable items or materials such as, but not limited to, yard debris, recyclable wood waste, whole tires, and appliances and ban the landfill disposal of these items. (SCWMA, 2003)

2.16.3 Utilities and Service Systems Impacts and Mitigation Measures

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board: *less than significant impact*. See discussion under e).

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments: *less than significant impacts*

As described in d), below, the primary use of water during construction and operation of the transmission line would be for dust suppression measures on PG&E's access roads. Because the water used during dust suppression activities would be minimal and because this water would evaporate or be absorbed by the ground, disposal would not be required. Any water used during the construction or operation would be minimal and would not

result in a determination by a wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. In addition, the project would not exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board. Therefore, this would be a less than significant impact.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects: *less than significant impact*.

As described in d), below, water use and wastewater that would be generated by the Proposed Project would be minimal and therefore, the project itself would not require or result in the construction of a new or expanded water or wastewater treatment plant facilities.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects: *less than significant impact*.

~~Proposed Project~~

The Proposed Project would include the removal of ~~117~~ approximately 97 poles and the installation of ~~99~~ approximately 80 poles. Poles 33 through 39 would be replaced in essentially the same location. Most of ~~these 99~~ the other new poles would be placed ~~about~~ within 20 feet ~~away~~ from where an ~~the~~ existing pole~~s~~ would be removed, with a few new poles placed more than 35 feet from where an existing pole would be removed.~~; however Poles 33 through 39 would be replaced in essentially the same location. For the 92 poles that would be~~ Where an existing pole is removed and not replaced in ~~their~~ the same location, a backhoe and dumptruck would backfill the hole with imported gravel. The top 12 inches of each hole would be backfilled with soil removed from project construction activities. The surface would be revegetated with appropriate revegetation seed mix.

~~Thus~~Overall, the project would result in ~~33~~ approximately 17 fewer pole footings than under existing conditions. The new pole footings would cover a slightly larger surface area; however, there would be less overall pole footing coverage. The substation improvements would require the construction of a relatively small additional concrete foundation pad within the existing substation property. In total, the Proposed Project would result in a net increase in impervious surfaces of approximately 0.39 acres. The addition of 0.39 acres of impervious surfaces would not be significant. Since the Proposed Project would not substantially increase the amount of impervious surfaces, it would not substantially increase runoff nor create a substantial amount of additional runoff water. Therefore, the Proposed Project would not require or result in the construction of a new or expanded storm water drainage facility. See Section 2.8, *Hydrology and Water Quality* for additional information.

~~*Mitigation Measure 2.1-1*~~

~~With implementation of Mitigation 2.1-1, 11 of the 99 poles that would be replaced under the Proposed Project would not be replaced under this mitigation. Thus, under this mitigation, there would be 22 fewer new pole footings than under existing conditions (11 less than under the project). In total, with implementation of Mitigation Measure 2.1-1, there would be a net increase in impervious surfaces of slightly less than the 0.39 acres that would result. This addition of impervious surfaces would not be significant and would not substantially increase runoff nor create a substantial amount of additional runoff water. Therefore, the under Mitigation Measure 2.1-1, the construction of a new or expanded storm water drainage facility would not be required.~~

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed: *less than significant impact*.

The primary use of water during operation of the transmission line would be for dust suppression measures on PG&E's access roads. The water that would be required for operation of the transmission line would most likely be trucked in from off-site. Dust suppression would be performed as necessary and is not anticipated to occur on a regular basis. Water used for operation of the transmission line would normally be purchased from a local water utility. Because use of domestic water is not anticipated to be used on a regular basis and would only be used as necessary to control dust on PG&E's access roads, the amount of water required by operation of the transmission line would be minimal.

Construction of the proposed transmission line would also require the use of minimal amounts of water. Any water used during the construction period would be available from existing municipal water sources and would not require local water providers to obtain additional water entitlements.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs: *less than significant impact*.

Construction activities would result in the generation of construction waste material. As this generated waste would not be substantial and the generation would be only short-term, existing landfills would have adequate capacity for the disposal of this construction waste.

In addition, the project would require the removal and disposal of approximately 117 wood poles and 11 wood pole tops, which would be disposed of in accordance with PG&E's treated wood protocol (see **Appendix D**). In total, there would be an estimated 600 cubic yards of wood pole material to be reused or disposed of. PG&E would either make the poles available for reuse or, if demand does not exist for the poles, would dispose of them in an appropriate landfill that has sufficient capacity to accept the

material. The Central Disposal Site in Sonoma County currently has a remaining permitted capacity of 11.2 million cubic yards and is not estimated to close until 2014. In addition, PG&E could dispose of the poles in other appropriate landfill locations in nearby counties that have sufficient capacity to accept the waste. Therefore, the Proposed Project would not adversely impact existing capacities of landfills.

g) Comply with federal, state, and local statutes and regulations related to solid waste: *less than significant impact.*

The Proposed Project would only generate construction waste and the one time disposal of wood poles that cannot be reused; operation of the transmission line is not anticipated to result in the generation of additional solid waste. The construction waste generated would be minimal and PG&E would dispose of the waste in an appropriate landfill with sufficient capacity to accept the waste.

The Sonoma County Waste Management Agency currently has a diversion rate of about 35 percent, which does not meet the requirements of AB 939. However, the County has a Countywide Integrated Waste Management Plan to address this shortfall. The project would generate only a small amount of waste and this generation would be on a one-time basis (as opposed to continual generation). Additionally, PG&E would attempt to make the poles available for reuse to limit the volume sent to the landfill. Therefore, the Proposed Project would not be in conflict with any statutes and/or regulations related to solid waste.

h) Contact and/or disturb underground utility lines and/or facilities during construction activities: *less than significant impact with mitigation incorporated.*

~~Implementation of Mitigation Measure 2.1-1 would result in t~~The new 115 kV single-circuit transmission line ~~to~~ would be undergrounded beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation~~ (see **Figure 2.1-4**)~~. Construction activities associated with ~~implementation of this mitigation measure~~ undergrounding this portion of the line could inadvertently contact underground utility lines and/or facilities during underground construction, possibly leading to short-term utility service interruptions.

Impact 2.16-1: Construction activities associated with ~~Mitigation Measure 2.1-1~~ undergrounding a portion of the new transmission line along Leveroni Road could inadvertently contact underground utility lines and/or facilities during underground construction, possibly leading to short-term utility service interruptions. This would be a less than significant impact with implementation of Mitigation Measure 2.16-1.

> **Mitigation Measure 2.16-1:** PG&E shall ensure that Underground Service Alert is notified at least 14 days prior to initiation of construction activities of the underground portion of the transmission line. Underground Service Alert verifies the location of all existing underground utilities and alerts the other utilities to mark

their facilities in the area of anticipated construction activities. Compliance with this measure shall be verified by the CPUC mitigation monitor.

Significance after Mitigation: Less than significant.

References – Utilities and Service Systems

California Integrated Waste Management Board (CIWMB), 2005. *Jurisdiction Profile for Sonoma County Waste Management Agency*, http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile2.asp?RG=R&JURID=503&JUR=Sonoma+County+Waste+Management+Agency, accessed June 14, 2005.

City of Sonoma, 2005. http://www.sonomacity.org, accessed May 20, 2005.

Sonoma County Water Agency (SWCA), 2005. http://www.scwa.ca.gov, accessed May 20, 2005.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 1989. *1989 Sonoma County General Plan*, adopted March 23, 1989.

Sonoma County Waste Management Agency (SCWMA), 2003. *Sonoma County Countywide Integrated Waste Management Plan*, October 15, 2003.

Valley of the Moon Water District (VMWD), 2005. http://www.vomwd.com/, accessed May 20, 2005.

2.17 Mandatory Findings of Significance

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
17. MANDATORY FINDINGS OF SIGNIFICANCE					
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Mandatory Findings of Significance Discussion

a) Potential to degrade the quality of the environment: *less than significant impact with incorporated mitigation*.

As discussed in the *Agriculture Resources*, *Air Quality*, *Biological Resources*, *Cultural Resources*, *Hazards and Hazardous Materials*, ~~*Land Use and Planning,*~~ *Noise*, *Public Services*, *Transportation/Traffic*, and *Utilities and Services Systems* sections of this MND, the Proposed Project would result in potentially significant temporary impacts as a result of construction of the transmission line and substation modifications that would have the potential to degrade the quality of the environment. However, adoption and implementation of mitigation measures described in this MND would reduce these individual impacts to less than significant levels.

As described in Section 2.4 *Biological Resources*, the Proposed Project would have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife species population to drop below self sustaining levels, nor does it restrict the range of a rare or endangered plant or animal community, or reduce the range of a rare or endangered plant or animal. Implementation of **Mitigation Measures 2.4-1a and 1b, 2.4-2, 2.4-3a through 2.4-3c, 2.4-4 and 2.4-5** contained in Section 2.4 would ensure that these impacts would be less than significant.

Section 2.5 *Cultural Resources*, concludes that the Proposed Project would have the potential to eliminate important examples of the major periods of California history or pre-history; however, **Mitigation Measures 2.5-1a, 1b and 2.5-2** identified in this section would reduce such impacts to a less than significant level. Additionally, the project would not result in any direct impacts to known cultural resources during construction of the project. There are no known areas of cultural significance located within the Proposed Project area.

b) Impacts that are individually limited, but cumulative considerable: *less than significant impact with incorporated mitigation*.

CEQA Guidelines Section 15130 requires a discussion of the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness.

CEQA Guidelines Section 15130(b) identifies the following three elements are necessary for an adequate cumulative analysis:

- A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the Lead Agency; or a summary of projections contained in an adopted General Plan or related planning document designed to evaluate regional or area-wide conditions. This information is provided in **Table 2.17-1**.

- A summary of expected environmental effects to be produced by those projects. The summary shall include specific reference to additional information stating where that information is available.

- A reasonable analysis of the cumulative impacts of the relevant projects, and an examination of reasonable options for mitigating or avoiding any significant cumulative effects of a Proposed Project.

The cumulative projects considered in this analysis are provided in **Table 2.17-1**. These projects range from residential and commercial developments to other utility infrastructure projects. The projects listed in **Table 2.17-1** are considered reasonably likely to be constructed and/or operated during a similar timeframe as the Proposed Project. The projects are examined in light of their potential to contribute to short-term, construction-related effects as well as long-term operational effects in conjunction with the Proposed Project.

TABLE 2.17-1
CUMULATIVE PROJECTS WITHIN THE VICINITY OF THE PROPOSED PROJECT

APN or Project Name	Description	Address / Location	Agency / Organization	Details	Distance from Project
Fulton 230 kV Transmission Line	230 kV line	From Lakeville Substation to Fulton Substation	PG&E	Reconfiguring existing lines (no new lines).	Variable
Sonoma Valley Recycled Water Project	Utility Improvements for the Sonoma County Water Agency	Many streets within the City of Sonoma area	Sonoma County Water Agency	N/A	Variable
127-111-043	Single Family Residential	19220 7th St. East	Sonoma County	1 unit	Over 1 mile
127-231-010	Single Family Residential	912 East Napa St.	Sonoma County	1 unit	Over 1 mile
128-291-008	Detached Barn	20450 5th St. East	Sonoma County	1 unit	Over 1 mile
128-322-009	Private School	20872 Highway 12	Sonoma County	1 unit	Over 1 mile
135-022-025	Single Family Residential	22752 Burndale Rd.	Sonoma County	1 unit	Over 1 mile
Cheese Factory addition	Commercial	2 West Spain Street	City of Sonoma	8,480 sq. ft.	Over 1 mile
Dan Miller PUD	Multi-Family Residential	317 Second Street East	City of Sonoma	3 units	Over 1 mile
Detert Apartments	Multi-Family Residential	117 East Napa St.	City of Sonoma	2 units	Over 1 mile
Fulton Capacitor Bank	Install capacitor banks	Inside Fulton Substation	PG&E	To provide reactive support to the area.	Over 1 mile
Giannis Mixed Use	Multi-Family Residential	19315 Sonoma Highway	City of Sonoma	8 units / 4,020 sq. ft.	Over 1 mile
Haydn Miller PUD	Single Family Residential	604 Curtin Lane	City of Sonoma	6 units	Over 1 mile
Litchfield Second Unit	Second Unit	360 Fifth Street West	City of Sonoma	1 unit	Over 1 mile
Martinez	Single Family Residential	475 Denmark St.	City of Sonoma	35 units	Over 1 mile
More Subdivision	Single Family Residential	498 East Napa Street	City of Sonoma	2 units	Over 1 mile
Norrbom	Multi-Family Residential	590 West Napa Street	City of Sonoma	23 units	Over 1 mile
Pendergast Subdivision	Single Family Residential	685 Fano Lane	City of Sonoma	1 unit	Over 1 mile
Peterson	Multi-Family Residential	254 First Street East	City of Sonoma	39 units	Over 1 mile
Pueblo Voltage Support	Install STATCOM device	Inside Pueblo Substation	PG&E	To prevent voltage drops.	Over 1 mile
Sonoma Village West	Multi-Family Residential	19370 Sonoma Hy	City of Sonoma	15 units	Over 1 mile
Starr Ranch	Single Family Residential	Fifth Street East	City of Sonoma	20 units	Over 1 mile
Wagner Office Bldg	Building	19310 Sonoma Highway	City of Sonoma	18,000 sq. ft.	Over 1 mile
Weiler B&B	Hotel Units	156,168 East Napa Street	City of Sonoma	6 units / 1,900 sq. ft.	Over 1 mile
Whiteley Condominiums	Multi-Family Residential	136 West Napa St.	City of Sonoma	7 units	Over 1 mile
Willows Wild	Multi-Family Residential	310 Fifth Street West	City of Sonoma	15 units	Over 1 mile
Pipgras Alzheimer's Facility	Cong. Care Units	91 Napa Road	City of Sonoma	87 units	Less than ¼ mile
McKenna Mixed Use	Multi-Family Res./Commercial	1254 Broadway	City of Sonoma	10 units / 4,400 sq. ft.	Less than ¼ mile
Albertson Subdivision	Single Family Residential	254 West MacArthur St.	City of Sonoma	2 units	¼ to 1 mile

TABLE 2.17-1 (continued)
CUMULATIVE PROJECTS WITHIN THE VICINITY OF THE PROPOSED PROJECT

APN or Project Name	Description	Address / Location	Agency / Organization	Details	Distance from Project
Burbank Housing	Multi-Family Residential	404 Napa Road	City of Sonoma	34 units	¼ to 1 mile
Carneros Parks Lofts	Live-work units	649 First Street West	City of Sonoma	30 units	¼ to 1 mile
Carneros Village	Multi-Family Residential	623 First Street West	City of Sonoma	14 units / 4,200 sq ft.	¼ to 1 mile
Chiapallone Duplex	Multi-Family Residential	1141-1143 Broadway	City of Sonoma	2 units	¼ to 1 mile
Chiapallone Fourplex	Multi-Family Residential	1141-1143 Broadway	City of Sonoma	4 units	¼ to 1 mile
Conforti Mixed Use	Multi-Family Res./Commercial	966 Broadway	City of Sonoma	8 units / 4,800 sq. ft.	¼ to 1 mile
Curusis Subdivision	Single Family Residential	20095 Fifth Street West	City of Sonoma	3 units	¼ to 1 mile
Ledson/Merlo	Multi-Family Residential	165-179 West MacArthur St.	City of Sonoma	30 units	¼ to 1 mile
McTaggart/Pinnacle	Single Family Residential	432 East Napa Street	City of Sonoma	13 units	¼ to 1 mile
Mehew Mixed Use	Single Family Residential, Second Units	720 Broadway	City of Sonoma	1 single-family unit, 1 second unit / 1,350 sq ft.	¼ to 1 mile
Montini/O'Brien	Single Family Residential	Fifth Street West	City of Sonoma	26 units	¼ to 1 mile
Moore Subdivision	Single Family Residential	370 Napa Road	City of Sonoma	2 units	¼ to 1 mile
Sanders Mixed Use	Multi-Family Res./Commercial	19957 Broadway	City of Sonoma	6 units / 1,760 sq. ft.	¼ to 1 mile
West MacArthur Village PUD	Multi-Family Residential	333 West MacArthur	City of Sonoma	13 units	¼ to 1 mile

SOURCES: Sonoma County PRMD (2005); City of Sonoma (2005); and PG&E PEA (2004)

It is anticipated that project construction would extend through a 19-month period. Projects within a mile of the transmission line alignment and substations were evaluated in this analysis of cumulative impacts. The County of Sonoma, City of Sonoma, the Sonoma County Water Agency and PG&E were contacted for information on projects within their jurisdiction. Development, utility improvement, and capital investment projects that could combine with the Proposed Project to result in a cumulative impact are shown in **Table 2.17-1**.

Short-Term Construction-Related Effects

In conjunction with the Proposed Project, several short-term construction-related cumulative impacts may occur. These potential impacts include cumulative impacts to air quality, noise and traffic.

Air Quality

Construction activities associated with the Proposed Project, as described in Section 2.3 *Air Quality*, could have a temporary impact on local air quality through temporary increases in NOx and PM10 emissions which could be cumulatively significant when combined with other projects described in **Table 2.17-1**. **Mitigation Measures 2.3-1a through 2.3-1c** would ensure that the project's temporary air quality construction impacts would be less than cumulatively considerable (i.e., because the project would be required to mitigate its contribution to the significant cumulative impact). As a result, the project would not have a significant cumulative air quality impact.

Noise

Equipment used during project construction activities would temporarily increase short-term noise levels in the project area. The Proposed Project, in conjunction with the other projects listed in **Table 2.17-1** would have the potential to contribute to a cumulative impact of noise levels in the project area. With one exception, the Sonoma Valley Recycled Water Project (SVRWP), it is unlikely that all cumulative projects listed in **Table 2.17-1** would occur in the same area at the same time and therefore, cumulative noise increases would be dispersed and a significant cumulative noise impact would not occur. However, the SVRWP combined with the Proposed Project could have the potential to result in a temporary cumulative noise impact. This impact could result if construction of the segment of the SVRWP along Leveroni Road were to occur at the same time as the Proposed Project. At this time, the exact construction schedule of the SVRWP has not yet been determined; however, it is tentatively anticipated to occur in late 2006 (Nunes, 2005) at which time, the construction of the portion of the transmission line along Leveroni Road would be complete. However, even if construction of the Proposed Project were to occur simultaneously with the SVRWP, implementation of **Mitigation Measures 2.11-1a** and **2.11-1b** identified in Section 2.11 *Noise*, would ensure that the project's construction- and operation-related noise impacts would be less than cumulatively considerable (i.e., because the project would mitigate its contribution

to the significant cumulative impact). As a result, the project would not have a significant cumulative noise impact.

Transportation/Traffic

Project construction activities, as described in Section 2.15 *Transportation and Traffic*, could have a temporary construction-related impact on local traffic flow in the project area as street, lane, and sidewalk closures may be required. In conjunction with other construction on projects identified in **Table 2.17-1** in the area, potential cumulative impacts could occur. As specified in Section 2.15 *Traffic and Transportation*, **Mitigation Measure 2.15-1b** requires PG&E to prepare of a Traffic Management Plan prior to construction. This Plan would be subject to the approval of the City of Sonoma and Sonoma County and would consider other cumulative projects along the construction corridor, including the SVRWP along Leveroni Road. Implementation of this Plan (required by **Mitigation Measure 2.14-1b**) along with **Mitigation Measure 2.17-1** (below) would ensure that the project's contribution to significant cumulative impacts related to transportation and traffic would be less than significant.

Impact 2.17-1: Project construction activities along Leveroni Road could adversely affect local noise and traffic conditions if the Proposed Project is constructed at the same time as the SVRWP segment along Leveroni Road. This would be a less than significant impact with implementation of Mitigation Measure 2.17-1.

> **Mitigation Measure 2.17-1: At least two weeks prior to commencement of project construction activities, PG&E shall contact the Sonoma County Water Agency to determine if construction of the Proposed Project and construction of the SVRWP would occur at the same time along Leveroni Road. If construction of both projects (the Proposed Project and SVRWP) would occur along Leveroni Road at the same time, then PG&E shall incorporate consideration of the SVRWP into its Traffic Management Plan required by Mitigation Measure 2.15-1. At that time, specific measures shall be added to the Traffic Management Plan regarding phasing of project construction.**

Significance after Mitigation: Less than significant.

c) Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly: *less than significant impact with incorporated mitigation*.

Project impacts include the potential for an accidental release of hazardous materials stored in staging areas and used during the construction of the transmission line that could enter nearby waterways, adjacent lands, or public roadways. With implementation of **Mitigation Measures 2.7-1a through 2.7-1e,** provided in Section 2.7 *Hazards and Hazardous Materials*, the Proposed Project would not result in environmental effects that could cause adverse effects on human beings, either directly or indirectly. Temporary impacts to human beings through degradation of local air quality and noise could occur

during project construction from the operation of construction equipment. However, with implementation of **Mitigation Measures 2.3-1a through 2.3-1c, 2.11-1a and 2.11-1b** provided in Sections 2.3 *Air Quality* and 2.11 *Noise*, these temporary impacts would have less than significant adverse effects on human beings.

Electricity transmission or use can generate electric and magnetic fields (EMF), which are caused by the presence and motion of electric charges. Over the past decade, media reports on potential EMF exposure from power lines have generated much public interest and concern. Incorporation of EMF reduction measures in accordance with CPUC Decision 93-11-013, which are part of the Proposed Project, would ensure that these impacts would be less than significant (see **Appendix B** for additional information related to EMF).

References – Mandatory Findings of Significance

City of Sonoma, 2005. *Development and Construction Report*, May 2005.

Nunes, Lisa, Project Contact for the Sonoma Valley Recycled Water Project, ESA, personal communication, June 17, 2005.

Pacific Gas and Electric Company (PG&E), 2004. *Proponent's Environmental Assessment, Lakeville-Sonoma 115 kV Transmission Line Project*, November 2004. *Prepared by EDAW*.

Sonoma County Permit and Resource Management Department (Sonoma County PRMD), 2005. *Construction and Planning Applications Reports*, through May 2005.

SECTION 3
Environmental Determination

On the basis of this initial evaluation:

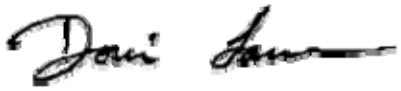
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

March 23, 2006
Date

Dorris Lam, Public Utilities Regulatory Analyst
Printed Name

SECTION 4

Report Authors and Public Agency Outreach Meetings and Consultations

4.1 Report Authors

4.1.1 Lead Agency

California Public Utilities Commission

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4.1.2 Consultants

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Tim Morgan	Deputy Project Manager, Project Description, Mineral Resources, Mandatory Findings of Significance
Jennifer Johnson, JD	Executive Summary, Project Description, Aesthetics, Route Comparison
Heidi Vonblum	Agriculture Resources, Land Use and Planning, Population and Housing, Recreation, Utilities and Service Systems, Editorial Review
Michael Ratte	Air Quality
Lee Miles	Biological Resources
Dean Martorana, RPA	Cultural Resources
Eric Schniewind, REA, PG	Geology, Soils, and Seismicity, Hydrology and Water Quality
Jyothi Iyer	Noise
Asavari Devadiga	Public Services
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4.2 Public Agency Outreach Meetings and Consultation

The CPUC conducted 4 meetings to provide government agencies and other interested parties opportunities to discuss the proposed transmission line and identify significant environmental issues that should be considered in the preparation of the Final Mitigated Negative Declaration. These meetings and other persons consulted are listed below.

Date	Agency/Organization Involved	Location
01/27/05 Meeting	John Bonnoitt, City of Sonoma Engineer Dorris Lam, California Public Utilities Commission Dail Miller, Environmental Science Associates Jennifer Johnson, Environmental Science Associates Lee Miles, Environmental Science Associates	City of Sonoma, City Hall
01/27/05 Meeting	Gregg Carr, Sonoma County Planning Department, Comprehensive Planning Scott Briggs, Sonoma County Permit & Resource Management Department, Environmental Review Dave Roberts, Sonoma County Transportation and Public Works Maria Cipriani, Sonoma County Agricultural Preservation & Open Space District Lori MacNab, Sonoma County Agricultural Preservation & Open Space District Dorris Lam, California Public Utilities Commission Dail Miller, Environmental Science Associates Jennifer Johnson, Environmental Science Associates Lee Miles, Environmental Science Associates	Sonoma County Planning Department
5/19/05 Phone Conversation	Bob Gaiser, Sonoma County Permit and Resource Management Department Heidi Vonblum, Environmental Science Associates	Sonoma County

Date	Agency/Organization Involved	Location
6/22/05 Meeting	Alan Haley, Sonoma Mountain Institute Mark Sindt, Sonoma Mountain Institute John Olmstead, Sonoma Mountain Institute Dorris Lam, California Public Utilities Commission Tim Morgan, Environmental Science Associates John Forsythe, Environmental Science Associates Jennifer Johnson, Environmental Science Associates	Sonoma Mountain Institute
1/4/06 Public Information Meeting	Attendees were: Any Wingfield, Sonoma County Comprehensive Planning Marta Puente, Sonoma County APSOD John Olmstead, Sonoma Mountain Institute Dorris Lam, California Public Utilities Commission Doug Cover, Environmental Science Associates Tim Morgan, Environmental Science Associates John Forsythe, Environmental Science Associates Jennifer Johnson, Environmental Science Associates JoLynn Lambert, PG&E Dave Thomas, PG&E Mike Near, PG&E Michael Herz, PG&E	Sonoma Valley Public Library

CHAPTER 5
Comments and Responses

5.1 Introduction

A total of five comment letters were received from agencies and organizations in response to the Draft Mitigated Negative Declaration (MND) for Pacific Gas and Electric Company's (PG&E) Lakeville-Sonoma 115 kV Transmission Line Project (Application Number 04-11-011).

5.2 List of Comment Letters Received

The comment letters received on the Draft MND are listed below in **Table 5-1** in order of their arrival. Each comment letter has been assigned a corresponding alphabet letter designation.

TABLE 5-1
LIST OF COMMENTERS

Letter #	Commenter	Date
A	Sonoma Mountain Institute	January 9, 2006
B	Sonoma County Agricultural Preservation and Open Space District	January 9, 2006
C	Pacific Gas & Electric Company	January 9, 2006
D	Department of Transportation, Division of Aeronautics	January 10, 2006
E	Department of Transportation, Division of Aeronautics	February 22, 2006

5.3 Responses to Comments

This section contains responses to all of the substantive comments received on the Draft MND up to the date of publication of this Final MND (the official public review period extended from December 9, 2005 through January 9, 2006). Each comment letter was assigned a letter according to the system identified previously (i.e., A, B, etc.). Each comment addressed within each letter was assigned a comment number (i.e., A-1, A-2, etc.). Responses are provided to each comment within the letter. Where a response to a similar comment has been provided in another response, the reader is referred to the other response.

All changes to the MND are described in the response and referred by the page number on which the original text appears in the MND. Added text is <u>underlined</u>; deleted text is ~~stricken~~. Added and deleted text is also shown in Section 2, *Environmental Checklist and Discussion*.

Comment Letter A

SMI Written Input for PGE/PUC Mitigated Negative Declaration / Sonoma-Petaluma Project
January 9, 2006

Response to CPUC Mitigated Negative Declaration, December 2005/ prepared by ESA.
Prepared by John D. Olmsted, M.A. Consulting Landscape Ecologist

SONOMA MOUNTAIN INSTITUTE RESPONSE, Monday January 9th, 2006

Topics with Mitigable Inadequacies are listed first; Mitigations and/or Discussion are Follow
A. Sudden Oak Death and Exotic Biota Protocols are largely adequate **(Except as below)**
B. Construction Start **after winter S.O.D. danger & before fire season** is good goal **(But see below)**
C. Steel Towers lessen fire danger **(except if fire starts during construction or metal maintenance)**
D. No new roads will be built across SMI/Sonoma Open Space District land/easements **(But below)**
E. CPUC/ESA Monitors are a big help **(But Bond or SMI and SCOSD Attorneys Costs** are needed)
F. Sudden Oak Death and Exotic Biota Protocols for construction are valuable **(but need to be included in all future maintenance**

Mitigable Inadequacies and Discussion

A. A procedure requiring all workers and vehicles entering SMI/SCOSD project lands needs to be instituted involving the leaving of a Daily Protocol Compliance Slip at the Road Entrance(s) and/or Property Boundary. This guarantees cleaning of tires, vehicle underpinnings, worker clothing, etc. This may involve a washing station for worker shoes. A-1

B/C. Construction time in months must be estimated and March 15-June 15th construction window to be committed to (or other timing negotiated) . Exceptions need to be negotiated with extra fire prevention including pumper utilizing SMI pond, radio/tele plan to County & CDF Fire departments Major Delays should result in moving entire construction to following year or to short fall window A-2

C. The addition of metal towers increases the chance that metal maintenance/welding may be neede in fire season. Commitments are needed to develop a metal maintenance protocol for fire season. maintenance in future years. A-3

D. Worker passage across SMI areas outside the PGE easement needs to be discussed more fully. A-4

E. Failures to live up to final agreed-upon fire and biota protocol implementations need their own protocol. If a bond is not posted, Attorney Costs for Damage Suits needs to be assumed by PGE. A-5

F. Past PGE Maintenance has not utilized adequate S.O.D. and Exotic Biota Protocols. Commitments for future PGE maintenance activities along the Easement are needed A-6

Page Two DISCUSSION Regarding Specified Items

I. Construction Timing Failure in another California project

The author is familiar with a construction project at a nationally significant (4 Plaque) Historic Transportation Monument for which no **construction timing guarantees** were part of the Negative Declaration.
The inherent feature of the resource was 1860s protection technology for historic wooden beams.
The California State Agency restoring the structure

A. Made no plans to limit construction to the 7 month dry season
B. Construction delays brought work into 5 month rainy season; but no contingency plans existed
C. Rain exposure on 1860s giant timbers was the most likely cause for sudden cracks that developed
D. Additional costs over $100,000 and loss of several historic timbers ensued

(Photographs of lack of tarps, etc., taken in the 5 month rainy season, are in possession of Consultant)

Conclusion: **In projects for which timing is crucial, Enforceable Construction Windows are Necessary.** A-7

II. Relative Importance of Sonoma Mountain Institute/Sonoma County Open Space District Land

The combined open space easements of Sonoma Mountain Institute and Sonoma County Open Space District comprise a **Rare In California** conjunction of **Restorable Open Space Oak Woodlands** with **Well-funded Restoration** already begun and committed to continue. A-8

Conclusion. Location of major Sudden Oak Death research on adjoining lands (supervised from adjacent Cal. State University Sonoma) makes it thus highly necessary that an example of **Enforceable Construction Timing commitments** be worked out in the current project. (creating examples for similar sites such as the Santa Rosa relationship with the Mayacamas Audubon Reserve).

III. Fire

As previously submitted, Fire is an overwhelmingly important element for SMI (and SCOSD). The mitigation provided by the steel towers, minimizing fires starting from power pole failure, is very valuable. The potential damage to the ancient oak communities on the SMI/SCOSD lands is not something that financial responsibility alone can cover. A-9

Conclusion. The genetic and ecological resource is irreplaceable. Thus all mitigations regarding construction timing and fire prevention during construction are of the highest importance. Although they are not yet satisfactory in the current document, SMI believes that adequate mitigations and preparations can be developed and agreed to.

Letter A – Sonoma Mountain Institute

Response A-1 As described in Mitigation Measures 2.4-10a through 2.4-10e, measures to reduce or eliminate the potential for the spread of sudden oak death (SOD) would be implemented throughout the project area, including Sonoma Mountain Institute (SMI) and Sonoma County Agricultural Preservation and Open Space District (SCAPOSD) project lands. PG&E must comply with all mitigation measures contained in this document. Compliance with these measures would be monitored by CPUC designated Mitigation Monitors. Routine monitoring reports would include a discussion of compliance with these measures and would be provided to SMI/SCAPOSD on a weekly basis.

Response A-2 The construction schedule as presented on Table 1-7 of the Draft MND indicates that the transmission line construction period would span the interval between April 1, 2006 and May 1, 2007. The commenter references a construction interval between March 15th and June 15th with the inference that this period relates to their property (Sonoma Mountain Institute) and does not mention a specific year. The document preparers were aware that PG&E was and is likely to continue to conduct individual property access agreements for this and similar type projects, however the Draft MND makes no mention of any such property-specific construction period for proposed project work to be performed on Sonoma Mountain Institute property as stated by the commenter. As long as PG&E follows its established construction schedule and the specific time-sensitive mitigation measures[1] as presented in the MND and as verified by the CPUC Mitigation Monitors, the potentially significant project-related impacts would be reduced to a less-than-significant level.

Response A-3 The installation and maintenance of tubular steel poles (TSP) generally does not require any welding activities in the field, as the TSP is erected, bolted into place and conductors are fastened on by non-welding methods. In the unlikely event that maintenance crews have to contend with potential fire incidents at the field maintenance location, PG&E's maintenance crews are trained in fire suppression and carry the following items – 46 inch handle shovel, Indian-back pumps, and a chainsaw as required by public resources code (PG&E, 2006a). In addition, **Mitigation Measure 2.13-1b** requires that all PG&E vehicles carry water for fire suppression during construction (*See* **Mitigation Measure 2.13-1b**).

Response A-4 The subject of overland travel mentioned by the commenter is discussed on page 1-24 of the Draft MND. The intent of the overland travel is to minimize potential impacts from the passage of construction crews between existing

[1] The Draft MND contains numerous mitigation measures that establish a specific time period when project construction can occur (or must avoid) in order to avoid impacts to specific resources. Many of these are found in Section 2.4; however, there are others contained within the document and are too numerous to list here.

roads and a remote pole site. As defined in the Draft MND, these routes would be approximately 12 feet wide, occur on gently sloping grassy areas and rangeland without the preparation of a road. PG&E has indicated that for the project-related overland travel on SMI property, the following vehicles would potentially be used - wheel auger, flatbed boom truck, dump truck, concrete transport (PG&E, 2006a). PG&E would work with the local landowner to establish the best route for this overland travel to comply with all mitigation measures and any circumstances of local terrain conditions at the time overland travel would occur.

Response A-5 PG&E must comply with all mitigation measures contained in this document. Compliance with these measures would be monitored by CPUC-designated Mitigation Monitors. As is discussed in Response A-2, PG&E must meet construction schedule requirements of mitigation measures that are time-period specific contained in the Draft MND[2]. Should PG&E be found to not be in compliance with these mitigation measures, then the CPUC has the authority to halt any construction, operation, or maintenance activity as stated on page 5-5 of the Draft MND:

> ***"Enforcement and Responsibility***
>
> The CPUC is responsible for enforcing the procedures for monitoring through the environmental monitor. The environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CPUC. The CPUC has the authority to halt any construction, operation, or maintenance activity associated with the project if the activity is determined to be a deviation from the approved project or adopted mitigation measures. The CPUC may assign its authority to their environmental monitor."

The commenter also mentions a bond not being posted and the comment infers that this would be to cover damages. As the easement owner, PG&E has the duty under common law to repair any property damage that may be caused by construction of the transmission line project. PG&E is insured under a major risk management program with large self-insured retentions. This program includes coverage for general liability and automobile liability insurance with limits of $1,000,000 each occurrence and $2,000,000 in aggregate as to person or persons for bodily injury, personal injury and property damage. Further, PG&E has qualified as a self-insurer under the laws of the State of California with respect to Workers' Compensation. Thus, there is no need for the posting of any bond for the proposed project.

[2] Ibid.

Finally, the commenter mentions that attorney costs for damage suits need to be assumed by PG&E. It is unclear as to what potential environmental impacts with respect to this CEQA document the commenter is addressing as such determinations are within the purview of the legal system, not an environmental information document. In this regard, it would be highly speculative to assume that this would be an impact mitigatable under CEQA. Thus, no response can be provided to this comment.

Response A-6 The scope of the Draft MND pertains to activities associated with the current proposed project. PG&E must comply with all mitigation measures contained in Draft MND. Compliance with the measures would be monitored by CPUC designated Mitigation Monitors. Should PG&E be found to not be in compliance with these mitigation measures, then the CPUC has the authority to halt any construction, operation, or maintenance activity as stated in response A-5.

Response A-7 The commenter cites an example of construction timing failure from another unrelated project. Please see response A-6.

Response A-8 Please see responses A-2 and A-7.

Response A-9 The commenter's concern about fire on the SMI property is noted. Please see Response A-3 and **Mitigation Measure 2.13-1b.**

Comment Letter B

SONOMA COUNTY
AGRICULTURAL
PRESERVATION
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DISTRICT

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January 9, 2006

Via facsimile: 415/703-2200

Dorris N. Lam
Regulatory Analyst
Public Utilities Commission
Energy Division
Analysis Branch
505 Van Ness Avenue, 4th Floor
San Francisco, CA 94102

RE: Pacific Gas and Electric Company's Application to Construct the Lakeville-Sonoma 115kV Transmission Line Project – CPUC Application No. A-04-11-011 – Draft Mitigated Negative Declaration: Poles 33-39, Moon Ranch conservation easement

Dear Ms. Lam:

The Sonoma County Agricultural Preservation and Open Space District (District) has received and reviewed the above referenced document as it pertains to the District's perpetual Moon Ranch conservation easement. The District is not in agreement with the description of the conservation easement transaction on page 2.1-19. The District is a public agency created pursuant to the California Public Resources Code Section 5500 *et seq.* For clarification, I have summarized the creation of the District below.

Policies set forth in the 1989 Sonoma County General Plan's Agricultural Resources and Open Space Elements expressed the County's commitment to agriculture, the importance of maintaining distinct and identifiable communities, and a desire to protect its precious scenic and natural resources. The 1989 Plan also included an implementation program that envisioned establishing an Open Space District to preserve farmland and open space areas by acquiring interests in lands from willing sellers. B-1

In November 1990, the Sonoma County voters approved Measure A creating the Agricultural Preservation and Open Space District, and Measure C funding the program with a ¼ percent sales tax. An independent 5-member Open Space Authority levies the tax and administers the revenue pursuant to the voter approved Expenditure Plan.

Categories of lands for preservation such as community separators, critical habitat areas, agricultural lands, scenic landscapes, riparian corridors, biotic areas and other open space projects are described in the Expenditure Plan. The District's acquisition program furthers state policy on the preservation of open space and implements the Agricultural Resources and Open Space Elements of the 1989 Sonoma County General Plan.

The Moon Ranch property is designated as a scenic landscape unit in the Open Space Element of the 1989 Sonoma County General Plan. The defined purpose of the Moon Ranch conservation easement is to "preserve the open space, natural, scenic and agricultural values of the Property and to prevent any uses of B-2

Comment Letter B

the Property that will significantly impair or interfere with those values." The District's Moon Ranch conservation easement permanently protects the property for this purpose for all future landowners. B-2

The Draft Mitigated Negative Declaration, (page 2.1-3 under Table 2.1-2) identifies the District's Moon Ranch conservation easement as Map ID 8, Assessor's Parcel Number 017-100-007. The current Sonoma County Assessor's Roll lists the parcel numbers as 017-100-023, totaling 7.8 acres, under the Susannah Schroll Life Estate, et al, and 017-100-024, totaling 373.20 acres, under Sonoma Mountain Institute. I am enclosing a current Sonoma County Assessor's Parcel Map, which has the District's conservation easement noted as CE 96-27796. The Moon Ranch conservation easement encumbers the *entire 381 acres*, and both Assessor Parcel Numbers. The District requests that both matters noted above be corrected as appropriate throughout the final CEQA document. B-3

We would like to reiterate that the primary purpose of the District's forever wild conservation easement on this property is to protect the natural resources of the land, including the oak woodland. To this end, the District requests that the sudden oak death (SOD) protocol described in the Draft Mitigated Negative Declaration be strictly adhered to during all phases of construction. Additionally, the District requests notification as each stage of the construction process begins and concludes, so that District staff can monitor potential impacts of the project on the natural resources of the property. B-4

The District also requests that comprehensive mitigation be included in the final CEQA document to address potential spread of the SOD pathogen, *Phytophthora ramorum*, in the oak woodland on the Moon Ranch forever wild conservation easement. B-5

Please feel free to call us to discuss any of this information.

Sincerely,

Marta L. Puente

Marta L. Puente
Open Space Planner

Enclosure: Sonoma County Assessor Parcel Map

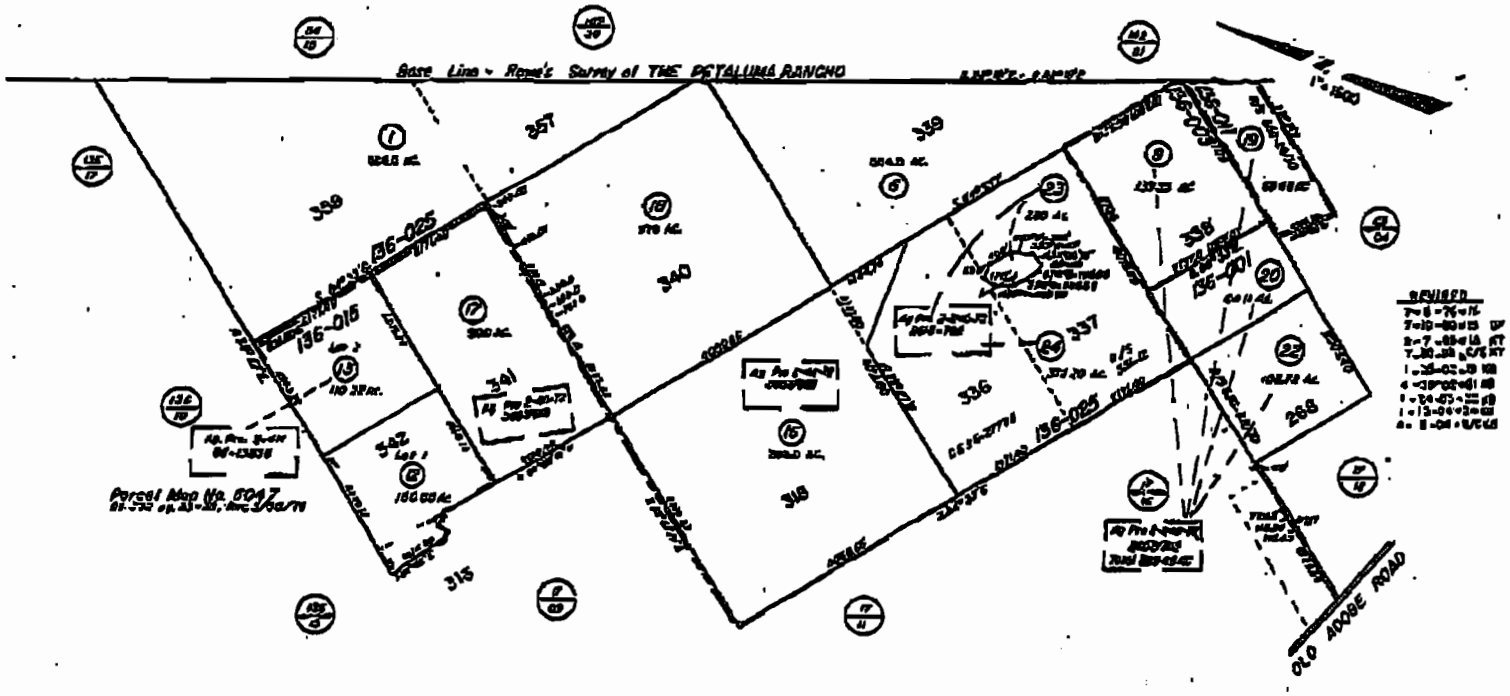
c: Maria J. Cipriani, Assistant General Manager
Kathleen Brennan Hunter, Conservation Program Manager
Dino Bonos, Stewardship Coordinator
James P. Botz, District Counsel
Mark Sindt, Sonoma Mountain Institute

Comment Letter B

COUNTY ASSESSOR'S PARCEL MAP

TAX RATE AREA
136-001
136-011
136-003
136-016
136-025

17-10



NOTE: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA DELINEATED HEREON.

Assessor's Map Bk. 17 Pg. 10
Sonoma County, Calif.

Letter B – Sonoma County Agricultural Preservation and Open Space District

Response B1 The commenter provides a summary of the creation of the Sonoma County Agricultural Preservation and Open Space District (SCAPOSD). This information will be added to MND on page 2.2-5 as follows:

Sonoma County Agricultural Preservation and Open Space District (Non-regulatory)

The Sonoma County Agricultural Preservation and Open Space District (~~Sonoma County~~ SCAPOSD)~~ permanently preserves the diverse agricultural, natural resource and scenic open space lands of Sonoma County for future generations. To this end, the District conserves greenbelts between cities, farmland, biological resources, wildlife habitat, and land for public recreation. The intent of the District is to further State policy on the preservation of open space and to implement the Open Space and Agricultural Resources Elements of the 1989 Sonoma County General Plan. The principal focus of the program is to acquire conservation easements, but the District may acquire fee rights in property where the project is in conformity with the Expenditure Plan (APOSD, 2005).~~is a public agency created pursuant to the California Public Resources Code Section 5500 *et seq.* Policies set forth in the 1989 Sonoma County General Plan's Agricultural Resources and Open Space Elements expressed the County's commitment to agriculture, the importance of maintaining distinct and identifiable communities, and a desire to protect its scenic and natural resources. The 1989 General Plan also included an implementation program that envisioned establishing an Open Space District to preserve farmland and open space areas by acquiring interests in lands from willing sellers.

In November 1980, the Sonoma County voters approved Measure A, which created the Agricultural Preservation and Open Space District, and Measure C, which funded the program with a 1/4 percent sales tax. An independent 5-member Open Space Authority levies the tax and administers the revenue pursuant to the voter approved Expenditure Plan.

Categories of land for preservation such as community separators, critical habitat areas, agricultural lands, scenic landscapes, riparian corridors, biotic areas, and other open space projects are described in the Expenditure Plan. The District's acquisition program furthers State policy on the preservation of open space and implements the Agricultural Resources and Open Space Elements of the 1989 Sonoma County General Plan (Puente, 2006).

In addition, the text of MND page 2.1-11 is changed as follows:

> The Sonoma County Agricultural Preservation and Open Space District (~~Sonoma County~~ SCAPOSD) is ~~a farmland and open space preservation program. The intent of the APOSD is to further State policy on the preservation of open space and to implement the Open Space and Agricultural Resources Elements of the 1989 Sonoma County General Plan (Sonoma County APOSD, 2005)~~. is a public agency created pursuant to the California Public Resources Code Section 5500 *et seq.* Policies set forth in the 1989 Sonoma County General Plan's Agricultural Resources and Open Space Elements expressed the County's commitment to agriculture, the importance of maintaining distinct and identifiable communities, and a desire to protect its scenic and natural resources. The 1989 General Plan also included an implementation program that envisioned establishing an Open Space District to preserve farmland and open space areas by acquiring interests in lands from willing sellers.

Regarding the commenter's disagreement with the MND's description of the conservation easement transaction, please see response B-2.

Response B-2 The commenter generally summarizes the purpose of the conservation easement on the Moon Ranch property. MND page 2.1-11 acknowledges the existence of the easement and its stated purpose.

Response B-3 The commenter correctly states that the Draft MND identifies its Moon Ranch conservation easement by the incorrect Assessor's Parcel Number (APN). The Sonoma County Assessor's Parcel Map submitted along with the comment letter is a more recent version of the Assessor's Parcel Map that was referenced in the Draft MND analysis.[3] As indicated on this updated map, the proposed project crosses what is now indicated as APN# 017-100-024 which is one of the two parcels that made up what was formerly designated 017-100-007. The proposed project does not cross the other parcel (017-100-023) mentioned by the commenter. Therefore, the following changes are made to the text of the MND:

The eighth full row in Table 2.1-2 on MND page 2.1-3 is changed as follows:

8	017-100-~~007~~ 024	Open space with residence	LEA 60	**LEA**	SR; Z; B6

The fourth paragraph on MND page 2.1-11 is revised as follows:

[3] In the summer of 2005, the document preparers obtained the most recent copy of the parcel map available at the Sonoma County Tax Assessors Office. This copy was dated October 15, 1993. The commenter provided a copy of the parcel map that was current as of December 2005 and is more recent than the copy that was available to the document preparers.

The ~~Sonoma County~~ SCAPOSD currently holds a *Deed and Agreement Conveying a Conservation Easement and Assigning Development Rights* that applies to two parcels of land. The larger of the two parcels that this deed applies to is currently owned by the Sonoma Mountain Institute, through which a portion of the transmission line would cross (pole numbers 33 through 39) (see **Figure 2.1-3**).[2] The Sonoma Mountain Institute property (Assessor's Parcel Number 017-100-024) is located at 4080 Manor Road in Petaluma, California and comprises approximately ~~380~~ 373 acres of land. The property is currently used for research demonstrations in connection with the purposes of the Sonoma Mountain Institute, which are to sustain, manage, restore, and rehabilitate open space and other property dedicated to conservation goals and objectives. The Sonoma Mountain Institute property currently has a conservation easement with the ~~Sonoma County~~ SCAPOSD that places approximately 211 of the 38~~0~~1 acres into a designation called *Forever Wild*, through which the Proposed Project would cross (Haley & Bilheimer, 2005). The stated purpose of the easement is "to preserve open space, natural, scenic and agricultural values of the Property and to prevent any uses of the Property that will significantly impair or interfere with those values" (~~Sonoma County~~ SCAPOSD, 1995).

[2] The other parcel that is covered by the same deed is under the Susannah Schroll Life Estate, et al (APN 017-100-023), totaling 7.8 acres. In total the Deed covers Assessor Parcel Numbers 017-100-023 and 017-100-024, which together comprise 381 acres.

Response B-4 Please see response A-5. The commenter requests that notification be given at each stage of the construction process on the SMI property to allow the commenter to monitor activities. Daily monitoring reports will be prepared and supplied to Sonoma County either by fax, email, or available online. The text of Table 5-1 found in the fourth column from the left beginning on page 5-25 at the discussion of Impact 2.4-10 and ending on page 5-27 in the Draft MND is modified for the four instances of the text as follows:

> CPUC mitigation monitor to inspect compliance at least once a week. During construction of poles on SMI property, PG&E and CPUC mitigation monitors shall provide copies of all routine mitigation monitoring reports submitted to the SCAPOSD and the CPUC on a weekly basis.

Response B-5 Mitigation Measures 2.4-10a-f provided in the Draft MND were derived from organizations[4] with current scientific knowledge on the SOD pathogen

[4] California Oak Mortality Task Force and Sonoma County Agricultural Commissioner.

and its known distributions. These measures adequately address the potential spread of SOD that could result from construction activities associated with the proposed project based on current scientific knowledge.

Comment Letter C

Pacific Gas and Electric Company

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RECEIVED
JAN 10 2006
ENVIRONMENTAL SCIENCE ASSOC.

January 9, 2006

Via Hand-Delivery

Ms. Dorris Lam
Energy Division
California Public Utilities Commission
505 Van Ness Avenue, Fourth Floor
San Francisco, CA 94102

Re: Lakeville-Sonoma 115 kV Transmission Line Project (A.04-11-011)
Comment to draft Mitigated Negative Declaration

Dear Ms. Lam:

PG&E has reviewed the draft Mitigated Negative Declaration (MND) proposed for this project, and wishes to add a clarification to section 1.8.1, page 1-20. As we notified you by letter dated August 26, 2005, PG&E will use *non-specular* 477 ACSS conductor to limit reflection of light and visibility. We would appreciate your adding this information. C-1

PG&E will separately provide additional comments to the MND. Thank you for your assistance.

Very truly yours,

DAVID T. KRASKA

cc: Lakeville-Sonoma Transmission Project
c/o Environmental Science Associates
225 Bush Street, Suite 1700
San Francisco, CA 94104

Osa Wolff, Shute, Mihaly & Weinberger
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Comment Letter C

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January 9, 2006

Via Hand-Delivery

Ms. Dorris Lam
Energy Division
California Public Utilities Commission
505 Van Ness Avenue, Fourth Floor
San Francisco, CA 94102

Re: Lakeville-Sonoma 115 kV Transmission Line Project (A.04-11-011)
Comment to draft Mitigated Negative Declaration

Dear Ms. Lam:

PG&E has reviewed the draft Mitigated Negative Declaration (MND) proposed for this project, agrees that an MND is appropriate for this project, and appreciates the effort expended by Commission staff and consultants on this application. PG&E's comments to the MND are included below.

As we have previously indicated, PG&E needs to begin this project in late spring in order to meet the Summer 2007 operational date, so time is of the essence in completing this permitting process.

Mitigation Measure 2.1-1 (Undergrounding)

PG&E agreed to install one segment of the new transmission underground along Leveroni Road between Fifth Street and Sonoma Substation to ensure there would be no "potentially significant visual impact due to the increased height of the poles leading into the City of Sonoma." (Kraska letter to Dorris Lam dated April 5, 2005.) PG&E did not agree to underground the line segment to mitigate an inconsistency with the City of Sonoma's General Plan, since PG&E is not subject to local planning or zoning regulations. (*See, e.g., Town of Woodside* (1978) 83 Cal.P.U.C. 418 (Dec. No. 88462).) In its Land Use and Planning chapter, the MND correctly notes that the CPUC has sole and exclusive jurisdiction over the siting and design of the project, and that "such projects are exempt from local land use and zoning regulations and permitting" (MND at 2.1-4), yet incorrectly indicates that the overhead double-circuit transmission line proposed by PG&E to replace the existing single-circuit line would conflict with an "*applicable* land use plan, policy, or regulation of an agency *with jurisdiction* over the project" (MND at 2.1-13, emphasis

C-2

added). Since the General Plan designations are not applicable to PG&E, and the City of Sonoma has no jurisdiction over the project, this chapter of the MND needs to be corrected, along with the Executive Summary at ES-3 and the tables at pages ES-5 and 5-8. (The references to the Sonoma County cultural resource consultation and plan at pages 1-38 and 2-3 should also be deleted, consistent with the MND's Cultural Resources chapter, as there is no discretionary local review.) The underground mitigation measure can remain, but should be moved to the Aesthetics chapter, where the analysis assumed it was in place in any event. C-2

Preliminary engineering on the underground section of the project indicates that a second TSP at pole location 108, also approximately 75 feet tall, will be needed to transition the new circuit from overhead to underground. Pole 108 will be needed to allow the existing circuit to continue to the next existing pole. The mitigation measure should be revised to reflect the two necessary structures. Preliminary engineering also indicates that the underground line will require the fence at Sonoma Substation to be moved out to accommodate the necessary equipment. The modifications will remain well within PG&E's substation property and behind the landscaping buffer. "Existing fenceline" should be revised to "existing property line" in discussions of the Sonoma Substation modifications at pages 1-20, 2.2-6 and 2.2-9. C-3

Table 1-3 (Existing and Proposed Poles)

As PG&E has stated in all information provided to the Commission, project pole heights and other engineering details are approximate and subject to change "as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction." (*See, e.g.,* PEA, Figure 2-4 (a)-(d), Figure 2-5, Figure 2-6, Table 2-2, and Appendix I.) Thus, Table 1-3 at pages 1-15 through 1-18 should make clear that all heights given are approximate and subject to change. The column "Proposed Height (ft)" should be changed to "Approximate Proposed Height (ft)," and the column "Change in Height (ft)" should be changed to "Approximate Change in Height (ft)." Similarly, the reference to Table 1-3 on page 1-8 should state that the table reflects the "approximate" proposed heights, which are subject to change with final engineering. C-4

Although further adjustments are possible with final engineering, PG&E has already determined that poles 80 through 88 will need to be somewhat taller than indicated in this chart. Poles 80-87 will all be approximately 75 feet tall, rather than 65-70 feet tall, which includes a 10-foot height increase for EMF mitigation. These poles were already shown at 75 feet in the visual simulations that were used for the visual analysis. Pole 88 will be approximately 65 feet tall, rather than 60. C-5

Table 1-3 should also be revised to add footnote "a" to poles 5, 6 and 108 (and pole 108 should be shown as TSP rather than wood). Footnote "b" can be eliminated as redundant. Footnote "c" applies to poles 80 through 87, as stated above. Poles 109 through 120 remain C-6

untouched with incorporation of the underground mitigation measure, so Table 1-3 should reflect the change. The existing land use for poles 7 through10 should be orchard, and for poles 25 through 27 irrigated vineyard without residence. C-6

Sections 1.8.1.4, 1.8.1.6 and 1.8.1.7 (Helicopter Work)

Section 1.8.1.4: The current plan is to use helicopters to perform some of the construction activities on approximately 26 poles where overland access is difficult or to otherwise facilitate project construction. (Of the poles listed in the first sentence of this section, poles 52, 54, 55 and 63 will be eliminated.) Only the work at pole 14 will be performed entirely by helicopter, due to the special circumstances at that site. For work at the other poles listed, helicopters will be used for one or more of the activities listed.

Section 1.8.1.6: Approximately 35 poles will be removed by helicopter. C-7

Section 1.8.1.7: Again, approximately 30 should be changed to approximately 26. The third sentence should be revised to read: "Some locations will require transporting excavated soils, foundation forms, concrete, TSPs, or miscellaneous tools and materials by helicopter."

Miscellaneous Minor Revisions

PG&E also suggests the following minor revisions, corrections and additions:

Page 1-8, section 1.6.1, last sentence: revise to approximately 27 fewer "transmission" poles or to approximately "17" fewer poles (because approximately 10 poles will be topped but will remain in place to support distribution lines). C-8

Page 1-9, section 1.6.2, last paragraph: revise pole numbers to reflect underground mitigation. C-9

Page 1-23, end of first new paragraph, "Priskert" should be "Pritzker." C-10

Page 1-31, second paragraph, times refer to totals over the life of the project; perhaps more accurate to state that installation would require approximately 80 hours; transporting approximately 120 hours. C-11

Page 1-31, last paragraph, first sentence, change "1½-2 weeks" to "4-5 hours per structure" for clarity. C-12

Page 2.1-2, second paragraph, add to last sentence: "except for poles 7-12, which must avoid an existing transmission gas pipeline." C-13

Page 2.1-2, last paragraph, add to last sentence: "except for certain poles along Felder Creek." C-14

Page 2.1-17, first new paragraph, sentence five: delete "any and all" before necessary easements and add "or other legal authorization" since PG&E generally obtains an Order of Possession for construction during any eminent domain proceedings. C-15

Comment Letter C

Page 2.4-19, first new paragraph, add "substantial" before "impacts" to reflect current law. (Guidelines for California Environmental Quality Act, Cal. Code Regs., tit. 14, § 15065(a)(1) (as amended December 1, 2004).) C-16

Page 2.4-31, Mitigation Measure (MM) 2.4-2, second bullet (and both MM charts), delete "to act as construction monitor" since Specialist will only do pre-construction survey and training; Environmental Monitor will be construction monitor. C-17

Page 2.4-31, third bullet (and both MM charts), add "For wet season work," before the second sentence beginning with "the survey area should consist of" to indicate that wet season work areas only need to be surveyed before wet season work. C-18

Page 2.4-33, MM 2.4-3c (and both MM charts), delete "in coordination with CDFG" and last sentence, and add "as set forth in MM 2.4-3b by the Environmental Monitor." C-19

Page 2.4-39, MM 2.4-7d (and both MM charts), third bullet, last sentence, after "shall have authority to stop activities that are likely to adversely affect sensitive aquatic habitats" add "consistent with project safety." C-20

Page 2.4-43, MM 2.4-10b (and both MM charts): add "loose" before "mud" in final sentence. C-21

Page 2.6-8, second new paragraph, last sentence, delete "lengthening the insulator strings" and add "installing load-limiters." C-22

Page 2.7-7, last sentence at top of page, delete "and because the poles are placed in concrete footing" since wood poles are not placed in concrete foundations. C-23

Page 2.8-2, last sentence, revise to "Poles 26, 36 and 37 would remain approximately in their current locations. All would be constructed more than 100 feet from the stock ponds." Pole 26 is not new, and will be installed near the existing pole which is several hundred feet from the stock ponds. C-24

Page 2.8-7, first new paragraph, last sentence, delete "or stockpiled for reuse in the staging areas." C-25

Page 2.11-10, second to last paragraph, third sentence, delete "such as operation of generators as emergency power back-up contingencies for essential safety purposes" and add "such as when work must be performed during line outages that are only available outside of normal work hours." C-26

Page 2.15-12, section c, first sentence: change first phrase to "Petaluma Airport is within two miles of Lakeville Substation and helicopters . . . " C-27

Page 2.16-5, section c, and page 2.16-6, section f: pole numbers should be changed to reflect underground mitigation. C-28

Page 2.7-6 (and both MM charts), Impact 2.17-1, delete this impact and mitigation measure because the SVRWP project has been completed. C-29

Page 5-12, MM 2.4-1a, and page 5-14, MM 2.4-2, Monitoring/Reporting Requirements, delete requirement to submit contracts; this has not been required on other projects, serves no valid CPUC purpose, and may conflict with confidentiality requirements. C-30

Comment Letter C

Conclusion

PG&E appreciates the opportunity to provide these comments. Please feel free to contact us if you need further information or clarification of these comments.

Very truly yours,

DAVID T. KRASKA

cc: Lakeville-Sonoma Transmission Project
c/o Environmental Science Associates
225 Bush Street, Suite 1700
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Osa Wolff, Shute, Mihaly & Weinberger
396 Hayes Street
San Francisco, California 94102-4421

Letter C – Pacific Gas and Electric Company

Response C-1 In response to this comment, the following change is made to the last paragraph on MND page 1-20:

> Construction of the transmission line would include installation of new tubular steel poles, installation of wood poles, removal of existing wood poles and conductor (transmission line wires), topping of some existing wood poles, installation / removal of safety structures at road crossings and stringing of new conductor for the 11 kV circuits. The existing 115 kV conductor would be removed and replaced with ~~the same~~ non-specular 477 ACSS conductor type (aluminum with a steel core) to limit reflection of light and visibility…

Response C-2 The commenter's question of applicability and jurisdiction regarding land use plan, policy, and regulation are rendered moot by a subsequent letter from PG&E to the CPUC (PG&E 1996c) which revises the project description to include as part of the project what was described in the Draft MND as **Mitigation Measure 2.1-1** (undergrounding of the transmission line as it enters the City of Sonoma along Leveroni Road from approximately Fifth Street West to the Sonoma Substation). The environmental impacts of undergrounding that section of the transmission line were fully evaluated in the Draft MND, so incorporating the undergrounding as part of the project does not substantively affect either the evaluation methods or the conclusions of the MND. Mitigation Measure 2.1-1 is now removed from the MND and various changes to the text are made to delete references to Mitigation Measure 2.1-1 and to clarify, where appropriate, that undergrounding the transmission line from approximately Fifth Street West to the Sonoma Substation is part of the project. All text changes are identified in strikeout/underline in the affected sections of this document.

This comment also states that references to the Sonoma County cultural resource consultation and plan at pages 1-38 and 2-3 should be deleted to be consistent with the Cultural Resources chapter, as there is no discretionary local review. Pages 1-38 and 2-3 are revised to remove those references as noted.

Response C-3 The commenter states that a second TSP, that would also be approximately 75 feet tall, will be required at the location of Pole 108 to transition the new circuit from overhead to underground. The commenter also states that in order to complete the undergrounding, it will be necessary to move the existing fenceline at the Sonoma Substation out further. This comment is affected by PG&E's request to have undergrounding incorporated as part of the project (PG&E, 2006c) rather than as a mitigation measure. In response to that request, Section 1 of the Draft MND (Project Description) is revised

to reflect the addition of Pole 108a and the change to the existing fenceline (*See* Section 1). Following are other changes made to the MND to address these comments.

The first full paragraph on MND page 1-20 is changed as follows:

> At the Sonoma Substation, additional equipment would be installed within the existing ~~fenceline~~ property line, as shown in **Figure 1-7**….

The last paragraph on MND page 2.2-6 is changed as follows:

> The Lakeville and Sonoma Substations are located on parcels that are not designated by the Farmland Mapping and Monitoring Program (FMMP) as *Prime Farmland*, *Farmland of Statewide Importance*, or *Unique Farmland*; rather both parcels are designated by the FMMP as *Urban and Built Land*. Modifications to the substations, which would occur within the existing ~~boundary and fence~~ property lines of the substations…

The second full paragraph on MND page 2.2-9 is changed as follows:

> … Therefore, modifications to the substations, which would occur within the existing ~~boundary and fence~~ property lines of the substations, would not result in any conflicts with existing zoning for agricultural use or a Williamson Act contract.

Response C-4 In response to the comment, the second sentence under Section 1.6.2 on Draft MND page 1-8 is changed as follows:

> **Table 1-3** provides a more detailed description of existing~~,~~ and approximate proposed~~,~~ and difference of pole heights plus their land use designations for the entire transmission line project.

Regarding column headings for Table 1-3, please see Response C-5.

Response C-5 In response to this comment and Comment C-6, Table 1-3 on MND pages 1-15 through 1-18 will be revised to incorporate the indicated changes. In response to Comment C-2, the incorporation of undergrounding requires changes to Table 1-3 as well. All necessary corrections to Table 1-3 are provided in redline/strikeout text in Section 1.6.3 of this document (*See* Table 1-3).

Response C-6 Please see Response C-5.

Response C-7 In response to the comment, the following changes are made to the MND:

The first sentence of the fifth paragraph (Section 1.8.1.4) on MND page 1-24 is changed as follows:

> It is estimated that helicopter access would be used to install ~~30~~ 23 poles (Poles 14, 26, 33-39, 41-49, 51, 53, 56, 58, ~~59~~ and ~~63~~ 64-~~66~~) in locations where overland access is not possible or difficult due to topography, vegetation, or to otherwise facilitate the project construction.

The last sentence of the first full paragraph (Section 2.15) on page 2.15-2 is changed as follows:

> A helicopter would be used for poles at the substations and to install Poles 14, 26, 33-39, 41-49, 51, 53, 56, 58, ~~59~~ and ~~63~~ 64-~~66~~.

The last sentence on MND page 1-25 is changed as follows:

> Approximately ~~30~~ 35 poles would require removal by helicopter.

The first paragraph on MND page 1-28 (Section 1.8.1.7) is changed as follows:

> Installation of approximately ~~30~~ 23 TSPs would require the use of a helicopter and special construction techniques. Typically, an auger would be walked into the site by the pole crew, accompanied by the environmental monitor. Some locations would require transporting excavated soils, foundation forms, concrete, TSPs, ~~and~~ or miscellaneous tools and materials ~~would all be transported in or out~~ by helicopter. The crew would drive on existing roads to a nearby location, park, and walk the remainder of the way to some sites. There may also be helicopter transportation of some construction workers to remote pole sites.

Response C-8 In response to the comment, the last sentence of first paragraph under Section 1.6.1 is changed as follows:

> Overall, the new transmission line would require approximately 17 ~~27~~ fewer poles than the existing line because the taller tubular steel poles allow for greater spans (distance) between poles, which reduces the total number of poles needed to support the existing and new circuits.

Response C-9 The section referenced in this comment has been revised to reflect undergounding as part of the project rather than as mitigation (*See* Section 1). Please also see Response C-2.

Response C-10 In response to the comment, the last sentence of the first full paragraph on MND page 1-23 is changed as follows:

Note: no new permanent or new temporary (discussed below) access roads would be constructed on the Moon Ranch or ~~Pristkert~~ Pritzker.

Response C-11 In response to the comment, the second paragraph on MND page 1-31 is revised as follows:

A line crew of approximately 16 people would install conductor over an approximate six month period. A three member helicopter crew would be used to install the new circuit wire and would require approximately 10 days (80 hours). There would also be approximately 15 days (120 hours) where the helicopter would be used to transport people and materials for the conductor installation.

Response C-12 In response to the comment, the first sentence of the last paragraph on MND page 1-31 is revised as follows:

Some structures can be installed without a clearance and will be set with a crane (typically a 6-member tower crew and 3-member crane crew working about ~~1 ½ 2 weeks~~4 to 5 hours per structure).

Response C-13 In response to the comment, the last sentence of the second paragraph on MND page 2.1-2 is changed as follows:

Segment 1 would be located within the existing PG&E right-of-way except for Poles 7 through 12, which in order to avoid an existing transmission gas pipeline, would be located outside of the existing PG&E right-of-way.

Response C-14 In response to the comment, the last sentence of the last paragraph on MND page 2.1-2 is changed as follows:

Segment 2 would be located within the existing PG&E right-of-way except for some poles along Felder Creek.

Response C-15 In response to the comment, the fifth sentence of the second full paragraph on MND page 2.1-17 is revised as follows:

PG&E would not be able to begin project construction until after ~~any and all~~ necessary easements or other legal authorizations have been acquired.

Response C-16 In response to the comment, the second sentence of the first full paragraph on MND page 2.4-19 is changed as follows:

CEQA Guidelines Section 15065(a) declares that substantial impacts to rare, threatened, or endangered plants or animals are significant.

Response C-17 In response to the comment, on page 2.4-31 of the Draft MND, the second bullet under Mitigation Measure 2.4-2 has been revised as follows:

> PG&E shall contract with ~~a Specialist~~ an environmental monitor and submit the name and credentials of this individual to act as construction monitor(s) to USFWS for approval at least 15 days prior to commencement of any construction activities.

However, it should be noted that although not required under CEQA, the USFWS *may* require a USFWS-approved monitor to be present during construction activities as a condition of USFWS approval of the project.

Response C-18 In response to the comment, on page 2.4-31 of the Draft MND, the third bullet under Mitigation Measure 2.4-2 has been revised as follows:

Immediately prior to activities in the vicinity of Felder Creek, the USFWS-approved Specialist shall perform a preconstruction survey for California red-legged frog. For wet season work sites, ~~T~~the survey area should consist of all proposed wet season work sites within one mile of Felder Creek and should include all suitable aquatic and upland habitats within 90 m (300 ft) of these proposed work sites.

Response C-19 In response to the comment, on page 2.4-33 of the Draft MND the last sentence in Mitigation Measure 2.4-3c has been revised as follows:

> Use of helicopters shall be restricted to necessary trips to install and remove poles, install the transmission line, and to deliver and remove equipment to areas lacking vehicular access or in areas where access would cause severe erosion. Helicopters may be used in an area if active raptor nests occur if an appropriate buffer has been established in coordination with CDFG. In active nesting areas, helicopters may be used after young have fledged, as ~~determined by a qualified biologist in coordination with CDFG~~ set forth in Mitigation Measure 2.4-3b.

Response C-20 In response to the comment, on page 2.4-39 of the Draft MND, the last two sentences of the third bullet has been revised as follows:

> If problems are found, the Environmental Monitor shall recommend remedial measures. Consistent with project safety, ~~T~~the monitor shall have the authority to stop activities that are likely to adversely affect sensitive aquatic habitats and recommend alternative work practices in consultation with construction personnel.

Response C-21 The intent of the measure is to remove ***all*** mud and other debris from equipment and construction personnel to reduce and eliminate the spread of SOD. The requested change does not clarify and could potentially confuse monitors and construction personnel during the implementation of the mitigation measure.

Response C-22 In response to the comment, the last sentence of the second full paragraph on MND page 2.6-8 is revised as follows:

> The transmission line at this location is designed with a flexible capacity by ~~lengthening the insulator strings~~ installing load-limiters to allow for any increased tension on the line caused by fault rupture.

Response C-23 In response to the comment, the last sentence of the first partial paragraph on MND page 2.7-7 is revised as follows:

> Because the chemicals have dried ~~and because the poles are placed in concrete footing~~, there is negligible leaching out of the wood and into the environment.

The comment states that wood poles are not placed in concrete foundations and this text change reflects that revision. Because the wood treatment chemicals have dried prior to placement of the wood poles in the ground, there would continue to be negligible leaching out of the wood and into the environment.

Response C-24 In response to the comment, the last two sentences of the last paragraph on MND page 2.8-2 (which runs over to MND page 2.8-3) are revised as follows:

> ~~Pole 26 is a proposed new pole whereas Poles 36 and 37 would remain in their current location. The new Pole 26 would be constructed at a 100-foot setback from the stock ponds.~~ Poles 26, 36, and 37 would remain approximately in their current locations. These three poles would be constructed at least 100 feet away from the stock ponds.

Response C-25 In response to the comment, the last sentence of the first full paragraph on MND page 2.8-7 is changed as follows:

> Soil generated from the pole locations would not be left at each pole site, rather, it would be off-hauled and disposed ~~or stockpiled for reuse in the staging areas~~.

Response C-26 In response to the comment, the third sentence of the second to last paragraph on MND page 2.11-10 is revised as follows:

> Equipment would not be operated at night except as necessary, such as ~~operation of generators as emergency power back-up contingencies for essential safety purposes~~ when work must be performed during line outages that are only available outside of normal work hours.

Response C-27 In response to the comment, the first sentence of the first paragraph under section c) on MND page 2.15-12 is revised as follows:

> ~~Although there are no airports within two miles of the project,~~ The Petaluma Municipal Airport, located near the intersection of East Washington Street and Adobe Road, is within two miles of the Lakeville Substation, and helicopters would be used during the construction of the transmission line.

This text change will not affect the conclusion of the resulting impact analysis for Impact 2.15-2 since implementation of Mitigation Measure 2.15-2, requiring preparation and compliance with a Lift Plan to be approved by the FAA, would reduce any air traffic impacts to a less than significant level.

Response C-28 Please see Response C-9.

Response C-29 The commenter asserts that Mitigation Measure 2.17-1 should be deleted because the Sonoma Valley Recycled Water Project (SVRWP) is complete. The commenter is incorrect about this project being complete as the SVRWP is currently under environmental review by the Sonoma County Water Agency and had filed a Notice of Preparation on September 16, 2005 with the state clearinghouse (SCH No. 2005092083). Given the still potential overlapping of the two project's construction schedule, Mitigation Measure 2.17-1 is still required to reduce cumulative impacts along the eastern end of Leveroni Road.

This comment does identify an error in the Executive Summary of the Draft MND. To correct this error the indication that Mandatory Findings of Significance would have no or less than significant impact is changed by deleting reference to in the upper of the two table blocks on the bottom of page ES-3 of the MND and is this now added to the bottom of the two table blocks bottom of page ES-3 of the MND to correctly indicate that it is potentially significant as is stated in Section 2 and 3 of the Draft MND.

Response C-30 In response to the comment, on page 5-12, the first sentence of the first paragraph under the fourth column from the left on Table 5-1 is revised as follows:

> PG&E to submit contact information, and qualifications of Specialist~~, and copy of contract with that Specialist~~ to CPUC for approval.

Similarly, on page 5-14, the fourth sentence under the fourth column from the left on Table 5-1 is revised as follows:

Submit contact information and qualifications of ~~contract with~~ Specialist to CPUC

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
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Comment Letter D

Flex your power!
Be energy efficient!

RECEIVED
JAN 18 2006
ENVIRONMENTAL SCIENCE ASSOC.

January 10, 2006

Ms. Jennifer Johnson
ESA
225 Bush Street, Suite 1700
San Francisco, CA 94101

Dear Ms. Johnson:

Re: PG&E Negative Declaration for Lakeville Sonoma Transmission Line Project

The California Department of Transportation, Division of Aeronautics (Division), reviewed the above-referenced document with respect to airport-related noise and safety impacts and regional aviation land use planning issues pursuant to the California Environmental Quality Act (CEQA). The Division has technical expertise in the areas of airport operations safety and airport land use compatibility. We are a funding agency for airport projects and we have permit authority for public and special use airports and heliports. The following comments are offered for your consideration.

The proposal is for the construction of a 7.23-mile transmission line between the Lakeville Substation and the Sonoma Substation. Transmission poles will be between 50-100 feet in height. The proposal also includes two helicopter "landing zone/staging areas", one at the Lakeville Substation, approximately 5,000 feet southeast of the Petaluma Municipal Airport and the other approximately 3,000 feet west of the Sonoma Substation.

Both heliports will require the issuance of State Heliport Permits by the Division in accordance with Public Utility Code, Section 21663. Heliports that are required by building code as an Emergency Use Facility (i.e. to be used only for emergency medical or evacuation purposes), however, are exempt from the State's heliport permit requirements. The California Code of Regulations, Section 3527 defines an Emergency Use Facility to be, "An area for accommodating helicopters in support of emergency public safety operations, but is not used as a heliport for any other purpose." That does not appear to apply here. D-1

Information regarding the State Heliport Permit process is available on-line at http://www.dot.-ca.gov/hq/planning/aeronaut/htmlfile/heliportpermit.php. More specifically, the Division will require the following prior to issuing a Sate Heliport Permit:

- An application form that is completely filled out and signed by the owner or the owner's agent.
- Two sets of scaled layout plans for the facility showing that it will meet our design standards as described in the enclosed CCR.

Comment Letter D

- Topographic map that shows the location and altitude of the aircraft traffic patterns relative to the airport or the location of the approach surfaces relative to the heliport's FATO.

- Local area map or drawing showing the facility and the location of schools, places of public gathering and residential areas within two miles of the centerline of a proposed runway or within 1,000 feet from the center of a proposed FATO of a heliport.

- Documentation of approval of the plan for construction by either the County Board of Supervisors of the county or the City Council of the city (as appropriate) in which the facility is to be located.

- Documentation of action by the Airport Land Use Commission of the county in which the facility is to be located.

- Documentation of compliance with CEQA.

- Documentation showing ownership of the facility. The owner, for the purpose of this permit, is the person with the authority to possess the facility, which may be in fee simple or leasehold for a period of at least one year.

- Federal Aviation Administration (FAA) Airspace Determination for the proposed facility.

When we receive a complete application, then we can proceed with the permitting process. The applicant should also be advised to contact the Division's Aviation Safety Officer for Sonoma County, Patrick Miles, at (916) 654-5376, for assistance with the State permit requirements.

As a Responsible Agency, we must ensure that the proposal is in full compliance with CEQA. The issues of primary concern to us include heliport-related noise and safety impacts on the surrounding community. To ensure that the community will not be adversely impacted by helicopter operations, flight paths should avoid noise-sensitive and people intensive uses. Environmental documentation should include the anticipated number of operations, daytime and/or nighttime use, *a noise study with heliport noise contour*s, diagrams showing the proposed landing site and the approach/departure flight paths. The diagrams should also depict the proximity of the proposed flight paths to any existing or proposed noise sensitive or people intensive uses. Consideration given to the issue of compatible land uses in the vicinity of a heliport should help to relieve future conflicts between the heliport and its neighbors.

Public Utilities Code, Section 21659, "Hazards Near Airports Prohibited" prohibits structural hazards near airports and heliports. Structures should not be at a height that will result in penetration of the approach imaginary surfaces. If the heliport is planned for operation prior to completion of the later phases of construction activities, impacts to the heliport imaginary surfaces from temporary

D-1

Comment Letter D

construction-related impacts (e.g. construction cranes, etc.) should be identified. Federal Aviation Administration (FAA) Advisory Circular 150/5370-2E "Operational Safety on Airports During Construction" can be incorporated into the project design in order to identify any permanent or temporary construction-related impacts (e.g. construction cranes, etc.) to the airport/heliport imaginary surfaces. This advisory circular is available at http://www.faa.gov/ARP/publications/-acs/5370-2e.pdf. The FAA may also require the filing of a Notice of Proposed Construction or Alteration (Form 7460-1) for certain project-specific activities in accordance with Federal Aviation Regulations Part 77 "Objects Affecting Navigable Airspace". Form 7460-1 is available at http://forms.faa.gov/forms/faa7460-1.pdf.

D-1

The FAA will require the filing of a Notice of Landing Area Proposal (Form 7480-1). A copy of the form is available on the FAA website at http://www.faa.gov/ARP/ane/forms/7480-1.pdf.

The proposal must be submitted to the Sonoma County Airport Land Use Commission (ALUC) for consideration. The proposal should also be coordinated with staff at Petaluma Municipal Airport.

These comments reflect the areas of concern to the Division with respect to airport-related noise and safety impacts and regional airport land use planning issues. We advise you to contact our district office concerning surface transportation issues.

Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-5314.

Sincerely,

Sandy Hesnard

SANDY HESNARD
Aviation Environmental Specialist

c: Sonoma County ALUC, Petaluma Municipal Airport

Letter D – Department of Transportation, Division of Aeronautics

Response D-1 The commenter had asserted that based on the description of the proposed project found in the Draft MND, State Heliport Permits and the accompanying analysis and documentation would be required for the temporary landing zones proposed by the project for construction purposes. After discussions with the commenter, PG&E has indicated (PG&E, 2006b) that the commenter's concerns over apparent pole height issues and the need for State Heliport Permits has been resolved. The commenter has indicated that temporary permits are all that are necessary for the proposed project and are in the process of being issued (*See* Comment E-1). To reflect this change, on page 1-38, Table 1-8 of the Draft MND is modified as follows:

	Section 1600 Streambed Alteration Agreement	Alteration of any streambed or drainage channel (if required)
California Department of Transportation	Temporary Heliport Permits	To permit temporary helicopter operations during construction.
State Historic Preservation Officer (SHPO)	Section 106 of the NHPA Review (through U.S. Army Corps of Engineers' review process)	Cultural Resource Management Plan (if required)

Similarly on page 2-2 of the Draft MND the following is inserted before the seventh bulleted item:

- California Department of Transportation, Temporary Heliport Permits

Letter E – Department of Transportation, Division of Aeronautics

From: Patrick Miles [mailto:patrick_miles@dot.ca.gov]
Sent: Wednesday, February 22, 2006 4:08 PM
To: Lam, Dorris
Subject: Lakeville Sonoma Transmission Line Project

Ms. Dorris Lam,

[E-1] A letter sent from this office, dated January 10, 2006, signed by Ms. Sandy Hesnard, mentioned possible actions that might be required relating to heliport sites identified in the above referenced project document. This afternoon Mr. Tim Morgan asked me to provide you with an update to the letter. I traveled to the proposed landing sites and inspected them on February 8, 2006. I noted that the tubular steel poles mentioned in Sandy's letter are well below the height of the trees in that area, and will not interfere with aviation activity at the Petaluma Airport. I will be forwarding Temporary Heliport Permits for the landing zones within the next few days. The Temporary Permits will be effective for one year. We will require no further helicopter permit action relating to the project. If I can be of further assistance please feel free to contact me via telephone or e-mail.

Patrick Miles
CA Division of Aeronautics
(916) 654-5376

Letter E – Department of Transportation, Division of Aeronautics

Response E-1 Comment Noted. This comment addresses the commenter's prior concerns expressed in Comment D-1.

5.4 Public Meeting Comments and Responses

A public meeting was held on January 04, 2006 at 6:30 pm at the Sonoma Valley Library in Sonoma, California on the Lakeville-Sonoma 155 kV Transmission Line Project. Attendees were: Dorris Lam (CPUC); Doug Cover, John Forsythe, Tim Morgan, Jennifer Johnson (ESA); Jo Lynn Lambert, Dave Thomas, Mike Near, Michael Herz (PG&E); John Olmstead (SMI), Amy Wingfield (Sonoma County Comprehensive Planning), and Marta Puente (SCAPSOD).

Verbal Comments and Responses at the Meeting:

Marta Puente (Sonoma County Agricultural Preservation and Open Space District (SCAPOSD)):

Comment: How did you come to find that Sudden Oak Death Syndrome (SOD) would not be spread during the course of this process?

Response: ESA, as documented in the MND, consulted with a number of agencies with specific knowledge of SOD as well as conducted an extensive literature review and did not find information to support a finding that this project would spread SOD. *(Note to the reader: The specific discussion is found in Impact 2.4-10 in Section 2.4 Biological Resources. Agencies consulted are listed in Section 4.2 Outreach Meetings and Consultations; see also Response B-5.)*

Comment: Is PG&E prepared to do future mitigation if future data shows an increase in the spread of SOD after completion of this project? Would there be any guarantees?

Response: A full response is to be provided in the Final Mitigated Negative Declaration (FMND). *(Note to the reader: See Section 5.3 Response to Comments, Letter B, Response B-5.)*

John Olmstead (Sonoma Mountain Institute):

Comment: Concerns regarding infestation of star thistle on SMI property and protocol used to mitigate potential impacts associated with invasive/noxious weeds and SOD.

Response: A brief explanation was provided of how, during project construction, the monitoring program would function (including the PG&E Primary Monitors and ESA as the Third-Party Monitors for the CPUC). The presentation team explained how the monitoring program purpose is compliance with the mitigation measures set forth in the Mitigation Monitoring, Reporting and Compliance Program (MMRCP) Section of the environmental document. *(Note to the reader: the MMRCP is found in Appendix G of this document.)*

Comment: Concerns regarding construction, specifically, SMI wants to be notified when and what types of construction will be occurring on their lands, wants to be present during

construction, wants to make sure that construction is occurring at times appropriate to avoid possible SOD issues and fire hazards.

Response: Mike Near (PG&E) stated that PG&E has a protocol that it follows during construction and this protocol does include coordination with local land owners as well as other interested parties. Thus, PG&E would routinely notify and coordinate access with local property owners such as SMI.

Comment: Concerns regarding safeguards surrounding the issues of if there are greater environmental impacts than discussed/covered in the environmental document, specifically on SMI property. How legally would SMI deal with that sort of issue?

Response: The commenter was requested (and agreed) to submit a written comment that clarified their specific issues of concern. *(Note to the reader: See Section 5.3 Response to Comments, Letter A, specifically Comment A-5 and Response A-5.)*

References

Puente, Marta L., 2006. Open Space Planner, Sonoma County Agricultural Preservation and Open Space District, written communication, January 9, 2006.

Pacific Gas and Electric Company (PG&E), 2006a. Personal Communication with Dave Thomas, Project Manager, January 25, 2006.

Pacific Gas and Electric Company (PG&E), 2006b. Personal Communication with Mike Neer, Project Manager, February 16, 2006.

Pacific Gas and Electric Company (PG&E), 2006c. Letter from David Kraska to Dorris Lam, Energy Division, California Public Utilities Commission, January 23, 2006.

Appendices

PACIFIC GAS AND ELECTRIC COMPANY'S APPLICATION TO CONSTRUCT LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT CPUC A.04-11-011

Final Mitigated Negative Declaration

SCH# 2005122042

Prepared for:
California Public Utilities Commission
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March 2006

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APPENDIX A

Route Comparison Report

APPENDIX A – Route Comparison Report[1]

Introduction

During the initial planning phases of the project, PG&E considered various routes in addition to the Proposed Project. Four routes in addition to the Proposed Project were considered to be feasible and capable of meeting project objectives and therefore were carried forward for analysis in the Proponent's Environmental Assessment (PEA). **Figure A-1 (Modified Figure 3-1 from PEA)** shows the Proposed Project and additional routes[2] evaluated by PG&E between the Lakeville and Sonoma substations. These routes are made up of various combinations of numbered segments as listed below.

Routes	Segments	Total Miles
PG&E		
Proposed Project	1-2-17	7.23
Route A	1-3-12-11-9-8-7-5-6	8.45
Route B	1-2-13-12-4-5-6	7.85
Route C	14-10-11-4-5-6	8.30
Route D	14-15-16-8-7-5-6	8.78

In response to concerns raised by the ~~City and~~ County of Sonoma, Department of Public Works, the CPUC considered an additional ~~two~~ route~~s~~ ~~that include the following:~~ as listed below.

Routes	Segments	Total Miles
CPUC		
Route E	14-15-16-4-5-6 Plus new alignment (*See* written description below)	Unknown
~~Preferred Route~~	~~1-2-17~~ ~~Underground part of Segment 17~~	~~7.23~~

For informational purposes, the following sections describe the Proposed Project and various routes comparison ~~evaluated by PG&E and the preferred route evaluated by the CPUC~~. Each of these routes has been evaluated under the following criteria based on their environmental effects:

- Impacts to environmental resources.
- Unnecessary creation of new utility corridors and number of roadway and utility crossings.
- Minimization of issues related to land use impacts and disturbances.

Proposed Project

The Lakeville–Sonoma 115 kV Transmission Line Project proposes to add a second 115 kV transmission circuit to an existing transmission line corridor between the Lakeville Substation and the Sonoma Substation. Co-locating the two circuits on a single set of double-circuit tubular steel poles (TSPs) and wood poles would minimize project impacts, and modifying these two substations would be

[1] Although an analysis of alternatives under CEQA (CEQA Guidelines Section 15126.6 (a)) is not required for a MND, PG&E evaluated several route alternatives to the proposed Lakeville-Sonoma 115kV Transmission Line Project in accordance with Section IX.B.1.c of CPUC General Order 131-D.
[2] The word "route" is referred to the word "alternative" in the PEA.

necessary to accommodate the new circuit. For the portion of the Proposed Project located in Segment 1 on the Moon Ranch property, the transmission line would be installed within the existing right of way (ROW) pole for pole. (*See* Pacific Gas And Electric Company's Application to Construct Lakeville-Sonoma 115 kV Transmission Line Project CPUC A.04-11-011, Draft Mitigated Negative Declaration **Figure 1-3**).

The double-circuit transmission line would begin at the Lakeville Substation, parallel Adobe Road northeast, and then pass north and east through vineyards and ranch lands (Segment 1). The line would then roughly parallel Felder Road near the junction of Felder Road and Felder Creek to the junction of Felder Road and Leveroni Road (Segment 2). From there it would follow Leveroni Road (Segment 17) and would include an underground section from approximately Fifth Street West to the Sonoma Substation ~~(Segment 17)~~.

The Proposed Project would also include modifying and adding equipment at the Lakeville and Sonoma substations. At the Lakeville substation, an existing chain link fence would be moved slightly closer to Frates Road to accommodate additional equipment; whereas, at the Sonoma substation, all new equipment would be installed within the existing fence line.

~~The Proposed Project was not selected as the preferred project due to the concerns raised by the City of Sonoma regarding the visual and land use designation impacts associated with the Proposed Project on the Sonoma Creek and Four Corners "gateways" area. For a more detailed evaluation of the Proposed Project please see the MND/IS.~~

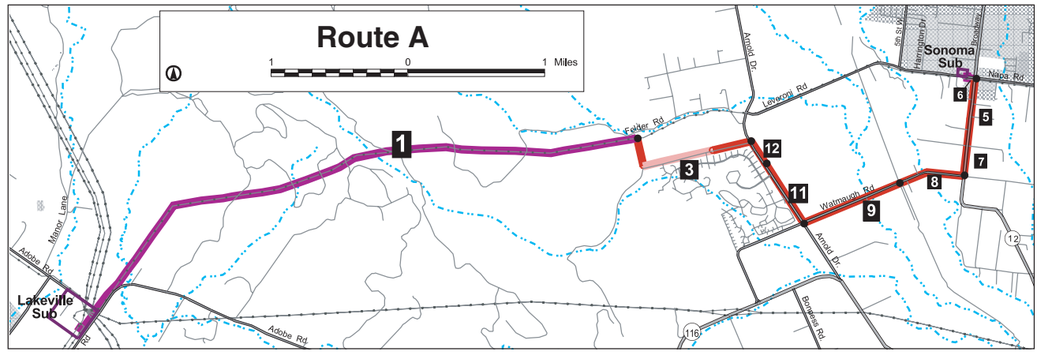
Route A (Segment 1-3-12-11-9-8-7-5-6)

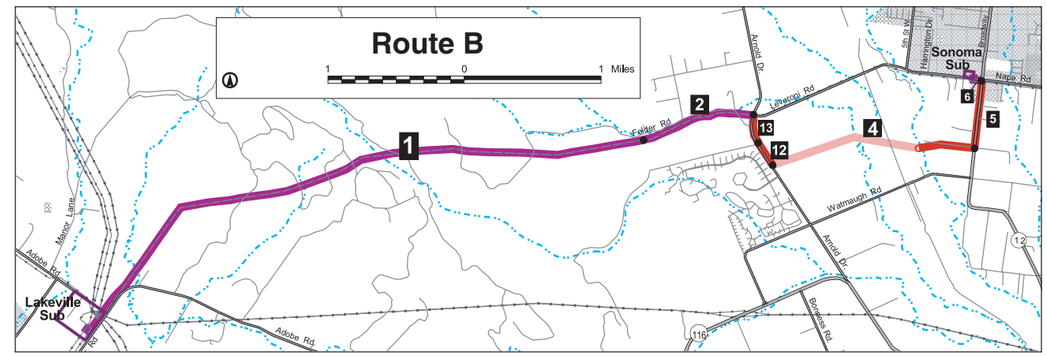
Route A follows the same alignment as the Proposed Project along the west half of the route (Segment 1). As with the Proposed Project, for the portion of the project in Segment 1 located on the Moon Ranch property, the transmission line would be installed within the existing ROW. Near the junction of Felder Road and Felder Creek, at approximately pole 71 of the Proposed Project, the route turns south and runs adjacent to Temelec, a residential subdivision (Segment 3,12,11), before turning east at Watmaugh Road (Segment 9, 8) and north along Highway 12 (Segment 7,5,6). As with the Proposed Project, Segment 1 would replace an existing single-circuit wood pole 115 kV transmission line with a double-circuit 115 kV transmission line on tubular steel poles. The eastern half of Route A would involve installing a new single-circuit transmission line that would carry existing distribution lines underneath. Note that approximately 3,000 feet of the route on Segment 3 would involve installing a new transmission line adjacent to a portion of the Temelec subdivision where no distribution or transmission lines currently exist. Construction methods and equipment usage for Route A would be the same as those described for the Proposed Project in the MND/IS. Route A is over one mile longer than the Proposed Project.

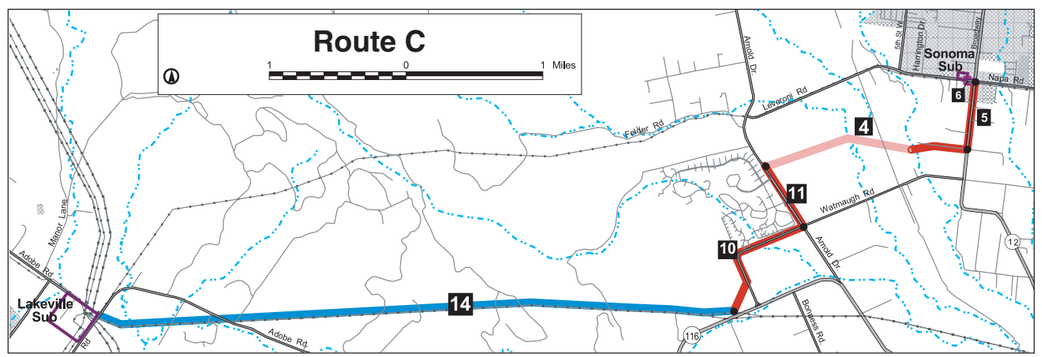
Evaluation of Environmental Factors

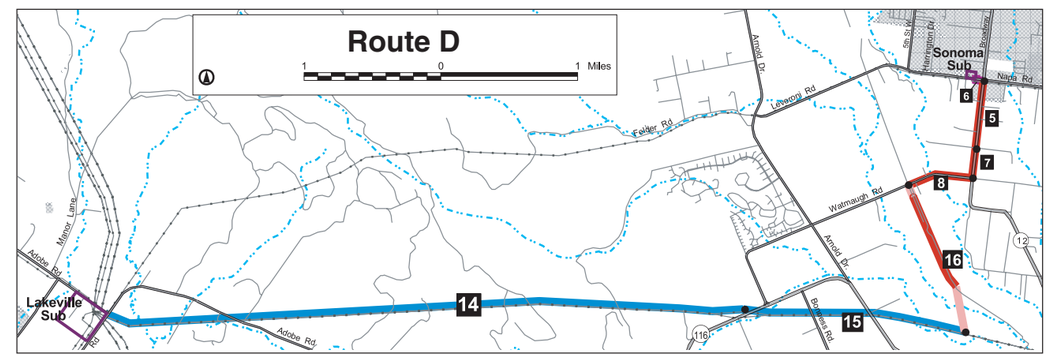
For those issue areas where there would be no difference in environmental impacts between Route A and the Proposed Project, an analysis is provided in the Draft MND/IS for Segment 1 of the Proposed Project for all issues areas. For Segment 3, 5, 6, 7, 8, 9, 11, 12 the differences are as follows:

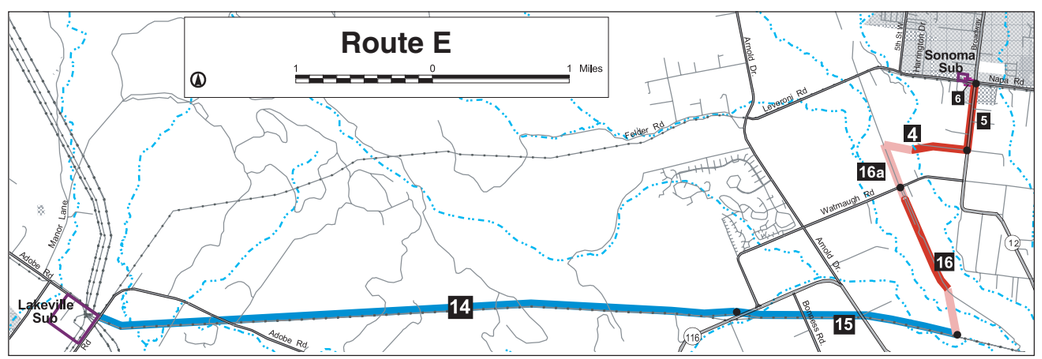
Aesthetics: Although Route A would reduce visual impacts of the Proposed Project at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive, other visual impacts would occur. Segments 5, 7, 11, and 12 would involve installing a new transmission line along Highway 12 and Arnold Drive, which are county-designated scenic corridors for a distance of about 3/4-mile on each road. Highway 12 is also considered "eligible" for the State Scenic Highway program, but it has not officially been designated. However, since there are existing distribution poles and lines in place along Highway 12 and Arnold Drive that would be used to co-locate the new line with the

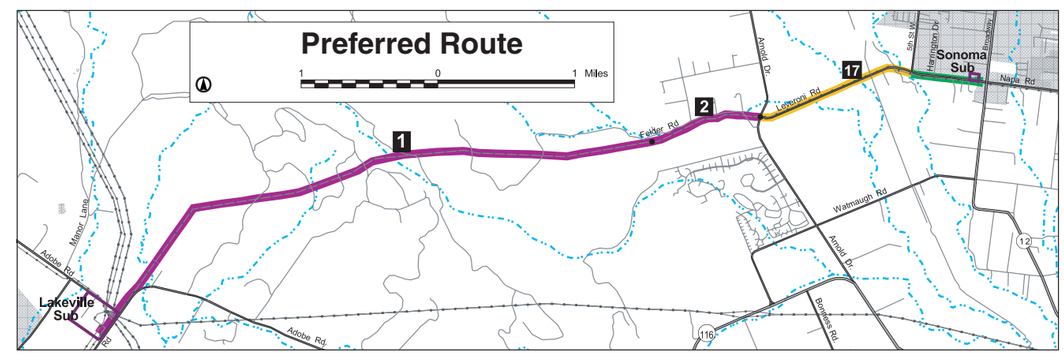












Proposed / Alternative Transmission Lines

- TSP Single Circuit
- TSP Double Circuit
- Wood Pole Single Circuit (new line)
- Underground Transmission Line
- Wood Pole Single Circuit w/ Dist Under
- Wood Pole Double Circuit w/ Dist Under (Some TSP used mostly for angle poles.)
- 1 Route Segment #
- Existing Transmission Line
- Existing Substation

SOURCE: PG&E/EDAW Inc. 2003-05, ESA 2005

Lakeville-Sonoma 115 kV Transmission Line Project . 204202

Figure A-1
Route Comparisons

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existing distribution lines on shared poles (albeit taller than the existing poles), this would be a less-than-significant impact.

Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection (City of Sonoma 1995). However, as the new transmission line would be co-located with existing transmission and distribution lines on shared poles (albeit taller), there would not be a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Route A could result in a significant visual impact by installing a new transmission line along the north side of the Temelec residential subdivision where there is a neighborhood walkway with views of adjacent open space and vineyards. Currently there are no transmission or distribution lines along the western half of Segment 3; Route A would likely be a significant change to the existing visual character of the walkway and would likely be noticed by people who regularly use this walkway for relaxation, exercise, and views of adjacent open space. Therefore, Route A would result in greater visual impacts than the Proposed Project.

For a portion of Segment 8 along Watmaugh Road, extensive tree removal and cutting of cypress trees would be necessary for safety reasons. Removal and/or cutting would adversely affect the existing visual character of Watmaugh Road, as well as the view of the trees from Highway 12, which could be a significant visual impact, depending on the amount of cutting or tree removal needed.

Due to the potential of significant visual impacts to the residences of the Temelec subdivision and to Watmaugh Road, this route would have slightly greater impacts than the Proposed Project.

Agricultural Resources: Segment 3 contains some vineyard farmland which is under Williamson Act contract. A small amount would be taken up by pole footprints; however, this would not conflict with the Williamson Act contract, however the potential impact is greater than in the Proposed Project since no contracted lands would be affected.

Air Quality: Impacts would be similar to the Proposed Project.

Biological Resources: Impacts associated with Route A would be similar to the Proposed Project. Cutting or removal of the cypress trees along Watmaugh Road (Segment 8) would not constitute a significant impact on biological resources as long as removal occurs during non-nesting season to protect birds, and would not conflict with County ordinances which permit tree trimming around utility lines.

Cultural Resources: Route A could impact a cultural resource (CA-Nap-260 prehistoric habitation site) and require mitigation which may include archaeological excavation. There are four previously identified cultural resources along Route A: the Petaluma Adobe building (State Historic Landmark 18) inside the Petaluma Adobe State Historic Park; a historic stone wall, Temelec Hall (State Historic Landmark 237), and site CA-Nap-260 (a prehistoric habitation site). Temelec Hall was erected in 1858 by Granville P. Swift, a member of the Bear Flag Party. General Percifor Smith, U.S. military commander in California, lived nearby in 1849. CA-Nap-260 was first identified in 1958 when obsidian and clamshells were noted in midden deposits. The site is extensive, measuring approximately 250' x 135' at the time it was originally recorded. Like the Proposed Project, impacts to the Petaluma Adobe State Historic Park and the stone wall would be less-than-significant. There would be no impact on Temelec Hall (near Segment 3) under Route A, although there could be impacts to CA-Nap-260 should the site extend into the area where new transmission line poles would be installed. Therefore, Route A would have slightly greater impacts than the Proposed Project.

Geology, Soils, and Seismicity: Impacts would be similar to the Proposed Project.

Hazards and Hazardous Materials: Impacts would be similar to the Proposed Project.

Hydrology and Water Quality: Impacts would be similar to the Proposed Project.

Land Use and Planning: Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. Since the new transmission line would be combined with existing transmission and distribution lines on shared poles (albeit taller), this would not result in a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Route A would also bring the transmission line adjacent to a greater number of residences and businesses than the proposed project; adjacent to homes (Segments 3, 12, 11, 9, 8, 7 and 5), adjacent to businesses (Segments 5 and 7), as well as adjacent to a school on the west side of Highway 12 in the middle of Segment 5, where no transmission line currently exists. Note, no residences or businesses along Segments 5 and 7 would need to be relocated.

New right-of-way would be acquired along part of Segment 3, but this would not create significant land use impacts on the vineyard and residential subdivision, as property owners would be compensated for the value of the easement and restrictions on land uses under the transmission line.

Due to the proximity of the Route to a greater number of residences and businesses than the proposed project as well as the need to acquire new right-of-way, Route A would have slightly greater impacts than the Proposed Project.

Mineral Resources: Impacts would be similar to the Proposed Project.

Noise: The primary difference between the Proposed Project and Route A relative to noise is the proximity of sensitive receptors (schools, residences, churches, etc.). Route A would bring the transmission line adjacent to a greater number of residents (e.g., Segments 3, 11, 12, 9, 8, 5 and 7) constituting a temporary impact to nearby residents. Therefore, Route A would have slightly greater impacts than the Proposed Project.

Population and Housing: Impacts would be similar to the Proposed Project.

Public Services: Impacts would be similar to the Proposed Project.

Recreation: Impacts would be similar to the Proposed Project.

Transportation and Traffic: Impacts would be similar to the Proposed Project. However this route would parallel California State Highway 12. Therefore, construction efforts would need to be coordinated with Caltrans; and long-term plans for widening Highway 12 may be needed in this area.

Utilities and Services Systems: Impacts would be similar to the Proposed Project.

Conclusion: While Route A would reduce visual impacts at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; Route A was not selected as the preferred route because of the potential impacts related to Aesthetics, Agricultural Resources, Biological Resources, Noise and Land Use.

Route B (Segment 1-2-13-12-4-5-6)

Route B follows the same alignment as the Proposed Project along the western half of the route (Segment 1, 2). As with the Proposed Project, for portion of Segment 1 located on the Moon Ranch property, the transmission line would be installed within the existing ROW pole for pole. At the junction of Felder Road and Leveroni Road, Pole 89 of the Proposed Project, the route then turns south at Arnold Drive (Segment 13, 12), continuing approximately 2,000 feet and then cuts east across agricultural lands, crossing Sonoma Creek (Segment 4), before turning north along Highway 12 (Segment 5,6). The portion of Segment 4 that cuts east from Arnold Drive to just before the crossing of Sonoma Creek would involve installing a new single-circuit transmission line where no distribution or transmission lines currently exist. Construction methods and equipment usage for Route B would be the

same as those described for the Proposed Project in the MND/IS. Route B is about half a mile longer than the Proposed Project.

Evaluation of Environmental Factors

For those issue areas where there would be no difference in environmental impacts between Route B and the Proposed Project, an analysis is provided in the MND/IS for Segment 1 and 2 of the Proposed Project for all issues areas. For Segment 4, 5, 6, 12 and 13 the differences are as follows:

Aesthetics: Route B would reduce visual impacts of the Proposed Project at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; however, other visual impacts would occur. Segments 5, 13, and 12 would involve installing a new transmission line along Highway 12 and Arnold Drive, which are county-designated scenic corridors for a distance of about 3/4-mile on each road. Highway 12 is also considered "eligible" for the State Scenic Highway program, but it has not officially been designated. However, since there are existing distribution poles and lines in place along Highway 12 and Arnold Drive that would be used to co-locate the new line with the existing distribution lines on shared poles (albeit taller than the existing poles), this would be a less-than-significant impact.

Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection (City of Sonoma 1995). However, as the new transmission line would be co-located with existing transmission and distribution lines on shared poles (albeit taller), there would not be a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Installation of Segment 4 would conflict with Sonoma County General Plan policies to retain the largely open, scenic character of important scenic landscape units (Sonoma County 1998) and could therefore create a significant visual impact, as it would be placed in open space/agricultural lands where there currently are no electrical lines. Additionally, Segment 4 conflicts with the County policy to preserve scenic values along designated scenic highway corridors, as it would be visible from Arnold Road. Visual impact on the eastern end of Segment 4 would not be significant as there are exiting distribution lines within that area.

Therefore, due to the potential of significant visual impacts to open space/agricultural lands and the direct conflict with the Sonoma County General Plan policies, this route would have slightly greater impacts than the Proposed Project.

Agricultural Resources: Impacts would be similar to the Proposed Project.

Air Quality: Impacts would be similar to the Proposed Project.

Biological Resources: Route B impacts would be similar to the Proposed Project with the exception of an additional vernal pool in Segment 4 that could potentially be affected. Therefore, Route B would have a slightly great impact than the Proposed Project.

Cultural Resources: Impacts would be the same as the Proposed Project.

Geology, Soils, and Seismicity: Impacts would be similar to the Proposed Project.

Hazards and Hazardous Materials: Impacts would be similar to the Proposed Project.

Hydrology and Water Quality: Impacts would be similar to the Proposed Project.

Land Use and Planning: Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. Since the new transmission line would be combined

with existing transmission and distribution lines on shared poles (albeit taller), this would not result in a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Route B would also bring the transmission line adjacent to a greater number of residences and businesses than the Proposed Project; adjacent to homes where no transmission line exist (Segments 13, 12, 4, and 5), adjacent to businesses (Segments 5), as well as adjacent to a school on the west side of Highway 12 in the middle of Segment 5, where no transmission line currently exists. Note, no residences or businesses along Segment 5 would need to be relocated.

Acquisition of a new right-of-way and placement of a transmission line across active agricultural lands where no lines currently exist along most of Segment 4 could cause a significant impact as farmers would have to operate around the transmission poles in their fields. However, generally this can be mitigated to a less-than-significant level with the strategic placement of the transmission line poles or monetary compensation.

Due to the proximity of the Route to a greater number of residences and businesses than the proposed project as well as the need to acquire new right-of-way, Route B would have slightly greater impacts than the Proposed Project.

Mineral Resources: Impacts would be similar to the Proposed Project.

Noise: The primary difference between the Proposed Project and Route B relative to noise is the proximity of sensitive receptors (schools, residences, churches, etc.). Route B would bring the transmission line adjacent to a greater number of residents (e.g., Segments 12, 5 and 6) constituting a temporary impact to nearby residents. Therefore, Route B would have slightly greater impacts than the Proposed Project.

Population and Housing: Impacts would be similar to the Proposed Project.

Public Services: Impacts would be similar to the Proposed Project.

Recreation: Impacts would be similar to the Proposed Project.

Transportation and Traffic: Impacts would be similar to the Proposed Project. However, as with Route A, this route would parallel California State Highway 12. Therefore, construction efforts would need to be coordinated with Caltrans; and long-term plans for widening Highway 12 may be needed in this area.

Utilities and Services Systems: Impacts would be similar to the Proposed Project.

Conclusion: While Route B would reduce visual impacts at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; Route B was not selected as the preferred route because of the additional potential impacts related to Aesthetics, Biological Resources, Noise and Land Use.

Route C (Segment 14-10-11-4-5-6)

Route C proposes a new single-circuit 115 kV transmission line on tubular steel poles that would run parallel to an existing 120-foot 230 kV lattice tower transmission line near Adobe Road and Highway 116 (Segment 14). At approximately ¼ mile before the intersection of Watmaugh Road and Highway 116, a wood pole line would be installed, running in a northwesterly direction until intersecting Watmaugh Road where it would continue north (Segment 10). Then the route continues along the south and east sides of the Temelec residential subdivision (Segment 10, 11), approximately ½ mile on Arnold Drive, before cutting across agricultural lands (Segment 4) and turning north along Highway 12 (Segment 5, 6). Portion of Segment 4, which cuts east from Arnold Drive to just before the crossing of Sonoma Creek, would involve installing a new single-circuit transmission line where no distribution or transmission lines currently exist. Construction methods and equipment usage for Route C would be the

same as those described for the Proposed Project in the MND/IS. Route C is over one mile longer than the Proposed Project.

Evaluation of Environmental Factors

While certain construction related impacts would be the same as the Proposed Project, certain resource impacts would be different as Route C does not have any segments in common with the Proposed Project.

Aesthetics: Route C would reduce visual impacts of the Proposed Project at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; however, other visual impacts would occur. Segments 5 and 11 would involve installing a new transmission line along Highway 12 and Arnold Drive, which are county-designated scenic corridors for a distance of about 3/4-mile on each road. Segment 14 would also cross Adobe Road and be located near Highway 116, another county scenic corridor. Highway 12 is also considered "eligible" for the State Scenic Highway program, but it has not officially been designated. However, since there are existing distribution poles and lines in place along Highway 12 and Arnold Drive that would be used to co-locate the new line with the existing distribution lines on shared poles (albeit taller than the existing poles), this would be a less-than-significant impact. Additionally, since Segment 14 would parallel an existing 230 kV lattice tower transmission line, this would be a less-than-significant impact.

Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. However, as the new transmission line would be co-located with existing transmission and distribution lines on shared poles (albeit taller), there would not be a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Installation of Segment 4 would conflict with Sonoma County General Plan policies to retain the largely open, scenic character of important scenic landscape units (Sonoma County 1998) and could therefore create a significant visual impact, as it would be placed in open space/agricultural lands where there currently are no electrical lines. Additionally, Segment 4 conflicts with the County policy to preserve scenic values along designated scenic highway corridors, as it would be visible from Arnold Road. Visual impact on the eastern end of Segment 4 would not be significant as there are exiting distribution lines within that area.

Therefore, due to the potential of significant visual impacts to open space/agricultural lands and the direct conflict with the Sonoma County General Plan policies, this route would have slightly greater impacts than the Proposed Project.

Agricultural Resources: Impacts would be similar to the Proposed Project.

Air Quality: Impacts would be similar to the Proposed Project.

Biological Resources: Route C construction related impacts to biological resources would be similar to the Proposed Project. However, protocol-level surveys for special-status plants and California red-legged frog (CRLF) (Rana aurora draytonii) would be required along Segments 10 and 14 to determine if additional impacts could occur in these areas. Suitable habitat for 18 species of special-status plants is found within Segments 10 and 14.

Impacts to protected valley oaks and landmark and heritage trees may be less likely for Route C than for the Proposed Project. Potential impacts from the spread of invasive plants are likely to be similar, although different species of invasive plants from those noted for the proposed route could cause impacts.

Impacts to high-value wetlands could be less than those of the Proposed Project. However, in Segment 4, one vernal pool could be affected and additional vernal pools may exist in Segment 10.

Potential impacts to sensitive aquatic species would be similar to the Proposed Project assuming that major streams such as Rodgers, Carriger and Sonoma creeks would be spanned by the transmission line and direct impacts to these stream zones would be avoided. The potential risk to nesting birds associated with operation and maintenance may be somewhat greater because the existing Lakeville-Sonoma transmission line would continue to operate along with the proposed new line. This risk would be minimized by implementation of existing avoidance measures for nesting birds.

It is likely that all of these potential impacts could be mitigated to a less-than-significant level although, for special-status plants and CRLF, the results of protocol-level surveys would be needed to determine this with certainty.

Although impacts associated with valley oaks, land mark and heritage trees, high value wetlands appears to be less than the Proposed Project; impacts to vernal pools may be higher; therefore, Route C would have roughly proportional impacts as the Proposed Project.

Cultural Resources: There is one previously identified cultural resource along Route C. This consists of site CA-Nap-260, a prehistoric habitation site which was first identified in 1958 when obsidian and clamshell were noted in midden deposits. This site is extensive, measuring approximately 250' x 135' at the time it was originally recorded. Based on the best available knowledge of this site, Route C is not expected to impact this cultural resource; therefore, this would have slightly less impacts than the Proposed Project. However, if the site extends beyond the known boundary, this will need to be reevaluated.

Geology, Soils, and Seismicity: Impacts would be similar to the Proposed Project.

Hazards and Hazardous Materials: Impacts would be similar to the Proposed Project.

Hydrology and Water Quality: Impacts would be similar to the Proposed Project.

Land Use and Planning: Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. Since the new transmission line would be combined with existing transmission and distribution lines on shared poles (albeit taller), this would not result in a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact. However most of Segment 14, which parallels an existing 230 kV lattice tower transmission line, would not conflict with the Sonoma County General Plan as it encourages the use of existing utility corridors.

Route C would also bring the transmission line adjacent to a greater number of residences and businesses than the Proposed Project; adjacent to homes where no transmission line exist (Segments 4, 5, 10, and 11), adjacent to businesses (Segment 5), as well as adjacent to a school on the west side of Highway 12 in the middle of Segment 5, where no transmission line currently exists. Note, no residences or businesses along Segment 5 would need to be relocated.

Acquisition of a new right-of-way and placement of a transmission line across active agricultural lands where no lines currently exist along most of Segments 4 and 14 could cause a significant impact as farmers would have to operate around the transmission poles in their fields. However, generally this can be mitigated to a less-than-significant level with the strategic placement of the transmission line poles or monetary compensation.

Due to the proximity of Route C to a greater number of residences and businesses than the Proposed Project as well as the need to acquire new right-of-way, Route C would have slightly greater impacts than the Proposed Project.

Mineral Resources: Impacts would be similar to the Proposed Project.

Noise: The primary difference between the Proposed Project and Route C relative to noise is the proximity of sensitive receptors (schools, residences, churches, etc.). Route C would locate the transmission line adjacent to a greater number of residents (e.g., Segments 10, 11, 5 and 6) constituting

a temporary impact to nearby residents. Therefore, Route C would have slightly greater impacts than the Proposed Project.

Population and Housing: Impacts would be similar to the Proposed Project.

Public Services: Impacts would be similar to the Proposed Project.

Recreation: Impacts would be similar to the Proposed Project.

Transportation and Traffic: Impacts would be similar to the Proposed Project. However as with Route A and B, this route would parallel California State Highway 12. Therefore, construction efforts would need to be coordinated with Caltrans; and long-term plans for widening Highway 12 may be needed in this area.

Utilities and Services Systems: Impacts would be similar to the Proposed Project.

Conclusion: While Route C would reduce visual impacts at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive, it would be located near a greater number of residences and businesses than the Proposed Project. Additionally, potential impact to protected valley oaks, landmark and heritage trees, wetlands and vernal pools may be slightly less than the Proposed Project. However, Route C was not selected as the preferred route because of the additional potential impacts related to Aesthetics, Land Use and Noise.

Route D (Segment 14-15-16-8-7-5-6)

Route D proposes a new single-circuit 115 kV transmission line on tubular steel poles that would run parallel to an existing 230 kV lattice tower transmission line near Adobe Road and Highway 116 (Segment 14 and 15). Approximately ¾ of a mile southeast of where the line crosses over Arnold Drive, a wood pole would be installed, turning north for a short distance before joining up with an existing distribution line that continue to run north and meets up with Watmaugh Road (Segment 16). The line would turn east at Watmaugh Road (Segment 8), then north along Highway 12 (Segment 7 and 5) and proceed west on Napa Road to the Sonoma Substation (Segment 6). Construction methods and equipment usage for Route D would be the same as those described for the Proposed Project in the MND/IS. Portion of Segment 16 would involve installing a new single-circuit transmission line where no distribution or transmission line currently exist. Route D is one and a half miles longer than the Proposed Project.

Evaluation of Environmental Factors

While certain construction related impacts would be the same as the Proposed Project, certain resource impacts would be different as Route D does not have any segments in common with the Proposed Project.

Aesthetics: Route D would reduce visual impacts of the Proposed Project at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; however, other visual impacts would occur. Segments 5 and 7 would involve installing a new transmission line along Highway 12 and Segment 15 would cross Arnold Drive, which are all county-designated scenic corridors. Segment 14 would also cross Adobe Road and be located near Highway 116, another county scenic corridor. Highway 12 is also considered “eligible” for the State Scenic Highway program, but it has not officially been designated. However, since there are existing distribution poles and lines in place along Highway 12 and Arnold Drive that would be used to co-locate the new line with the existing distribution lines on shared poles (albeit taller than the existing poles), this would be a less-than-significant impact. Additionally, since Segment 14 would parallel an existing 230 kV lattice tower transmission line, this would be a less-than-significant impact.

Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. However, as the new transmission line would be co-located with existing transmission and distribution lines on shared poles (albeit taller), there would not be a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Installation portion of Segment 16 would conflict with Sonoma County General Plan policies to retain the largely open, scenic character of important scenic landscape units (Sonoma County 1998) and could therefore create a significant visual impact, as it would be placed in open space/agricultural lands where there currently are no electrical lines. Additionally, Segment 15 and potentially 16 conflicts with the County policy to preserve scenic values along designated scenic highway corridors, as it would be visible from Arnold Drive.

Due to the type and size of the cypress trees along Watmaugh Road of Segment 8, extensive tree removal and cutting would be necessary for safety reasons; therefore, adversely affecting the existing visual character of Watmaugh Road, as well as the view of the trees from Highway 12.

Therefore, due to the potential of significant visual impacts to open space/agricultural lands, Watmaugh Road, and the direct conflict with the Sonoma County General Plan policies, this route would have slightly greater impacts than the Proposed Project.

Agricultural Resources: Impacts would be similar to the Proposed Project.

Air Quality: Impacts would be similar to the Proposed Project.

Biological Resources: Construction related impacts to biological resources associated with Route D would be similar to the Proposed Project. However, protocol-level surveys for special-status plants and California red-legged frog (CRLF) (*Rana aurora draytonii*) would be required along Segments 14, 15 and 16 to determine if additional impacts could occur in these areas. Suitable habitat for 18 species of special-status plants is found within these segments.

Impacts to protected valley oaks and landmark and heritage trees may be less likely for Route D than for the Proposed Project. Potential impacts from the spread of invasive plants are likely to be similar, although different species of invasive plants from those noted for the proposed route could cause impacts.

Potential impacts to sensitive aquatic species would be similar to the Proposed Project assuming that major streams such as Rodgers, Fowler and Sonoma creeks would be spanned by the transmission line and direct impacts to these stream zones would be avoided. The potential risk to nesting birds associated with operation and maintenance may be somewhat greater because the existing Lakeville-Sonoma transmission line would continue to operate along with the proposed new line.

Although impacts associated with valley oaks, land mark and heritage trees appears to be less than the Proposed Project; impacts to nesting birds may be more; therefore, Route D would have roughly proportional impacts as the Proposed Project.

Cultural Resources: There is one previously identified cultural resource along Route D. This consists of site CA-Nap-266, a lithic scatter site which may be impacted should the site extend into the area where Route D poles would be installed. Based on the best available knowledge of this site, Route D is not expected to impact this cultural resource; therefore, this would have slightly less impacts than the Proposed Project. However, if the site extends beyond the known boundary, this will need to be reevaluated.

Geology, Soils, and Seismicity: Impacts would be similar to the Proposed Project.

Hazards and Hazardous Materials: Impacts would be similar to the Proposed Project.

Hydrology and Water Quality: Impacts would be similar to the Proposed Project.

Land Use and Planning: Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. Since the new transmission line would be combined with existing transmission and distribution lines on shared poles (albeit taller), this would not result in a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact. However, most of Segment 14, which parallels an existing 230 kV lattice tower transmission line, would not conflict with the Sonoma County General Plan as it encourages the use of existing utility corridors.

Route D would also bring the transmission line adjacent to a greater number of residences and businesses than the Proposed Project; adjacent to homes where no transmission line exist (Segments 5, 7, 8, and 16), adjacent to businesses (Segment 5), as well as adjacent to a school on the west side of Highway 12 in the middle of Segment 5, where no transmission line currently exists. Note, no residences or businesses along Segments 5 or 7 would need to be relocated.

Acquisition of a new right-of-way and placement of a transmission line across active agricultural lands where no lines currently exist along most of Segments 14, 15 and 16 could cause a significant impact as farmers would have to operate around the transmission poles in their fields. However, generally this can be mitigated to a less-than-significant level with the strategic placement of the transmission line poles or monetary compensation.

Due to the proximity of Route D to a greater number of residences and businesses than the Proposed Project as well as the need to acquire new right-of-way, Route D would have slightly greater impacts than the Proposed Project.

Mineral Resources: Impacts would be similar to the Proposed Project.

Noise: The primary difference between the Proposed Project and Route D relative to noise is the proximity of sensitive receptors (schools, residences, churches, etc.). Route D would bring the transmission line adjacent to a greater number of residents (e.g., Segments 5, 7, 8, and 16) constituting a temporary impact to nearby residents. Therefore, Route D would have slightly greater impacts than the Proposed Project.

Population and Housing: Impacts would be similar to the Proposed Project.

Public Services: Impacts would be similar to the Proposed Project.

Recreation: Impacts would be similar to the Proposed Project.

Transportation and Traffic: Impacts would be similar to the Proposed Project. However as with Route A through C, this route would parallel California State Highway 12. Therefore, construction efforts would need to be coordinated with Caltrans; and potential long-term plans for widening Highway 12 in this area.

Utilities and Services Systems: Impacts would be similar to the Proposed Project.

Conclusion: While Route D would reduce visual impacts at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive, it was not selected as the preferred route because of the additional potential impacts related to Aesthetics, Land Use and Noise.

Route E (Segments 14-15-16-4-5-6 plus new alignment 16a)

Route E proposes a new single-circuit 115 kV transmission line on tubular steel poles that would run parallel to an existing 230 kV lattice tower transmission line near Adobe Road and Highway 116 (Segment 14 and 15). Approximately ¾ of a mile southeast of where the line crosses over Arnold Drive, a wood pole would be installed, turning north for a short distance before joining up with an existing distribution line that continue to run north (Segment 16) until it intersects with the proposed Segment 4 of Route B and C. This line would turn east at Segment 4, then north along Highway 12

(Segment 5) and proceed west on Napa Road to the Sonoma Substation (Segment 6). Portion of Segment 16 would involve installing a new single-circuit transmission line where no distribution or transmission line currently exist. To avoid the impacts associated with the stand of cypress trees on Watmaugh Road (Segment 8) under Route A and D, the Sonoma County Department of Public Works suggested extending Segment 16 (See Figure A-1 referred to as Segment 16a) until it reaches Segment 4. Construction methods and equipment usage for Route E would be the same as those described for the Proposed Project in the MND/IS.

Evaluation of Environmental Factors

While certain construction related impacts would be the same as the Proposed Project, certain resource impacts would be different as Route E does not have any segments in common with the Proposed Project.

Aesthetics: Route E would reduce visual impacts of the Proposed Project at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive; however, other visual impacts would occur. Segments 5 and 7 would involve installing a new transmission line along Highway 12 and Segment 15 would cross Arnold Drive, which are all county-designated scenic corridors. Segment 14 would also cross Adobe Road and be located near Highway 116, another county scenic corridor. Highway 12 is also considered "eligible" for the State Scenic Highway program, but it has not officially been designated. However, since there are existing distribution poles and lines in place along Highway 12 and Arnold Drive that would be used to co-locate the new line with the existing distribution lines on shared poles (albeit taller than the existing poles), this would be a less-than-significant impact. Additionally, since Segment 14 would parallel an existing 230kV lattice tower transmission line, this would be a less-than-significant impact.

Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. However, as the new transmission line would be co-located with existing transmission and distribution lines on shared poles (albeit taller), there would not be a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact.

Installation portion of Segment 16 and the proposed extension to connect with Segment 4 of Route B and C would conflict with Sonoma County General Plan policies to retain the largely open, scenic character of important scenic landscape units (Sonoma County 1998).Therefore, this could create a significant visual impact, as it would be placed in open space/agricultural lands where there currently are no electrical lines. Segment 15, potentially Segment 16 and the proposed extension to connect with Segment 4 of Route B and C would conflicts with the County policy to preserve scenic values along designated scenic highway corridors, as it would be visible from Arnold Drive.

Therefore, due to the potential of significant visual impacts to open space/agricultural lands, and the direct conflict with the Sonoma County General Plan policies, Route E would have slightly greater impacts than the Proposed Project.

Agricultural Resources: Impacts would be similar to the Proposed Project.

Air Quality: Impacts would be similar to the Proposed Project.

Biological Resources: Route E construction related impacts to biological resources would be similar to the Proposed Project. However, protocol-level surveys for special-status plants and California red-legged frog (CRLF) (Rana aurora draytonii) would be required along Segments 14, 15, 16 and the proposed extension to connect with Segment 4 of Route B and C to determine if additional impacts could occur in these areas. Suitable habitat for 18 species of special-status plants is found within these segments.

Impacts to protected valley oaks and landmark and heritage trees may be less likely for Route E than for the Proposed Project. Potential impacts from the spread of invasive plants are likely to be similar,

although different species of invasive plants from those noted for the proposed route could cause impacts.

Potential impacts to sensitive aquatic species would be similar to the Proposed Project assuming that major streams such as Rodgers, Fowler and Sonoma creeks would be spanned by the transmission line and direct impacts to these stream zones would be avoided. The potential risk to nesting birds associated with operation and maintenance may be somewhat greater because the existing Lakeville-Sonoma transmission line would continue to operate along with the proposed new line.

Although impacts associated with valley oaks, land mark and heritage trees appears to be less than the Proposed Project; impacts to nesting birds may be more; therefore, Route E would have roughly proportional impacts as the Proposed Project.

Cultural Resources: There is one previously identified cultural resource along Route E. This consists of site CA-Nap-266, a lithic scatter site which may be impacted should the site extend into the area where Route E poles would be installed. Based on the best available knowledge of this site, Route E is not expected to impact this cultural resource; therefore, this would have slightly less impacts than the Proposed Project. However, if the site extends beyond the known boundary, this will need to be reevaluated.

Geology, Soils, and Seismicity: Impacts would be similar to the Proposed Project.

Hazards and Hazardous Materials: Impacts would be similar to the Proposed Project.

Hydrology and Water Quality: Impacts would be similar to the Proposed Project.

Land Use and Planning: Segments 5 and 6 would conflict with the City of Sonoma's General Plan policy to "enhance" the appearance of its designated Four Corners "gateway" at the Broadway/Highway 12 & Napa Road intersection. Since the new transmission line would be combined with existing transmission and distribution lines on shared poles (albeit taller), this would not result in a significant change from the existing visual character of the intersection and thus would not represent a significant visual impact. However, most of Segment 14, which parallels an existing 230 kV lattice tower transmission line, would not conflict with the Sonoma County General Plan as it encourages the use of existing utility corridors.

Route E would also bring the transmission line adjacent to a greater number of residences and businesses than the Proposed Project; adjacent to homes where no transmission line exist (Segments 5, and 16), adjacent to businesses (Segment 5), as well as adjacent to a school on the west side of Highway 12 in the middle of Segment 5, where no transmission line currently exists. Note, no residences or businesses along Segment 5 would need to be relocated.

Acquisition of a new right-of-way and placement of a transmission line across active agricultural lands where no lines currently exist along most of Segments 4, 14, 15, 16 and the proposed extension to connect with Segment 4 of Route B could cause a significant impact as farmers would have to operate around the transmission poles in their fields. However, generally this can be mitigated to a less-than-significant level with the strategic placement of the transmission line poles or monetary compensation.

Due to the proximity of Route E to a greater number of residences and businesses than the Proposed Project as well as the need to acquire new right-of-way, Route E would have slightly greater impacts than the Proposed Project.

Mineral Resources: Impacts would be similar to the Proposed Project.

Noise: The primary difference between the Proposed Project and Route E relative to noise is the proximity of sensitive receptors (schools, residences, churches, etc.). Route E would bring the transmission line adjacent to a greater number of residents (e.g., Segments 5 and 16) constituting a temporary impact to nearby residents. Therefore, Route E would have slightly greater impacts than the Proposed Project.

Population and Housing: Impacts would be similar to the Proposed Project.

Public Services: Impacts would be similar to the Proposed Project.

Recreation: Impacts would be similar to the Proposed Project.

Transportation and Traffic: Impacts would be similar to the Proposed Project. However as with Route A through D, this route would parallel California State Highway 12. Therefore, construction efforts would need to be coordinated with Caltrans; and potential long-term plans for widening Highway 12 in this area.

Utilities and Services Systems: Impacts would be similar to the Proposed Project.

Conclusion: While Route E would reduce visual impacts at the ~~Sonoma Creek Gateway and the~~ scenic vista located at Leveroni Road at Harrington Drive, as well as concerns raised by the County of Sonoma ~~associated~~ regarding visual and biological impact associated with the cypress trees along Watmaugh Road, it was not selected as the preferred route because of the additional potential impacts related to Aesthetics, Land Use and Noise.

~~*Preferred Route (Segments 1-2-17 including underground)*~~

~~The Preferred Route follows the same alignment as the Proposed Project except that the City of Sonoma has suggested under-grounding the portion of Segment 17 located on Leveroni Road from 5th Street (Pole 108) to the Sonoma Substation. This route assumes that the construction method employed for the modified portion of the Proposed Project would be open trenching. Please see the MND/IS for a detailed evaluation of this route as well as a detailed discussion of the impacts associated with the implementation of Mitigation Measure 2.1-1, which calls for the under-grounding of the portion of the Proposed Project located on Leveroni Road from 5th Street (Pole 108) to the Sonoma Substation.~~

~~This Preferred Route poses fewer overall environmental impacts as well as alleviates the concerns raised by the City of Sonoma by avoiding the potential visual impact and conflict with local land use designation that the Proposed Project would have on the Sonoma Creek and Four Corners "gateways" area.~~

Conclusion

This ~~Preferred Route~~ Proposed Project was chosen as the Preferred Route over the ~~Proposed Project~~ other routes because it poses fewer overall environmental impacts ~~as well as alleviates the concerns raised by the City of Sonoma. The Preferred Route~~ and avoids potential visual impacts ~~and land use designation conflict that the Proposed Project would have~~ on the Sonoma Creek and Four Corners "gateways" area. Therefore, the CPUC staff concluded that the Proposed Project~~, including a mitigation measure in the Land Use Section and referenced in the Aesthetics Section of the Lakeville-Sonoma 115kV Transmission Line Project CEQA documentation,~~ is the environmentally superior route.

Table A-1. Summary Comparison of Routes to the Proposed Project

Evaluation Factor	Route A	Route B	Route C	Route D	Route E	~~Preferred Route~~
			ENVIRONMENTAL FACTORS			
Environmental Impacts	Better than Proposed Project: • None	Better than Proposed Project: • None	Better than Proposed Project: • Cultural Resources	Better than Proposed Project: • Cultural Resources	Better than Proposed Project: • Cultural Resources	~~Better than Proposed Project:~~ ~~• Aesthetics~~ ~~• Land Use~~
	Worse than Proposed Project: • Aesthetics • Agricultural Resources • Land Use • Cultural Resources	Worse than Proposed Project: • Aesthetics • Biological Resources • Noise • Land Use	Worse than Proposed Project: • Aesthetics • Noise • Land Use	Worse than Proposed Project: • Aesthetics • Noise • Land Use	Worse than Proposed Project: • Aesthetics • Noise • Land Use	~~Worse than Proposed Project:~~ ~~• None~~
Creation of Utility Corridors	Creates new electrical transmission corridor in a portion of Segment 3	Creates an entirely new electrical transmission corridor in most of Segment 4	Creates an entirely new electrical transmission corridor in most of Segment 4	Creates an entirely new electrical transmission corridor in most of Segment 16	Creates an entirely new electrical transmission corridor in most of Segment 16 and proposed extension (16a) to meet Segment 4	~~None~~
			TECHNICAL AND ECONOMIC FACTORS			
System Reliability	Feasible	Feasible	Feasible	Feasible	Feasible	~~Feasible~~
Engineering and Design	Feasible	Feasible	Feasible	Feasible	Feasible	~~Feasible~~
Length of Line	8.4 miles	7.85 miles	8.30 miles	8.78 miles	7.43 miles	~~7.23 miles~~
Construction and Operation Access	Feasible	Feasible	Feasible	Feasible	Feasible	~~Feasible~~
Construction and Maintenance Cost	Greater than Proposed Project	Greater than Proposed Project	Greater than Proposed Project	Greater than Proposed Project	Greater than Proposed Project	~~Greater than Proposed Project~~

APPENDIX B

Electric and Magnetic Fields (EMF) and Other Field-Related Concerns

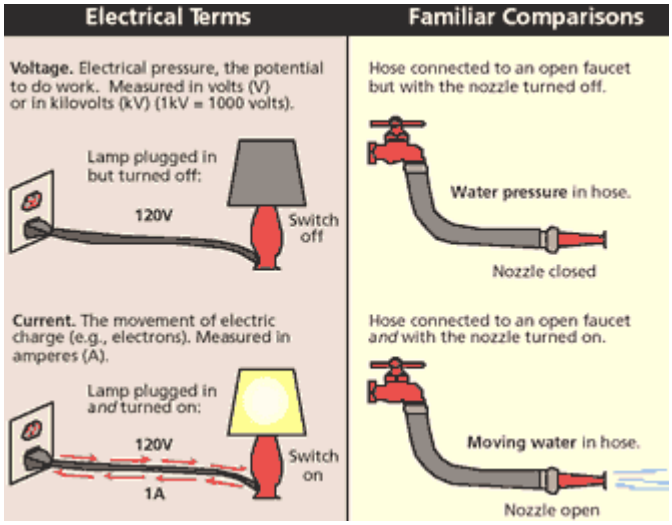
Appendix B

Electric and Magnetic Fields (EMF) and Other Field Related Concerns

EMF is an acronym for "electric and magnetic fields." As explained by the National Institutes of Health, electric and magnetic fields (EMF) are "…invisible lines of force that surround any electrical device. Power lines, electrical wiring, and electrical equipment all produce EMF." [1] EMF has two distinct components: **electric fields** (created by **electric voltage,** measured in *volts [V] or kilovolts [Kv]*), and **magnetic fields** (created by **electric current,** *measured in amperes [A]*).

Figure B-1 below illustrates the electrical *voltage* and *current* concepts:

FIGURE B-1
VOLTAGE VS. CURRENT



SOURCE: National Institutes of Health EMF RAPID Website

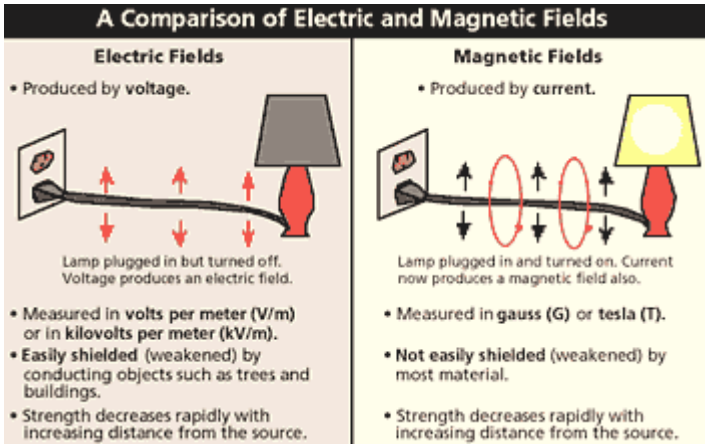
As explained by the National Institutes of Health, "…electric fields are produced by voltage and increase in strength as the voltage increases. The electric field strength is measured in units of volts per meter (V/m). Magnetic fields result from the flow of current through wires or electrical devices and increase in strength as the current increases. Magnetic fields are measured in units of gauss (G) or tesla (T)."[2]

Figure B-2 below illustrates the difference between *electric* and *magnetic* fields:

1 From the National Institute of Environmental Health Web Site on EMF, the EMF RAPID (Research and Public Information Dissemination) project, http://www.niehs.nih.gov/emfrapid/booklet/basics.htm

2 *Ibid.*

FIGURE B-2
ELECTRIC VS. MAGNETIC FIELDS



SOURCE: National Institutes of Health EMF RAPID Website

At low frequencies (such as those associated with EMF from transmission lines), the electric and magnetic fields are separable. By contrast, at high and super high frequencies, the fields are inseparable.[3]

EMF can occur naturally and/or result from human activities. Examples of **naturally-occurring EMF** are found in lightning and in the Earth's magnetic field, which causes a compass needle to point north.[4] Naturally-occurring electromagnetic fields also exist in the human body and allow messages to flow through the nervous system.[5] EMF can also be generated as a result of **human activities** such as communications, appliances, and the generation, transmission, and local distribution of electricity.

Electromagnetic fields are divided into several different categories, driven by their **frequencies.** Electromagnetic fields regularly change direction. The rate of change in direction is referred to as **frequency**, and represents the number of times the field changes direction each second. In the United States, the frequency of change in common household current is 60 times per second, commonly known as 60 Hertz (Hz) power. In Europe, the frequency is 50 Hz. By comparison, radio and communication waves operate at much higher frequencies (500,000-1,000,000,000 Hz.) **Table B-1** outlines the basic categories of electromagnetic fields:

3 "Are Electromagnetic Fields Dangerous to Your Health?", Ohio State University Extension Fact Sheet, http://ohioline.osu.edu/cd-fact/0185.html
4 The geomagnetic field of the earth ranges from 500-700 mG. (Carstensen, 1987).
5 *Ibid.*

TABLE B-1
CATEGORIES OF ELECTROMAGNETIC FIELDS

Description	Acronym	Examples
Extremely Low Frequencies	ELF	Appliances and power lines
High and Low Frequencies	HF and LF	AM radio transmission
Very Low Frequencies	VLF	TVs and video display terminals
Very High Frequencies	VHF	TV and FM radio transmissions
Super High Frequencies	SHF	Microwaves

SOURCE: "Are Electromagnetic Fields Dangerous to Your Health?", Ohio State University Extension Fact Sheet

This document focuses mainly on EMF associated with electricity transmission. The information presented in this analysis is limited to EMF from power lines operating at frequencies of 50 or 60 Hz.

Electric power flows across transmission systems from generating sources to serve electrical loads in a community. A transmission lines' *voltage* and *current* determine the **apparent power** flowing over the transmission line. In general terms, the higher the voltage level of a transmission line, the lower the current needed to deliver the power. For example, a 115 kV transmission line with 200 amps of current will transmit approximately 40,000 kilowatts (kW) of *apparent power* (enough to power approximately 40,000 homes), while a 230 kV line requires only 100 amps of current to deliver the same 40,000 kW. By contrast, a 500 kV transmission line would only require 46 amps of current to deliver the same amount. Since there continue to be public health concerns associated with exposure to EMF from electrical transmission lines, it is the primary focus of this analysis.

B.1 – Components of EMF

B.1.1 – Electric Fields

As mentioned above, the National Institute of Environmental Health Science has noted that, "…electric fields are produced by voltage and increase in strength as the voltage increases. The electric field strength is measured in units of volts per meter (V/m). Electric fields are often present even when the equipment is switched off, as long as it remains connected to the source of electric power".[6] **Table B-2** outlines the strength of typical electrical fields for common household appliances, at a distance of 12 inches.

6 National Institute of Environmental Health Website at http://www.niehs.nih.gov/emfrapid/booklet/basics.htm.

TABLE B-2
TYPICAL ELECTRIC FIELD VALUES FOR APPLIANCES, AT 12 INCHES

Appliance	Electric Field Strength (kV/m)
Electric blanket	0.25 *
Broiler	0.13
Stereo	0.09
Refrigerator	0.06
Iron	0.06
Hand mixer	0.05
Phonograph	0.04
Coffee Pot	0.03

* 1 to 10kV/m nest to blanket wires (Enertech, 1985)

Electric fields are created when an electrical line is energized with voltage. The strength of the field is directly dependant upon the voltage of the line and decreases with distance from the source of the EMF. The strength is likewise affected by surrounding objects: electric fields are shielded or weakened by materials that conduct electricity, even if they are materials that are traditionally known as poor conductors, such as trees, buildings, and human skin."[7]

At close distances, electric fields near power lines can result in phenomena similar to static electricity from clothes removed from a dryer or shuffling feet on a carpet, and may result in electric discharge (or "nuisance shock") when metal objects are touched.[8] Electric shock from transmission lines is acknowledged as a potential impact to public health, and is generally the result of accidental contact with energized wires.

B.1.2 – Magnetic Fields

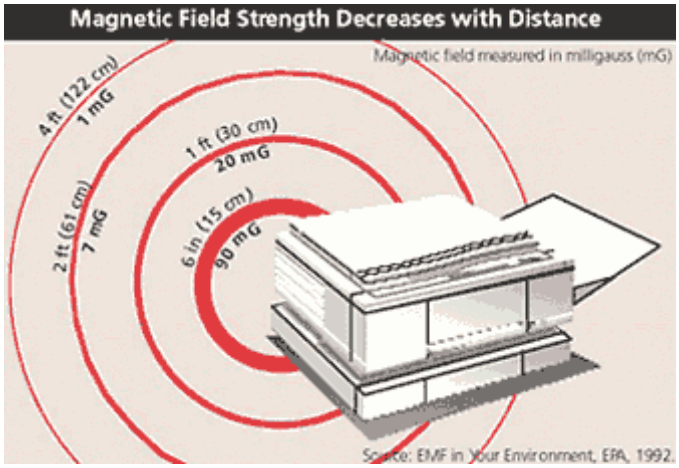
A current flowing through power lines at any voltage creates a magnetic field. The strength of the field is directly dependant on the current in the line. As mentioned earlier, the strength of this field is typically measured in gauss (G) or milligauss (mG). As with electric fields, magnetic field strength decreases rapidly with distance from the source, however unlike electric fields, magnetic fields are not easily shielded by objects or materials.

Figure B-3 illustrates the rapid decrease in magnetic field strength as one moves farther away from a common household photocopy machine.

7 *Ibid.*

8 An interesting demonstration of "ambient" EMF in the immediate vicinity of high-power transmission lines occurred in 2004 in the UK by Richard Box, the Artist in Resident of the Dept. of Physics at the University of Bristol, which is famous for its pioneering work on the effects of magnetic and electrical fields on human health. Box created an artistic display of 1301 fluorescent light bulbs that lit up, powered solely by the transmission line's ambient power. See http://www.pureenergysystems.com/news/exclusive/2004/pylon_ambience.

FIGURE B-3
DECREASING MAGNETIC FIELD LEVELS OVER VARIOUS DISTANCES



SOURCE: National Institute of Environmental Health EMF RAPID Website

Household appliances provide an illustrative example of magnetic fields. **Table B-3** outlines the typical magnetic field strengths for common appliances at distances of 1 and 3 feet.

TABLE B-3
MAGNETIC FIELD FROM HOUSEHOLD APPLIANCES

Appliance	Magnetic Field (mG)	
	At 1 foot distance	At 3 feet
Can opener	0.35 - 18.21	1.30 – 6.44
Clothes iron	1.66 - 2.93	0.25 – 0.37
Coffee machine	0.09 - 7.30	0 – 0.61
Computer monitor	0.20 – 134.7	0.01 – 9.37
Copier	0.05 – 18.38	0 – 2.30
Desktop light	32.81	1.21
Dishwasher	4.98 – 8.91	0.84 – 1.63
Fax machine	0.16	0.03
Food processor	6.19	0.35
Microwave oven	0.59 – 54.33	0.11 – 4.66
Mixer	0.49 – 41.21	0.09 – 3.93
Printer	0.74 – 43.11	0.18 – 2.45
Portable fan	0.04 – 85.64	0.03 – 3.12
Radio	0.34 – 4.07	0.03 – 0.98
Scanner	2.18 – 26.91	0.09 – 3.48
Television	1.80 – 12.99	0.07 – 1.11
Vacuum Cleaner	7.06 – 22.62	0.51 – 1.28

SOURCE: L. Zaffanella, School Exposure Assessment Survey, California EMF Program, interim results, November 1977.

If an appliance is plugged in to an outlet but not turned on, no current is flowing and only an electric field is generated around the appliance. No magnetic field would be present. However, when the appliance is switched on, both an electric field *and* a magnetic field will be created. The strength of the magnetic field is directly related to the extent of the *current* flowing in the appliance and the cord.

For areas where no major transmission lines exist, EMF is still present due to neighborhood electrical distribution lines, household wiring, and other electrical equipment and wiring. Generally speaking, the magnetic field returns to "background" level (i.e., a level no greater than normally occurs in nature) at distances of approximately 3–4 feet from an typical household appliance. The distance required to return to "background" level is much higher with respect to electrical power lines: approximately 60–200 feet from a distribution line and 300–1,000 feet from a transmission line. Fields and currents that occur in the same place can interact to strengthen or weaken the total overall effect. Therefore, the strength of the fields depends not only on the distance to the source but also the distance to and location of other nearby sources.

It can sometimes be difficult to determine the cause of elevated magnetic fields in or around a residence. Currents in grounding paths and common wiring errors can make locating source of magnetic fields only possible by a trained technician. However, these errors can be repaired easily by an electrician. In some cases, simple measurements can identify internal and external sources of elevated magnetic fields. Turning the power off at a residence can rule out indoor power sources. Measurements taken from varying distances at power lines can also help to pinpoint the cause of elevated sources.

It is estimated that the average individual encounters about 1mG during a 24 hour period. Forty percent of this exposure comes from nearby power lines, while 60 percent come from other sources, such as those in the home described above and/or exposure to appliances and electrical tools.

Considerable recent research has focused on the potential adverse health effects of magnetic field exposure. The primary reason for the focus on *magnetic* fields is because some scientific studies have reported an increased cancer risk associated with estimates of magnetic field exposure. No similar associations have been reported for electric fields. In fact, many of the studies examining the biological effects of electric fields were essentially negative.[9] The results of many major studies as they relate to EMF health effects are discussed later in this appendix section.

B.2 – Other Field Related Public Concerns

There are several other public concerns related to electric power facility projects. These concerns are both safety and nuisance issues and include: radio/television/electronic equipment interference; induced currents (i.e., power-line-related electric and magnetic fields that create

9 National Institute of Environmental Health Web Site, at http://www.niehs.nih.gov/emfrapid/booklet/basics.htm

weak electric currents in humans[10]) and shock hazards; and potential effects on cardiac pacemakers. Each of these is described below.

B.2.1 – Radio, Television, and Electronic Equipment Interference

Overhead transmission lines do not, as a general rule, interfere with normal radio or TV reception. However, there are two potential sources for interference: corona and gap discharges.

Corona Discharge

Whenever high voltages are present in electrical systems, there is the possibility that the high electric fields that exist close to the conductors may cause an electrical breakdown of the surrounding air. This effect is known as "corona discharge".[11] Corona discharges can sometimes generate unwanted radio frequency electrical noise. Several factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's corona performance.

A working group of the Radio Noise Subcommittee of the Institute of Electrical and Electronics Engineers (IEEE) has developed a Radio Noise Design Guide for High-Voltage Transmission Lines (IEEE Section 1971). This guide is useful for evaluating the performance of a high-voltage transmission line before it is built. The design guide is applicable to overhead A/C transmission lines in the voltage range of 115 kV to 800 kV. This guide is a valuable tool for the design of overhead high-voltage transmission lines because it provides electrical guidelines that engineers can use to evaluate design alternatives. The IEEE guide is based on many years of research and practical experience. The concept is to design high-voltage transmission lines efficiently to help reduce corona activity and its associated "noise."

Gap Discharges

Gap discharges are different from corona discharges. Gap discharges can develop on power lines at any voltage and are more frequently found on smaller low voltage distribution lines. Gap discharges can take place at locations where tiny electrical separations (or "gaps") develop between mechanically-connected metal parts (for example, on broken or poorly-fitting line hardware, such as insulators, clamps, or brackets). A small electric spark discharge across the gap can create unwanted electrical noise. In addition, tiny electrical arcs can develop on the surface of dirty or contaminated insulators, but this interference source is less significant than gap discharge. Hardware is designed to be problem-free, but corrosion, wind motion, gunshot damage and insufficient maintenance contribute to gap formation.

Radio and Television Interference

The potential for radio and television interference is associated with transmission and distribution line electrical conductors of any voltage, configuration, or location. However, there has been a significant amount of work done to quantify radio and TV noise and provide design methods for electrical transmission lines to mitigate this phenomenon (e.g., EPRI §1982, IEEE §§1971, 1972,

10 *Ibid.*
11 "Electric and Magnetic Fields", National Grid EMF, http://www.emfs.info/sci_elecNRPB_keypoints.asp

and 1976). Corona-generated electrical noise decreases with distance from a transmission line and also decreases with higher frequencies. When a problem exists, it is usually for AM radio, and not the higher frequencies associated with TV signals. Corona interference to radio and television reception is usually not a design problem for transmission lines rated at 230 kV and lower. In addition, radio and TV interference levels are typically extremely low at the right-of-way edge for 230 kV and lower transmission lines both in fair weather and in rain, and will usually meet or exceed established guidelines of the Federal Communications Commission (FCC).

With respect to gap discharge, the severity of potential interference depends on external factors such as the strength and quality of the transmitted radio or TV signal, the quality of the receiving radio or TV set and antenna system, and the distance between the receiver and power line. The vast majority of interference complaints are found to stem from causes other than power lines, such as poor signal quality, poor antennae, and interference from household items including door bells and appliances. (Interference from household items has been noted from such diverse sources as heating pads, sewing machines, freezers, ignition systems, aquarium thermostats, fluorescent lights, etc.) (IEEE § 1976).

In contrast to corona-generated interference, interference due to gap discharges is generally *less* frequent for high voltage transmission lines than for lower voltage distribution lines. Some of the reasons that these transmission lines have fewer gap-related problems include: predominate use of steel structures, fewer structures, greater mechanical load on hardware, and different design and maintenance standards. Gap discharge interference can be avoided or minimized by proper design of the transmission line hardware parts, use of electrical bonding where necessary, and by careful tightening of fastenings during construction. Individual sources of gap discharge noise can also be located and corrected using documented repair and maintenance procedures.

Personal Computer (PC) Monitor Interference

Personal computer monitors using cathode ray tubes (CRTs) can be susceptible to magnetic field interference. Magnetic field interference results in disturbances to the image displayed on the CRT monitor, often described as screen distortion, “jitter,” or other visual defects (Banfi, 2000). In most cases it can be annoying, and at its worst, it can prevent use of the monitor. The extent of interference depends on magnetic field intensity, monitor orientation, monitor design, and the monitor’s vertical refresh rate.

The potential for computer monitor interference is associated with transmission and distribution lines of any voltage, configuration, or location. Heavily loaded transmission lines and lower conductor ground clearances generally produce higher magnetic fields, which, in turn, can potentially result in computer monitor interference.

CRT monitors can potentially experience image jitter due to magnetic fields at about 10 mG or less, depending upon such factors as the size and type of monitor. However, this image distortion does not occur on liquid crystal display (LCD) monitors, commonly used on most portable/notebook computers (ESAA, 1996).

Computer monitor interference is a recognized problem in the video monitor industry. As a result, there are manufacturers who specialize in monitor interference solutions and shielding enclosures. Possible solutions to computer monitor interference issues include: relocation of the monitor, use of magnetic shield enclosures, use of software programs to adjust the monitor's vertical refresh rate, and replacement of cathode ray tube monitors with liquid crystal displays. It is important to note that use of flat screen LCD computer displays (immune to standard household current-created magnetic fields) has grown significantly in the past couple of years as unit prices have declined and image quality has improved.

B.2.2 – Induced Current and Shock Effects

Electric currents can be induced by electric and magnetic fields in conductive objects near to transmission lines. For magnetic fields, the concern is for very long objects parallel and close to the line. However, the majority of concern is related to the potential for small electric currents to be induced by electric fields in metallic objects close to transmission lines. Metallic roofs, vehicles, vineyard trellises, and fences are examples of objects that can develop a small electric charge in proximity to high voltage transmission lines.

Object characteristics, degree of grounding, and electric field strength affect the amount of induced charge. An electric current can flow when an object has an induced charge and a path to ground is presented. The amount of induced current that can flow is important to evaluate because of the potential for nuisance shocks to people and the possibility of other effects such as accidental ignition of fuel.

The amount of induced current can be used to evaluate the potential for harmful or other effects. Previous work on appliance leakage current can provide some insight into this issue. Leakage (and induced) current is commonly measured in units of milliamperes, or *mA* (One mA is 0.001 amperes of electric current). Most appliances have a leakage current that flows through to the body of the user. Usually the amount of current is very small and is below the threshold of perception. Many factors affect the leakage current levels. In addition to appliance design and age, contact resistance and insulation from the ground affect the magnitude of current that flows through to the user. Appliance leakage currents have been measured for a variety of appliances and levels ranged from 0.002 mA to tens of mA (Kahn, 1966; Stevenson, 1973).

There is a U.S. standard for leakage current from appliances that was developed to minimize the potential for electric shock hazards and sudden involuntary movements that might result in an accident (ANSI, 1992). The standard limits appliance leakage current to 0.5 mA for portable appliances and 0.75 mA for stationary or fixed appliances. The standard was developed with consideration of the variable threshold of human perception of electric current.

Different people and different situations produce a range of current perception values. As an example, when an average person grips an energized conductor, the median (50th percentile) threshold for perception of an A/C electric current is 0.7 mA for women and 1.1 mA for men (Dalziel, 1972; EPRI, 1982). If the current is gradually increased beyond a person's perception threshold, it becomes bothersome, and possibly startling. With sufficiently large currents, the

muscles of the hand and arm involuntarily contract and a person cannot release the gripped object.

The reasonably safe value at which 99.5 percent of people can let go of a gripped energized object is 9 mA for men and 6 mA for women (Bridges, 1985). An equivalent let-go value of 5 mA has been estimated for children (EPRI, 1982). However, before the current flows in a shock situation, contact must be made, and in the process of *establishing* contact, a small arc occurs. This causes a withdrawal reaction that, in some cases, may be a hazard if the involuntary nature of the reaction causes a fall or other accident. Consideration of let-go currents was the basis for the National Electric Safety Code (NESC) to set an induced current limit of 5 mA for objects under transmission lines (ANSI, 2002).

B.2.3 – Cardiac Pacemakers

Another area of concern related to the electric and magnetic fields of transmission lines has been the possibility of interference with cardiac pacemakers. There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate and is practically immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, on the other hand, pulses only when its sensing circuitry determines that pacing is necessary.

The concern is that interference could result from transmission line electric or magnetic fields, and cause a spurious signal in the pacemaker's sensing circuitry (Sastre, 1997). However, when these pacemakers detect a spurious signal, such as an induced 60 Hz current, they are programmed to revert to an asynchronous or fixed pacing mode of operation and return to synchronous operation within a specified time after the signal is no longer detected. The issue for pacemakers is if power line fields could adversely affect their operation.

The potential for cardiac pacemaker interference is associated with high voltage transmission lines along any section or location. Higher voltage transmission lines and lower conductor ground clearances generally produce higher electric fields, which can have the potential for pacemaker interference.

The potential for pacemaker interference from power line fields depends on the pacemaker's manufacturer, model, and implantation method, among other factors. Studies have determined that the thresholds for interference of the most sensitive units are about 2,000 to 12,000 mG for magnetic fields and about 1.5 to 2.0 kV/m for electric fields (University of Rochester 1985). Electric and magnetic fields at the edge of power line rights-of-way are generally below these values, but on the right-of-way the electric field threshold can be exceeded in some cases. The American Conference of Governmental Industrial Hygienists recommends not exceeding an electric field of 1 kV/m or magnetic field level of 1,000 mG for occupational exposure on workers wearing cardiac pacemakers (ACGIH, 2001).

It is unclear that reversion to a fixed pacing mode is harmful since pacemakers are routinely put into reversion with a magnet to test operation and battery life. Some new pacemaker models are dual chamber devices that can be more sensitive to external interference. Some of these dual

chamber units may experience inappropriate pacing behavior (prior to reversion to fixed pacing mode) in electric fields as low as 1.5-2 kV/m, while other models appear unaffected in fields up to 20 kV/m. The biological consequences of brief, reversible pacemaker malfunction are mostly benign. An exception would be an individual who has a sensitive pacer and is completely dependent on it for maintaining all cardiac rhythms. For such an individual, a malfunction that compromised pacemaker output or prevented the unit from reverting to the fixed pacing mode, even for brief periods, could be life-threatening (Sastre, 1997). However, this precise collection of events (i.e., susceptible pacer model, favorable field characteristics, and biological need for full-function pacing) appearing simultaneously would appear to be a rare event.

B.3 – Miscellaneous, Non-Field-Related Public Concerns

B.3.1 – Lightning

Contrary to popular belief, transmission lines do not “attract” lightning. However, lightning does tend to strike taller objects more frequently. For objects less than 600 feet tall, the strike probability is directly related to height (i.e., an object twice as tall as another object will generally have twice as many strikes) although object shape can be a factor too. For objects over about 600 feet tall, the likelihood of lightning strikes increases exponentially (Veimeister, 1972).

A transmission line passing above the earth can be said to cast an “electrical shadow” on the land beneath it (EPRI, 1982). Lightning strokes that would generally terminate on the land inside the shadow will strike the transmission line instead and strokes outside this shadow will miss the line entirely. Therefore, a transmission line actually protects the land near it from lightning strikes.

B.4 – EMF Research

B.4.1 – Scientific Panel Reviews

Hundreds of EMF studies have been conducted over the last 20 years in the areas of epidemiology, animal research, cellular studies, and exposure assessment. A number of nationally-recognized, multi-disciplinary panels have performed comprehensive reviews of the body of scientific knowledge on EMF. These panels’ ability to bring experts from a variety of disciplines together to review the research gives their reports recognized credibility. It is standard practice in risk assessment and policymaking to rely on the findings and consensus opinions of these distinguished panels.

Reports by the National Research Council/National Academy of Sciences, American Medical Association, American Cancer Society, National Institute of Environmental Health Sciences, World Health Organization – International Agency for Research on Cancer, and California Department of Health Services have all concluded that insufficient scientific evidence exists to warrant the adoption of specific health-based EMF mitigation measures. The potential for adverse health effects associated with EMF exposure is too speculative to allow the evaluation of impacts or the preparation of mitigation measures. The substantive conclusions reached by these various multi-disciplinary panels have been summarized below.

World Health Organization - International Agency for Research on Cancer

In June of 2001, the International Agency for Research on Cancer (IARC), a branch of the World Health Organization (WHO), evaluated the carcinogenic risk to humans of static and extremely low-frequency EMF. In October of 2001, the WHO published a Fact Sheet that summarized the IARC findings.

In June 2001, an expert scientific working group of IARC reviewed studies related to the carcinogenicity of static and ELF electric and magnetic fields. Using the standard IARC classification that weighs human, animal and laboratory evidence, ELF magnetic fields were classified as "possibly carcinogenic to humans," largely based on epidemiological studies of childhood leukemia. Evidence for all other cancers in children and adults, as well as other types of exposures (i.e., static fields and ELF electric fields) was considered not classifiable either due to insufficient or inconsistent scientific information.

The table below outlines the classification conclusions reached by the IARC:

Static magnetic fields	Inadequate	Inadequate	3 (not classifiable)
Static electric fields	Inadequate	Inadequate	3 (not classifiable)
ELF magnetic fields	Childhood leukemia: limited All other cancers: inadequate	Inadequate	2B (possibly carcinogenic)
ELF electric fields	Inadequate	Inadequate	3 (not classifiable)

SOURCE: National Grid EMF, citing the IARC 2001 Report Results

"Possibly carcinogenic to humans" is a classification used to denote an agent for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence for carcinogenicity in experimental animals. This classification is the weakest of three categories ("is carcinogenic to humans", "probably carcinogenic to humans" and "possibly carcinogenic to humans") used by IARC to classify potential carcinogens based on published scientific evidence. For comparison, some examples of well-known agents that have been classified by IARC are listed below:

Classification	Examples of Agents
Carcinogenic to Humans (usually based on strong evidence of carcinogenicity in humans)	Asbestos Mustard gas Tobacco (smoked and smokeless) Gamma radiation
Probably Carcinogenic to Humans (usually based on strong evidence of carcinogenicity in animals)	Diesel engine exhaust Sun lamps UV radiation Formaldehyde
Possibly Carcinogenic to Humans (usually based on evidence in humans which is considered credible, but for which other explanations could not be ruled out)	Coffee Styrene Gasoline engine exhaust Welding fumes ELF magnetic fields

British National Radiological Protection Board (NRPB)

In 1995, the NRPB joined the British Health Protection Agency to become the "Radiation Protection Division." In 2004, the NRPB released its most recent report addressing EMF-related health issues, *Advice on Limiting Exposure to Magnetic Fields (0-300 GHz)*, and its accompanying document, *Review of the Scientific Evidence for Limiting Exposure to Electromagnetic Fields (0–300 GHz)*.

The Board acknowledged that there are concerns that prolonged, low-level exposure to EMFs may be linked to long-term health effects, in particular, cancer. However, the *Review of the Scientific Evidence* document concluded that there was "…no firm evidence of such adverse health effects at the levels of EMF's to which people are normally exposed."[12]

Specifically, in the *Review of the Scientific Evidence* document, the panel found that, "…having considered the totality of the scientific evidence in the light of uncertainty and the need for a cautious approach, [the] NRPB recommends that restrictions on exposure to EMFs in the UK should be based on the guidelines issued by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in 1998.[13] This provides for basic restrictions on exposures of members of the public that are a factor of five lower than for those who are occupationally exposed". The report further noted that an association between prolonged exposure to intense power frequency magnetic fields and a small raised risk of childhood leukemia has been found, the scientific reasons for which were uncertain. Because of those findings and the requirement for additional research, the Board noted that "…further precautionary measures should be considered by the government".[14]

In reaching its conclusions, the NRPB sought input from numerous divergent sources, such as individual UK and international scientific experts, published comprehensive reviews by expert groups, and from an *ad hoc* expert group on weak electric field effects in the body.

National Institute of Environmental Health Sciences/RAPID Program

The National Institute of Environmental Health Sciences (NIEHS) and the Department of Energy (DOE) coordinated the implementation of the Electric and Magnetic Fields (EMF) Research and Public Information Dissemination (RAPID) Program, established by the 1992 Energy Policy Act. This was a six-year, federally-coordinated effort designed to evaluate developing technologies and research the potential adverse health effects on biological systems from exposure to 60 Hz electric and magnetic fields.[15], and to communicate these results to the public sector.

Overall, following the 6-year, $60-million study, the NIEHS concluded that the evidence for a risk of cancer and other human disease from EMF around electric power lines was "weak.[16]"

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12 From the *Statement by the National Radiological Protection Board ,Advice on Limiting Exposure to Electromagnetic Fields (0-300 GHz)* Abstract, at phttp://www.hpa.org.uk/radiation/publications/documents_of_nrpb/abstracts/absd15-2.htm

13 For a full discussion of the ICNIRP guidelines, see the section below entitled, "International Guidelines".

14 From the *Statement by the National Radiological Protection Board*, cite above.

15 As mentioned previously, 60Hz fields are those produced by the generation, transmission and use of electric energy

16 From NIEHS press release entitled *Environmental Health Institute Report Concludes Evidence is 'Weak' that EMF's Cause Cancer*, dated June 15, 1999, electronically at http://www.niehs.nih.gov/oc/news/emffin.htm

The report applied to the extremely low frequency electric and magnetic fields associated with both the larger transmission lines (that distribute power regionally) and the smaller distribution lines that provide power directly to homes.

While sections of the report did say that EMF exposure "cannot be recognized as entirely safe," the report concluded that the"…probability that EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal scientific support that exposure to this agent is causing any degree of harm."[17] Nonetheless, research has continued on some "lingering concerns" cited in the report, and the NIEHS noted that "…efforts to reduce exposures [to EMF] should continue…"[18]

The NIEHS said that the "strongest evidence" for health effects comes from statistical associations observed in human populations with childhood leukemia and chronic lymphocytic leukemia[19] in "occupationally-exposed" adults (such as electric utility workers, machinists and welders). "While the support from individual studies is weak," according to the report, "these epidemiological studies demonstrate, for some methods of measuring exposure, a fairly consistent pattern of a small, increased risk with increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia."[20] However, laboratory studies and investigations of basic biological function do not support these epidemiological associations, according to the report. It says, "Virtually all of the laboratory evidence in animals and humans and most of the mechanistic studies in cells fail to support a causal [cause and effect] relationship."[21]

NIEHS Director Kenneth Olden, Ph.D., said, "The lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to EMF, but it cannot completely discount the epidemiological findings. For that reason, and because virtually everyone in the United States uses electricity and therefore is routinely exposed to EMF, efforts to encourage reductions in exposure should continue. For example, industry should continue efforts to alter large transmission lines to reduce their fields and localities should enforce electrical codes to avoid wiring errors that can produce higher fields."[22]

The studies reviewed and conducted by NIEHS and its grantees focused on the possibility of an EMF-related link to cancer, largely in response to a leukemia study in Denver, Colorado in 1979, and to subsequent attempts to duplicate or refute it. But the NIEHS report also found inadequate evidence of any link to non-cancer diseases such as Alzheimer's, depression and birth defects. Christopher Portier, Ph.D., the associate director of the Environmental Toxicology Program at NIEHS who coordinated the evaluation effort, said, "This risk assessment gains strength and

[17] *Ibid.*
[18] *Ibd.*
[19] *Chronic Lymphocytic Leukemia* (or "CLL") is a rare condition characterized by an accumulation of abnormal lymphocytes in the blood and the bone marrow. CLL results from an acquired (not inherited) injury to the DNA of a single cell in the bone marrow. Scientists do not yet understand what produces this change in the DNA of CLL patients.
[20] *Ibid.*
[21] *Ibid.*
[22] *Ibid.*

reliability from the conduct of extensive new research focused to support the evaluation and through obtaining the opinion of hundreds of scientists who participated in the evaluation. The novel methods used in this risk assessment can serve as a blueprint for resolving other difficult issues."[23]

To assist the NIEHS in reaching its conclusions, several panels of scientists reviewed the data in open, public hearings. One such panel assembled to advise the NIEHS rejected EMF as a "known" or proven, or even "probable" carcinogen, but a majority of the panel said a role in cancer could not be ruled out and should therefore be regarded as a "possible" carcinogen. The NIEHS report also recommended that the fields continue to be recognized as a "possible" cancer hazard, but emphasized the weakness of the data and the low risk that may be involved. The report went on to say that the evidence does not seem to meet the standard for listing as a known or even "anticipated" human carcinogen in the National Toxicology Program's Report on Carcinogens.[24]

In 2002, as a follow-up to the report referenced above, the NIEHS released its "Questions and Answers About EMF' booklet to the public. Available on-line at http://www.niehs.nih.gov/emfrapid/, the booklet was designed to help inform the public about the basics of EMF, the potential adverse health effects, the research conducted to date, typical levels of appliance-related EMF exposure in the household, and standards and guidelines that have been developed both nationally and internationally to help regulate EMF exposure.[25]

U.S. National Research Council/ National Academy of Sciences

In 1997, the National Academy of Sciences/National Research council released a report entitled, "Possible Health Effects of Exposure to Residential Electric and Magnetic Fields". In essence, the report concluded that EMF exposure at normal residential levels did not constitute a public health hazard. Specifically, the report stated, "Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects… An association between residential wiring configuration (called wire codes…) and childhood leukemia persists in multiple studies, although the causative factor responsible for that statistical association has not been identified. No evidence links contemporary measurements of magnetic-field levels to childhood leukemia.[26]"

American Cancer Society

The most recent reference by the American Cancer Society to EMF-related health issues was in an article dated in January of 2000. In the article, the ACS cited a reputable *British Lancet* article authored by Nick Day, PhD, professor of epidemiology at Cambridge University which found, in

[23] *Ibid.*
[24] *Ibid.* This finding is consistent with the WHO's classifications discussed above.
[25] Many of these topics are also discussed and summarized throughout this document.
[26] "National Grid EMF", citing the National Academy of Sciences, http://www.emfs.info/expert_NAS.asp

essence, that there was "no link between electromagnetic fields and childhood cancer"[27]. The study followed 2,226 children in the UK "with a confirmed cancer" beginning in infancy and continuing through age 14. The children were compared to a cancer-free control group of children with comparable birth dates and genders.

According to the article, "The researchers took measurements of EMF exposures at the children's homes – including the proximity and type of overhead power lines nearby and electrical appliances in the homes. They also measured exposures at schools or other institutions attended by the children."[28] The researchers found "no evidence that magnetic fields associated with the electricity supply increase risk of childhood leukemia, malignant brain tumors, or any other childhood cancer."[29]

The American Cancer Society gave particular credence to Day's study, since it was a "very nice, large population-based study." The conclusions were clear that there was "…no evidence of an association of EMF and acute lymphoclastic leukemia, all leukemias, central nervous system tumors, and all other malignant disease."[30] The conclusions reached in the Day study paralleled those cited in an earlier, 1997 ACS article on the same topic entitled, *New Study Finds Electrical Lines Cause No Increase in Childhood Leukemia*.[31]

Michael Thun, MD, vice president of epidemiology and surveillance research for the American Cancer Society (ACS), noted the difficulties associated with studying potential links between EMF and cancer, since measuring exposure levels is complicated. However, according to Thun, "... [the Day] study went to great lengths to capture the major sources of exposure."[32]

Since the study was unable to capture a significant sample of children with "high category exposures," a follow-up study currently underway in Japan is expected to be able to address that issue upon its completion.

National Cancer Institute

According to the National Cancer Institute, overall, "…there is limited evidence that magnetic fields cause childhood leukemia, and there is inadequate evidence that these magnetic fields cause other cancers in children. Studies of magnetic field exposure from power lines and electric blankets in adults show little evidence of an association with leukemia, brain tumors, or breast cancer. Past studies of occupational magnetic field exposure in adults showed very small

27 American Cancer Society Website, *Study Finds No Link Between Power Lines and Childhood Cancer,* http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Study_Finds_No_Link_Between_Power_Lines_and_Childhood_Cancer.asp
28 *Ibid.*
29 *Ibid.*
30 *Ibid.*
31 For a full review of the 1997 article, see http://www.cancer.org/docroot/MED/content/MED_2_1X_New_Study_Finds_Electrical_Lines_Cause_No_Increase_in_Childhood_Leukemia.asp The 1997 study was conducted by the National Cancer Institute and the Children's Cancer Group, and was published in the New England Journal of Medicine.
32 American Cancer Society Website, *Study Finds No Link Between Power Lines and Childhood Cancer.*

increases in leukemia and brain tumors. However, more recent, well-conducted studies have shown inconsistent associations with leukemia, brain tumors, and breast cancer."[33]

The Institute itself conducted a comprehensive study to assess the potential relationship between EMF and the childhood risk of acute lymphoblastic leukemia, a rare but quickly-progressing disease in which too many immature white blood cells (called lymphoblasts) are found in the blood and bone marrow. The study found that children living in homes with high magnetic field levels did not have an increased risk of developing the disease. According to the article, "…the one exception may have been children living in homes that had fields greater than 0.4 microtesla (µT), a very high [magnetic field] level that occurs in few residences."[34] A second study conducted by NCI researchers reported that children living close to overhead power lines based on distance measurements were not at greater risk of leukemia.[35]

A third major study also cited by the Institute addressed the potential relationship between EMF and breast cancer in adult women living in Nassau and Suffolk counties in New York State. Released in 2003, the study followed 576 women who had been diagnosed with breast cancer during the period from August 1, 1996, and June 20, 1997, along with 585 "controls" (women who did not have the disease). The study, entitled, *Electromagnetic Fields and Breast Cancer on Long Island: A Case-Control Study*, did not find "…an association between exposure to EMFs and increased risk for breast cancer."[36]

American Medical Association

Resolution 511, amended and adopted at the 1993 American Medical Association Annual Meeting, asked that a review be conducted to describe the potential adverse health effects of exposure to extremely-low frequency electric and magnetic fields. In response to that request, the Council on Scientific Affairs (CSA) prepared an extensive report reviewing some of the prominent scientific and medical literature available on the topic of EMF as of December, 1994.[37]

The report considered basic principles relating to electromagnetic fields (EMF), summarized known effects, reviewed some studies related to EMF, and made recommendations about preventing possible adverse effects from EMF-related exposure. According to the report, "…Some studies of the past 15 years have associated exposures to 50 or 60 Hz electric and magnetic fields with slightly elevated risks of developing cancer or leukemia in children or adults. However, the inconsistency of the results and the shortcomings of most of the studies, in terms of selecting test and control groups, estimating exposures, and accounting for key variables that might affect outcomes, detract from the studies' conclusions… It is not certain that

[33] National Cancer Institute, "Magnetic Field Exposure and Cancer: Questions and Answers – Cancer Facts 3.46", http://cis.nci.nih.gov/fact/3_46.htm
[34] *Ibid.*
[35] *Ibid.*
[36] *Ibid,* at http://www.cancer.gov/cancertopics/factsheet/long-island-electromagnetic-qa
[37] The full text of the article is available on the AMA web site at http://www.ama-assn.org/ama/pub/category/13682.html.

electromagnetic fields pose health risks, or if they do, which attribute or mechanism of action is responsible."[38]

Because of the minimal and inconclusive evidence connecting EMF with adverse health affects, the AMA agreed with other public entities in concluding that although it was premature to dismiss EMF as a health issue entirely, it was likewise unnecessary to take drastic public health protection measures such as outlawing all EMF exposures. Also, since the federal government lacked specific EMF guidelines, the Council suggested that convening a multi-disciplinary national committee to investigate whether such standards were warranted would be helpful. Finally, the Council stated in its Recommendations that it encouraged on-going research efforts, including examinations of exposures to electromagnetic fields and their effects, average public exposures, occupational exposures, and the effects of field surges and harmonics.[39]

California Department of Health

In the State of California, a joint program between the California Department of Health and the Public Health Institute has been developed to address the public's EMF-related concerns. The program, dubbed the "California Electric and Magnetic Fields Program" was undertaken to help provide research, education, and technical assistance related to the possible health effects of electric and magnetic fields from power lines, appliances, and other uses of electricity.[40]

As part of the DOH's research effort, a comprehensive report entitled, *An Evaluation of the Possible Risks from Electric and Magnetic Fields (EMFs) From Power Lines, Internal Wiring, Electrical Occupations and Appliances*, was prepared and finalized in June, 2002. The report was intended to provide an evaluation of the animal, laboratory and human evidence that shows how exposure to 50/60 Hz magnetic fields may or may not increase human health risks. The Risk Evaluation was based on the results of published research studies, with emphasis on new studies, the National Institute of Environmental Health Sciences (NIEHS) Working Group Report (referenced earlier in this paper), and the results of the California EMF Program Studies. Three epidemiological scientists with the DHS were asked to review this data and attempt to formulate reasonable inferences based on the weight of the available evidence. The following information summarizes the pertinent results discussed in that study.

In contrast to the results seen in the majority of the prior studies conducted (such as the National Academy of Sciences RAPID EMF program referenced earlier), the DHS report did find some correlations between EMF and potential adverse health effects. Notably, all 3 scientists said they were, "…inclined to believe that EMF's can cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's Disease, and miscarriage… ."[41] The report went on to state that all 3 scientists had "…judgments that were 'close to the dividing line between believing and not believing' that EMF's cause some degree of increased risk of suicide."[42]

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38 Excerpted from the AMA's Report 7 of the Council on Scientific Affairs (I-94) Full Text, at http://www.ama-assn.org/ama/pub/category/13682.html .

39 *Ibid.*

40 California EMF Program, http://www.dhs.ca.gov/ehib/emf/

41 Executive Summary, *California EMF Risk Evaluation for Polictymakers and the Public*, California Department of Health, June 2002 Report, pg. 3.

42 *Ibid.*

Furthermore, with respect to adult leukemia, 2 of the 3 scientists were "close to the dividing line between believing or not believing" that EMF's cause some degree of increased risk, with the third being "prone to believe" that such a link exists.[43]

Conversely, with respect to birth defects, low birth weight, breast cancer, heart disease, Alzheimer's Disease, and depression, the 3 scientists did *not* believe (to varying degrees) that the research supported a connection between EMF and an increased risk for these maladies. Furthermore, the panel noted that they "strongly believe[d]" that EMF's are *not* "universal carcinogens"[44], largely due to the fact that there are so many other cancer types [beyond those already mentioned] that were not shown to be connected in any way with EMF exposure.[45]

In addressing the apparent inconsistencies between the conclusions reached by the prior reports and the DHS study, the DHS report did acknowledge that the "…DHS scientists [were] more inclined to believe that EMF exposure increased the risk of…health problems than the majority of the members of the scientific committees convened to evaluate the scientific literature… ."[46] Several reasons for the differences were cited, including that the DHS scientists placed *less* emphasis on the negative findings in animal and test tube experiments than the majority of other scientists, and that the DHS scientists placed *more* emphasis on the epidemiological evidence that the others found less than compelling.

The DHS report stopped short of making any specific public policy related recommendations but, instead, deferred to the California Public Utilities Commission (CPUC) to decide what action, if any, to take based on the report's findings.[47]

B.5 – Policies Standards and Guidelines

B.5.1 – International Guidelines

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) is an organization of 15,000 scientists from 40 nations who specialize in radiation protection. In 1998, the ICNIRP adopted guidelines recommending limits to EMF exposure in both occupational and household settings. **Table B-4** summarizes the ICNIRP recommendations.

The ICNIRP concluded that available data regarding potential long-term effects of EMF exposure, such as increased risk of cancer, are insufficient to provide a basis for setting exposure restrictions.

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43 *Ibid.* All of these findings are discussed in much further detail, with accompanying epidemiological data, in the full text of the report.

44 "Universal Carcinogen" can be defined as a substance that will "induce cancer in most tissues of most species at all ages…" See http://carcin.oupjournals.org/cgi/content/full/21/3/397 wherein the example of radiation exposure is cited as a "universal carcinogen".

45 From the CA Dept of Health 2002 EMF Study cited above, at pg. 3.

46 *Ibid.* Specifically, reference was made to the NIH RAPID Report from 1998, the International Agency for the Research on Cancer (IARC) report from 2001, and the British National Radiological Protection Board (NRPB) report from 2001.

47 See the latter section of this report for more details on the CPUC policies and approach to handling potential EMF-related health issues.

TABLE B-4
ICNIRP GUIDELINES FOR EMF EXPOSURE

Exposure (60 Hz)	Electric field	Magnetic field
Occupational	8.3 kV/m	4.2 G (4,200 mG)
General Public	4.2 kV/m	0.833 G (833 mG)

SOURCE: ICNIRP, 1998
Graphic Source: EMF Exposure Standards, EMF Questions and Answers Booklet[48]

B.5.2 – National Guidelines

As outlined earlier in this paper, many prominent national organizations have conducted research into EMF from power lines and potential health risks associated with exposure although, to date, no specific national standards have been established.

However, one national organization, the American Conference of Governmental Industrial Hygienists (ACGIH), a non-governmental, professional organization that facilitates the exchange of technical information about worker health protection, has published recommended "threshold limit values" (or TLV) for magnetic field exposures in an occupational setting. **Table B-5** summarizes the ACGIH recommendations.

According to the National Institute of Environmental Health Sciences, the TLVs for 60-Hz EMF shown in the table above were outlined as a guide to control EMF exposure, but were not intended to define safe versus dangerous EMF levels.[49]

TABLE B-5
ACGIH OCCUPATIONAL THRESHOLD LIMITS VALUES FOR 60-HZ EMF

	Electric Field	Magnetic Field
Occupational exposure should not exceed	25 kV/m	10 G (10,000 mG)
Prudence dictates the use of protective clothing above	15 kV/m	-
Exposure of workers with cardiac pacemakers should not exceed	1 kV/m	1 G (1,000 mG)

SOURCE: ACGIH, 2001.
Graphic Source: EMF Exposure Standards, EMF Questions and Answers Booklet[50]

48 EMF Exposure Standards - EMF Questions & Answers Booklet - June 2002, National Environmental Health Institute, http://www.niehs.nih.gov/emfrapid/booklet/standard.htm
49 *Ibid.*
50 EMF Exposure Standards - EMF Questions & Answers Booklet - June 2002, National Environmental Health Institute, http://www.niehs.nih.gov/emfrapid/booklet/standard.htm

B.5.3 – State Guidelines

Several states have adopted limits of electric field strength within transmission line rights-of-way[51] (ROW). Florida and New York are the only states that currently limit the intensity of magnetic fields from transmission lines. These regulations include limits within the ROW as well as the edge of the ROW and cover a broad range of values. **Table B-6** lists states that currently regulate EMF and their respective limits. Taken as a precautionary measure to prevent magnetic fields from increasing beyond "baseline" (i.e. beyond levels currently experienced by the public), the magnetic field limits were not actually based upon any link between scientific data and health risks (Morgan, 1991).

TABLE B-6
EMF REGULATED LIMITS (BY STATE) STATE TRANSMISSION LINE STANDARDS AND GUIDELINES

	Electric Field		Magnetic Field	
Florida	8 kV/m[a] 10 kV/m[b]	2 kV/m	-	150 mG[a] (max. load) 200 mG[b] (max. load) 250 mG[c] (max. load)
Minnesota	8 kV/m	-	-	-
Montana	7 kV/m	1 kV/m[e]	-	-
New Jersey	-	3 kV/m	-	-
New York	11.8 kV/m 11.0 kV/m[f] 7.0 kV/m[d]	1.6 kV/m	-	200 mG (max. load)
Oregon	9 kV/m	-	-	-

*R.O.W. = right-of-way (or in the Florida standard, certain additional areas adjoining the right-of-way).
kV/m = kilovolt per meter. One kilovolt = 1,000 volts.
[a] For lines of 69-230 kV.
[b] For 500 kV lines.
[c] For 500 kV lines on certain existing R.O.W.
[d] Maximum for highway crossings.
[e] May be waived by the landowner.
[f] Maximum for private road crossings.

Graphic Source: EMF Exposure Standards, EMF Questions and Answers Booklet[52]

In other states, several agencies and municipalities have enacted specific EMF policies[53]. These actions have been varied and sometimes include requirements that the fields be considered in the siting of new facilities. The manner in which EMF is considered has taken several forms. In a few instances, a concept referred to as "prudent avoidance" has been adopted. "Prudent Avoidance", a concept proposed by Dr. Granger Morgan of Carnegie-Mellon University, is defined as "limiting exposures which can be avoided with small investments of money and effort" (Morgan, 1991). Some municipalities or regulating agencies have proposed limitations on field strength, requirements for siting of lines away from residences and schools, and in some cases, prohibitions on the construction of new transmission lines. The origin of these individual actions has been

51 See Footnote 12 above for definition of "right of way".
52 EMF Exposure Standards - EMF Questions & Answers Booklet - June 2002, National Environmental Health Institute, http://www.niehs.nih.gov/emfrapid/booklet/standard.htm
53 Although the State of California has not specifically codified restrictions with respect to EMF limits, the CPUC has examined the issue. Please see the CPUC section of this document for more information.

varied, with some initiated by the regulators at the time of new transmission line proposals within their communities or through grassroots efforts.

B.5.4 – CPUC Guidelines

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas and water utilities, as well as railroad, rail transit, and passenger transportation companies within the state of California. The CPUC is responsible for assuring safe services to consumers for reasonable rates.[54] With respect to electricity, the CPUC is charged with enacting public policies governing transmission and distribution lines (new and existing), electricity substations, etc. for the largest, investor-owned utilities (including Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric, Sierra Pacific Power, and Pacific Power & Light).

In 1991, the CPUC began an investigation to consider its potential role in mitigating health effects, if any, of EMFs created by electric utility power lines and by cellular radiotelephone facilities. All interested parties were notified that the CPUC would take appropriate action on EMFs in response to a conclusion, based on scientific evidence, which indicated that a health hazard actually exists, and that a clear cause and effect relationship between utility property or operations and public health was established.[55]

As discussed earlier, significant controversy exists as to whether EMF does or does not constitute a public health hazard. As such, the CPUC was reticent to enact restrictive regulatory requirements. Instead, they adopted seven "Interim Measures" aimed at concurrently protecting the public while avoiding overreaching and unduly expensive limitations on the investor-owned utilities.

As indicated on the CPUC website, the seven interim measures enumerated in the CPUC's November 1993 decision include:

- **No-Cost and Low-Cost Steps to Reduce EMF Levels:** For new and upgraded utility facilities, "no-cost" and "low-cost" measures should be implemented where feasible to reduce potential EMF exposure, with the goal of pursuing the "prudent avoidance"[56] strategy while simultaneously controlling costs. Whereas the "no-cost" mitigation measures should be undertaken immediately, the "low-cost" options should be pursued throughout the project certification process. The CPUC established a benchmark of up to four percent (4%) of the total budgeted project cost to be applied towards developing EMF mitigation measures, including both design and siting considerations.

- **New Designs to Reduce EMF Levels:** The CPUC's Advisory and Compliance Division and Safety Division held workshops for utilities to develop EMF design guidelines for their new

54 California Public Utilities Commission Website, at http://www.cpuc.ca.gov/static/consumers/overview.htm
55 California Public Utilities Commission Website, at http://www.cpuc.ca.gov/static/industry/environment/electromagnetic+fields/action.htm
56 As an example, Southern California Edison has approached the "prudent avoidance" strategy by setting a policy to "Implement reasonable no cost and low cost steps to build new electric utility lines and substations in ways that reduce magnetic fields". http://www.emraa.org.au/powrlines/ESAA.htm

and rebuilt facilities. The guidelines incorporate alternative site selections, increasing the size of rights-of-way, placing facilities underground, and using other suggested methods for reducing EMF levels at transmission, distribution and substation facilities.

- **Measurement of EMFs:** Uniform residential and workplace EMF measurement programs were also designed in the workshops mentioned above. The guidelines are available to both utilities and their customers. The measurement considerations include sources of EMF beyond the control of utilities, such as appliances, house wiring, and grounding systems. Non-investor-owned utilities are also encouraged to use the measurement guidelines.

- **Education and Research:** The CPUC wants to encourage the public and groups having a financial or basic interest in EMFs to become involved in developing education and research programs. Established and managed by the DHS, the CPUC-regulated utilities and municipal utilities use ratepayer funds to pay for their share of development costs for education and research on EMF-related health issues.

- **EMF Education:** This $1.49 million program will provide credible, meaningful, consistent, and timely EMF information to electric utility customers, employees, and the public. DHS will coordinate a uniform EMF education program to supplement, but not duplicate, those that most electric utilities already have. Utilities without programs should implement one as soon as possible.

- **EMF Research:** A $5.6 million four-year non-experimental research program will be directed by DHS. This program will provide utility participation in state, national, and international research to be pursued to the extent that it benefits ratepayers.

- **Other Research**: Utilities are authorized to contribute to federal experimental research conducted under the National Energy Policy Act of 1992.

Recent Reexamination of "Prudent Avoidance" and Low-Cost/No-Cost Policies
In August of 2004, the CPUC opened an "Order Instituting Rulemaking" inquiry[57] to determine if modifications needed to be made to the Commission's previous "prudent avoidance" and low-cost/no-cost policies with respect to EMF. The inquiry was opened for several reasons, including the fact that the Commission had not revisited the issue since its 1993 ruling coupled with the recent resurgence in public interest in the topic in the wake of the 2002 Department of Health Services EMF report.

In its inquiry, the CPUC thoroughly reviewed the updated EMF scientific analyses presented by the National Institutes of Environmental Health Services Working Group (NIEHS), the British National Radiological Protection Board (NRPB), the International Agency for Research on Cancer (IARC), and the California Department of Health Services 2002 report.[58] In its analysis, the CPUC noted that all the reports examined (including the DHS report, although to a lesser

[57] *Order Instituting Rulemaking to Update the Commission's Policies and Procedures Related to Electromagnetic Fields Emanating from Regulated Utility Facilities,* Filed August 19, 2004 with the California Public Utilities Commission, Rulemaking 04-08-020.
[58] *Ibid*, at pg. 3. Please see earlier in this analysis for a synopsis of the CPUC-reviewed sources.

degree) failed to find a definitive causational relationship between EMF exposure and adverse health effects.[59]

As a result, the Commission decided, that it was "…not in a position [to] develop a specific numerical standard or threshold".[60] The CPUC cited the 2002 DHS report's lack of substantive recommendations regarding policy implications as further evidence that more definitive action was not warranted.[61] Nonetheless, the Commission did leave open the possibility of revisiting the EMF health issue in the future as new scientific evidence was produced. In the meantime, the CPUC decided to focus its efforts on improving its "prudent avoidance" and no-cost/low-cost policies which, as of May, 2005, is still an on-going effort.

B.6 – Pacific Gas & Electric: Implementation of the CPUC's "Prudent Avoidance" and "No-Cost/Low-Cost" Strategies

As one of the largest investor-owned California utilities, Pacific Gas and Electric (PG&E) has adopted a detailed written strategy to implement the "prudent avoidance" guidelines outlined by the CPUC. [62] As part of the Proposed Project, PG&E "…will incorporate "no cost" and "low cost" magnetic field reduction steps [for] proposed transmission and substation facilities..." Potential measures to reduce magnetic field exposure "…will be consistent with PG&E's Transmission and Substation EMF Design Guidelines."[63] The design guidelines provide for all of the following potential proactive EMF reduction measures:

- Increase distance from conductors and equipment;
- Reduce conductor spacing;
- Minimize current; and
- Optimize phase configuration

Taking into account the four potential considerations above, the "final field management plan" will be provided to the CPUC for review. It will include the following project information:

- A description of the project (including cost, design, length, location, etc.);
- A description of the surrounding land uses using priority criteria classifications;
- No-cost options to be implemented;

59 The CPUC Order also reviewed the 2002 DHS Report in detail and addressed the apparent inconsistencies between the DSH report and the other primary sources, noting that "…an independent review of the DHS study suggests that other reviewers might have reached different conclusions." From the *Order Instituting Rulemaking* cited above, at pg. 6.
60 *Ibid* at pg 7.
61 *Ibid.*
62 Specifically, PG&E has adopted a formal "Transmission and Substation EMF Design Guidelines" protocol.
63 *Ibid.*

- Priority areas where low-cost measures are to be applied;
- Measures considered for magnetic field reduction, percent reduction and cost; and
- Conclusion – (including a discussion of which options were selected and how areas were treated equivalently or why low-cost measures cannot be applied to this project due to cost, percent reduction, equivalence, environmental concerns or some other reason.)[64]

B.7 – PG&E's Proposed EMF Management Plan

Pursuant to the CPUC requirements, PG&E has submitted two EMF Management Plans for the proposed and amended project applications.[65] Calculated field strengths for the Proposed Project were provided by PG&E based on the following parameters:

- *Computer Program:* Southern California Edison Fields 3.0.A
- *Base Case Load Flow:* The projected 2009 normal summer peak load current (system peak, all lines in service) used for the base case calculation of the magnetic field is 335 Amps, flowing from the Lakeville Substation to the Sonoma Substation in both 115 kV circuits. Load currents are assumed to be balanced at 120 electrical degrees separation between the three phases. Conductor type is assumed to be 477 SSAC.
- *Base Case Phasing:* Both circuits are aligned ABC (Top, Middle, Bottom)
- *Base Case Height of Conductors:* Thirty feet
- *Location of Magnetic Field Calculation:* Three feet above ground adjacent to the minimum conductor clearance point, which is normally at midspan.

It was assumed that the projected peak summer loads for 2009 were used in order to provide a more conservative estimate of future line loadings and EMF levels by projecting 5 years ahead of currently available data (2004).[66] The area load levels represent summer peak loading conditions expected for a one-in-ten year heat wave, which occurs for a limited time each year.

Based on the calculations provided by PG&E, the maximum magnetic field strength varies from approximately 30.5 mG directly beneath the conductors, to 26.3 mG at the edge of the 40 foot wide right of way. This distribution appears reasonable for an overhead transmission line, with a high concentration of field strength directly below the conductors, and with a reduction of strength with distance due to the close spacing of the cables. The calculated field strength at the

64 Both the "potential measures" list and the list of details to be included in the "Final Field Management Plan" were taken directly from the *Proponent's Environmental Assessment* document cited above, at pg. H-5.

65 Pacific Gas and Electric Company. 2004. Preliminary Transmission EMF Management Plan Lakeville-Sonoma 115 kV Transmission Line Project. November 16, 2004. *and* Pacific Gas and Electric Company. 2005. Draft Preliminary Transmission EMF Management Plan Lakeville-Sonoma 115kV Transmission Line Project (Assuming Project Approved with CPUC-Proposed Mitigation Measure Requiring Undergrounding in and near Sonoma. June 2005.

66 ATI Architects and Engineers Technical Memorandum. Draft Electric and Magnetic Field Hazard Technical Memorandum. PG&E Lakeville-Sonoma 115kV project. Document Number E2106-MEM-002-RV1 June 3, 2005.

edge of the right of way also appears reasonable, since typical magnetic fields from power transmission lines range from 10 to 90 mG.[67]

The majority of the Proposed Project passes through open space, grazing lands, and vineyards. However, there are some residential areas along the alignment, particularly along Leveroni and Felder Roads in Sonoma. Residences on Leveroni Road are as close as 29 feet of the transmission line between Poles 117 and 119. The corresponding Base Case maximum magnetic field level at these locations is calculated to be approximately 22.9 mG. Residences on Felder Road are as close as 46 feet of the transmission line near Poles 83. At this location, the Base Case maximum magnetic field level is calculated to be approximately 16.6 mG.

At each existing substation, EMF levels at the property line are predominately the result of transmission and distribution lines that enter or exit the property. Changes to EMF levels would occur as a result of the proposed modifications to the transmission lines.

B.8 – Project EMF Levels with Implementation of Mitigation Measure 2.1-1

Implementation of Mitigation Measure 2.1-1 requires PG&E to underground a portion of the transmission line within Leveroni Road from approximately Fifth Street West to the Sonoma Substation. Under this Mitigation Measure, PG&E would construct a portion of the new transmission line underground along the Leveroni Road leading into the Sonoma Substation. The overhead line would be transitioned into a 115KV underground cable at Pole 108, approximately 150 feet west of the Fifth Street West intersection. A 3,060 foot long single-circuit 115 kV line would be installed underground along Leveroni Road between Fifth Street West and the Sonoma Substation. The 115 kV cables would be installed in a concrete encased duct bank in a 2 foot wide by 5 foot deep trench. The existing overhead 115 kV single-circuit transmission line, distribution lines, and communication wires on the existing poles along Leveroni Road would not be modified.

Calculated field strengths for the underground segment of the Amended Project were provided by PG&E based on the following parameters (PG&E, 2005):

- *Computer Program:* Southern California Edison Fields 3.0.A
- *Base Case Load Flow:* The projected 2009 normal summer peak load current (system peak, all lines in service) used for the base case calculation of the magnetic field is 335 Amps, flowing from the Lakeville Substation to the Sonoma Substation in both 115 kV circuits. Load currents are assumed to be balanced at 120 electrical degrees separation between the three phases. Conductor type is assumed to be 2500 kcmil Cu type XLPE cables.
- *Base Case Depth to Bottom of Trench:* Five feet

[67] *Ibid.*

- *Location of Magnetic Field Calculation:* Three feet above ground

Based on the calculations provided, the maximum magnetic field strength varies from approximately 40.6 mG directly above the conductors, to 4.5 mG at the edge of the 40 foot wide right of way. This distribution appears reasonable for an underground transmission line, with a high concentration of field strength directly above the cable since it is only a few feet from the ground surface, and with a rapid reduction of strength with distance due to the close spacing of the cables.[68] This results in a greatly reduced width of exposure compared to an overhead line.

The transition from overhead to underground occurs at Pole 108 and at the Sonoma Substation. The local EMF levels near Pole 108 may be higher than the Base Case calculations provided.

At the Sonoma Substation, EMF levels at the property line are predominately the result of transmission and distribution lines that enter or exit the property. Changes to EMF levels will occur as a result of the proposed modifications to the transmission lines.

Residences on Leveroni Road are as close as 29 feet to the existing transmission line between Poles 117 and 119. The maximum magnetic field level at these locations from the new underground transmission line are calculated to be approximately 2.3 mG, though depending on the placement of the duct bank Leveroni Road, it is likely that the distance to residences will be increased, and the corresponding field levels reduced.

The existing EMF levels induced by other utilities in the project vicinity are not known, and the cumulative effect of the underground and overhead circuits operating in parallel have not been provided. Further assessment of these effects may be warranted.

B.9 – EMF Mitigation Measures

In accordance with CPUC Decision 93-11-013 (CPUC, 1993), PG&E is required to consider no-cost and low cost measures, where feasible, to reduce EMF exposure from new or upgraded utility facilities. The magnetic field reduction techniques that are typically considered in electric power transmission facilities include the following:

- Optimize phase configuration
- Increase distance from conductors
- Reduce conductor spacing
- Minimize current

As previously mentioned, PG&E has presented two Preliminary Transmission EMF Management Plans, and has evaluated various EMF reduction measures, as described below.

[68] *Ibid.*

Proposed Project - Optimized Phase Configuration

Cross phasing circuits in a double circuit transmission line can be used as a field cancellation technique, where the phases from one circuit in a multi-circuit line are used to reduce the fields from another circuit, thereby reducing the total magnetic field strength. Relative to the Base Case described above, the revised analysis of EMF levels for the Proposed Project using this reduction measure incorporates the following modifications:

Phasing Modifications:

- Lakeville-Sonoma Circuit #1 is arranged ABC (Top, Middle, Bottom)
- Lakeville-Sonoma Circuit #2 is arranged CBA (Bottom, Middle, Top)

Based on the calculations provided, the revised maximum magnetic field strength using the cross phasing reduction measure varies from approximately 7.7 mG directly beneath the conductors, to 6.0 mG at the edge of the 40 foot wide right of way. This represents a 77.2 percent reduction in EMF levels at the edge of the right of way relative to the Base Case condition described above. This is considered a “no-cost” field reduction measure that PG&E has indicated will be incorporated into the Proposed Project. PG&E’s graphic representation of EMF levels for both overhead and underground portions of the line with and without EMF reduction measures are shown on **Figure B-4**.

Increasing Distance from Conductors

EMF levels decrease as the distance from the conductors increases. For overhead lines, this may be accomplished by raising the height of the poles and by reducing the sag of the conductors between poles. For the Proposed Project, PG&E has evaluated the effect on EMF levels considering increasing the height of the conductors first by 5 feet, then by 10 feet. The calculations that were performed also incorporated the cross phasing technique for reducing EMF levels as described above.

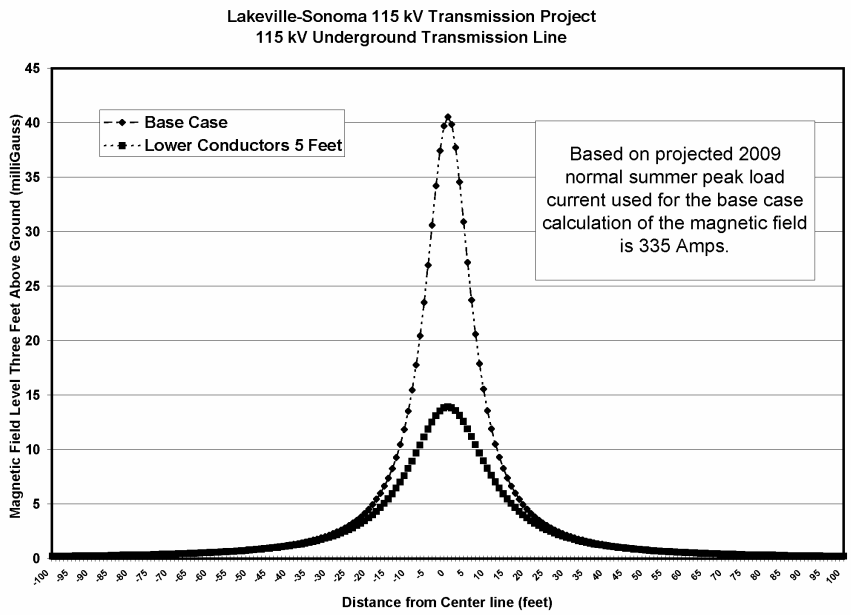
Based on the calculations provided, the revised maximum magnetic field strength using both the cross phasing reduction measure and the conductor height increase is shown in **Table B-7**:

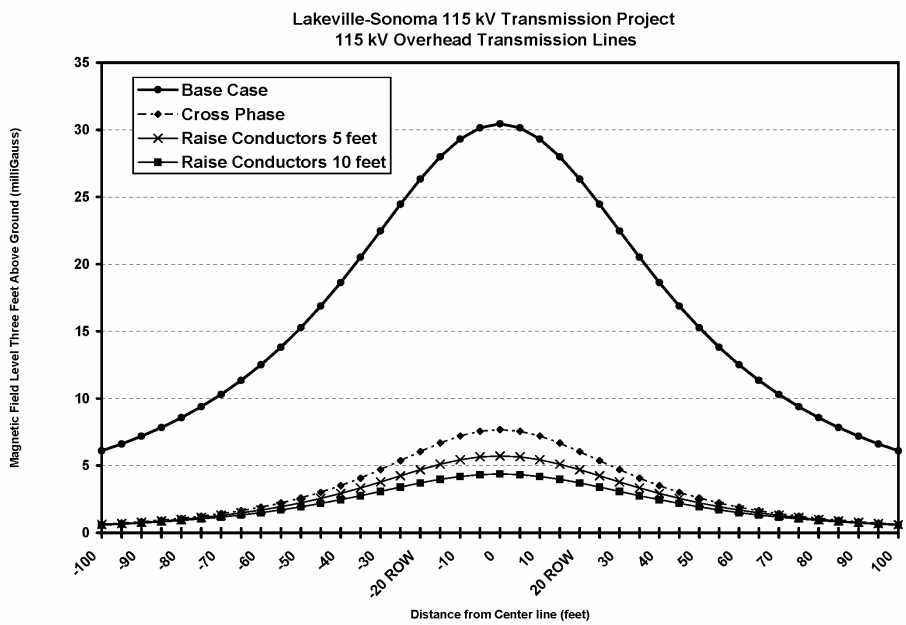
TABLE B-7
REVISED MAXIMUM MAGNETIC FIELD STRENGTH

Conductor Height Increase	Magnetic Field		
	Beneath Conductors	Edge of Right of Way	% Reduction at Edge of Right of Way
Base Case	7.7 mG	6.0 mG	-
5 foot height increase	5.7 mG	4.7 mG	21.7%
10 foot height increase	4.4 mG	3.7 mG	38.3%

PG&E has indicated that the height of the conductors will be raised by ten feet adjacent to residential areas along Felder and Leveroni Roads as a “low-cost” field reduction measure for the Proposed Project.

FIGURE B-4
PG&E ESTIMATED EMF LEVELS WITH AND WITHOUT REDUCTION MEASURES





SOURCE: PG&E (2004) and PG&E (2005)

Proposed Project with Underground Segment (Mitigation Measure 2.1-1)

In the second EMF management plan, PG&E has evaluated various EMF reduction measures for the underground duct bank along Leveroni Road, as described below.

Triangular Configuration

The proposed duct bank will include three solid dielectric cables, with each cable installed in separate conduits and carrying different phases of the three-phase circuit. In lieu of arranging the three cables in the same horizontal or vertical plane, PG&E intends to place the three cables in a triangular distribution within the duct bank, where one cable is located above or below the other two cables. This no-cost measure can reduce field levels by as much as 35 percent.

Strategic Line Placement

EMF levels decrease as the distance from the conductors increases. One method of achieving this for the underground duct bank is to strategically place the conductors in the right of way to maximize the distance to residences. While consideration must be given to existing underground utility locations, PG&E has indicated their intention to strategically locate the duct bank as a no-cost measure to minimize EMF exposure.

Lowering Depth of the Trench

Lowering the trench depth of the underground conductors has the same effect on EMF levels as increasing the height of an overhead system. For the Amended Project, PG&E has evaluated the effect on EMF levels considering lowering the trench depth by 5 feet. The calculations that were performed also incorporated the triangular configuration technique for reducing EMF levels as described above.

Based on the calculations provided, the revised maximum magnetic field strength using both the triangular configuration reduction measure and lowering the trench depth is as follows:

Lowering Trench Depth	Magnetic Field		
	Above Conductors	Edge of Right of Way	% Reduction at Edge of Right of Way
Base Case	40.6 mG	4.5 mG	-
Lowering Trench 5 feet	13.9 mG	3.7 mG	17.5%

PG&E has indicated that the trench will be lowered by five feet adjacent to residential areas along Felder and Leveroni Roads as a “low-cost” field reduction measure for the Amended Project.

B.10 – Final EMF Management Plan

Pursuant to CPUC regulations, PG&E shall submit a final field management plan to the CPUC for review at least 60 days prior to construction. This plan shall at least include the following:

- A description of the project.

- A description of the surrounding land uses considering priority criteria classifications per PG&E guidelines.
- An assessment of total EMF exposure levels along the route and at the substation fence lines.
- No-cost options to be implemented.
- Priority areas where low-cost measures are to be applied.
- Measures considered for magnetic field reduction, percent reduction, and cost.
- Identification of mitigation options selected and how areas were treated equivalently, as well as an explanation of which low-cost measures cannot be applied due to cost, percent reduction, equivalence, or other reason.

APPENDIX C

Special Status Plant Surveys

SPECIAL-STATUS PLANT SURVEYS

for the

PG&E Lakeville – Sonoma 115 kV Transmission Line

Proposed Route and Alternatives

Sonoma County, California

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J-359

October 2004

Executive Summary

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

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

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

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

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Table 1. List of Sensitive Plant Species Expected to Occur within the PG&E Lakeville – Sonoma 115 kV Transmission Line Route and Alternatives Areas. 6

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

Appendix B. California Natural Diversity Database Field Survey Forms

1.0 Introduction

1.1 Proposed Project

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

1.2 Project Site Location

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

1.2.1 Proposed Project Route

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

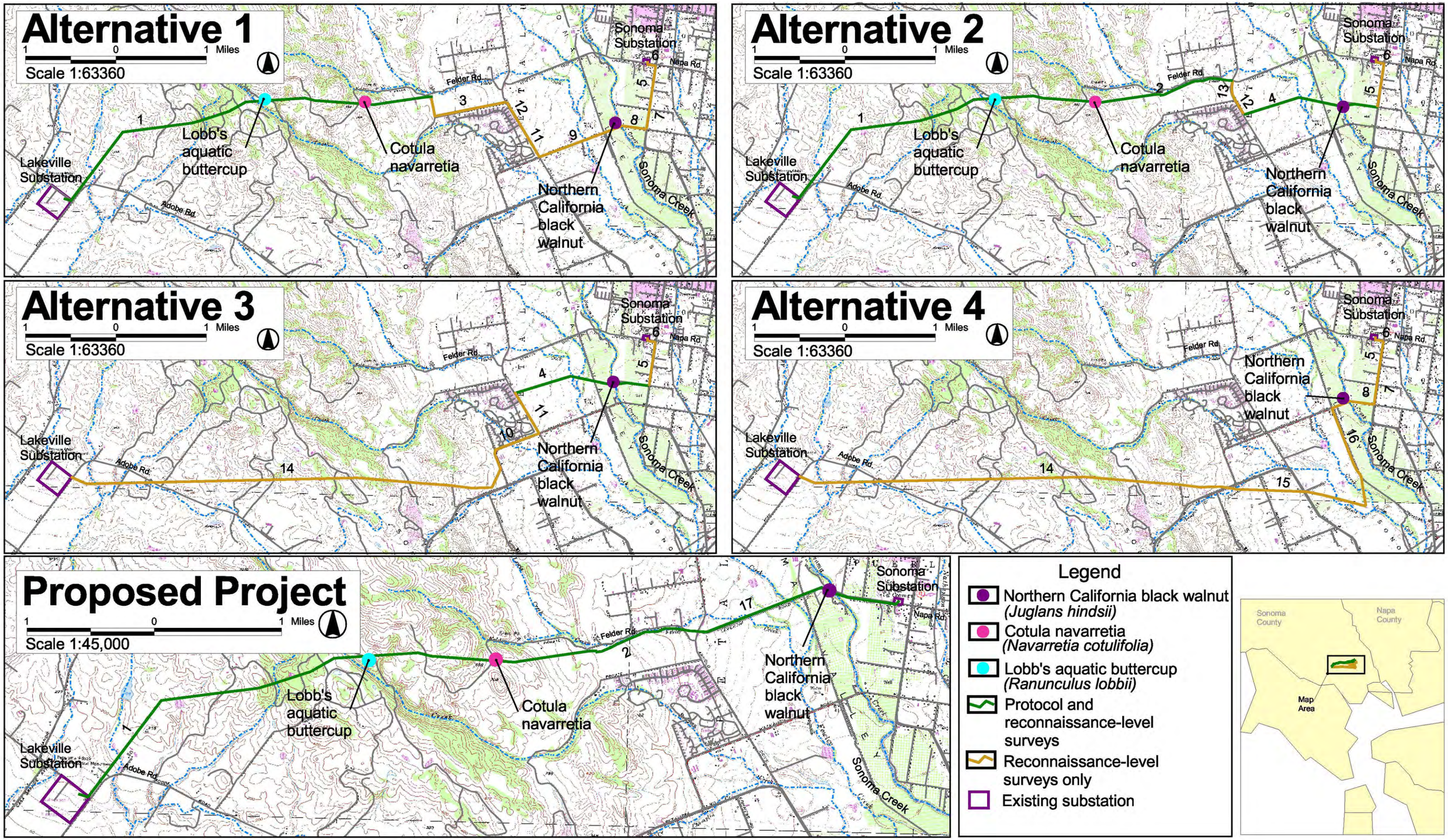

Figure 1.
Study area and results of special-status plant surveys.
Lakeville-Sonoma 115kV Transmission Line Project
October 2004

GANDA

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

1.2.2 Alternative Segments

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

1.3 Overview of Rare Plant Surveys

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

2.0 Methods

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

2.1 Reconnaissance-level Surveys

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

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

2.2 Protocol-level Surveys

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

[1] Formerly the California Exotic Pest Plant Council, Cal-EPPC.

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

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

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

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

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

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

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

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

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

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

2. Plant status definitions are as follows:
   U.S. Fish and Wildlife Service designations:
   - FE Endangered: Any species that is in danger of extinction throughout all or a significant portion of its range.
   - FT Threatened: Any species likely to become endangered within the foreseeable future.
   - SC Species of concern: Other species of concern to the Service.
   - SLC Species of local concern: Species of local or regional concern or conservation significance.

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

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

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

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

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

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

3.0 Results

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

3.1 Vegetation Types

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

Upland Types

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

Wetland and Riparian Types

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

3.1.1 Upland Vegetation Types

Coast Live Oak Forest and Woodland

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

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

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

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

Mixed Evergreen Forest

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

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

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

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

Non-native Grassland

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

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

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

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

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

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

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

Oregon Oak Woodland

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

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

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

Upland Redwood Forest

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

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

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

No special-status plants were found within Redwood Forest.

Vineyards and other Agricultural Lands

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

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

3.1.2 Wetland and Riparian Vegetation Types

Coastal and Valley Freshwater Marsh

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

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

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

North Coast Riparian Forest

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

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

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

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

Northern Vernal Pool

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

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

Vernal Marsh

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

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

3.2 Special-status Plant Species

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

3.2.1 *Juglans hindsii* (Northern California black walnut)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.0 Conclusions and Recommendations

4.1 Special-status Plant Recommendations

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

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

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

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

4.1.1 *Juglans hindsii* (Northern California black walnut)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Mitigate any direct or indirect impacts (e.g., weed invasion, erosion impacts) through appropriate weed control and erosion control measures.

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Appendix A

List of Vascular Plants Found within the Study Area

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

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

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

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

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

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

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

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

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

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

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

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

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

Notes:
1. Scientific names mainly from Hickman 1993.
   * = not native to California
   NW = noxious weed listed by Caifornia Invasive Plant Council and/or California Dept. of Food and Agriculture.

Appendix B

California Natural Diversity Database
Field Survey Forms

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

California Native Species Field Survey Form

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

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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

Scientific Name: Juglans hindsii — 1

Common Name: Northern California black walnut

Species Found? ☑ yes ☐ no _____ If not, why?

Total No. Individuals 10 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.
Yes, Occ. #

Collection? If yes: _____ _____
Number Museum / Herbarium

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

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

Plant Information

Phenology: _____ % vegetative _____ % flowering 100.00 % fruiting

Animal Information

Age Structure: _____ # adults _____ # juveniles _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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

Sonoma Creek, at the intersection of Watmaugh Road, in the City of Sonoma.

County: Sonoma Landowner / Mgr.: private

Quad Name: Sonoma Elevation: 45 ft

T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____ T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____

UTM: Zone: _____ (10, 11) Datum: _____ (NAD83, NAD27, WGS84, other)

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

UTM Coordinates _____

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

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

Other rare species? No

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

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

Visible disturbances / possible threats: Invasive plants.

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

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

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

Photographs: *(check one or more)*

	Slide	Print
Plant / animal	☐	☐
Habitat	☐	☐
Diagnostic feature	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

California Native Species Field Survey Form

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

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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

Scientific Name: Juglans hindsii — 2

Common Name: Northern California black walnut

Species Found? ☑ yes ☐ no _____ If not, why?

Total No. Individuals 8 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.
Yes, Occ. #

Collection? If yes: _____ _____
Number Museum / Herbarium

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

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

Plant Information

Phenology: _____ % vegetative _____ % flowering 100.00 % fruiting

Animal Information

Age Structure: _____ # adults _____ # juveniles _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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

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

County: Sonoma Landowner / Mgr.: private

Quad Name: Sonoma Elevation: 45 ft

T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____ T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____

UTM: Zone: _____ (10, 11) Datum: _____ (NAD83, NAD27, WGS84, other)

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

UTM Coordinates _____

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

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

Other rare species? No

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

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

Visible disturbances / possible threats: Invasive plants.

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

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

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

Photographs: *(check one or more)*

	Slide	Print
Plant / animal	☐	☐
Habitat	☐	☐
Diagnostic feature	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

California Native Species Field Survey Form

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

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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

Scientific Name: Juglans hindsii – 3

Common Name: Northern California black walnut

Species Found? ☑ yes ☐ no _____ If not, why?

Total No. Individuals 5 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.
Yes, Occ. #

Collection? If yes: _____ _____
Number Museum / Herbarium

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

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

Plant Information

Phenology: _____ % vegetative _____ % flowering 100.00 % fruiting

Animal Information

Age Structure: _____ # adults _____ # juveniles _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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

Sonoma Creek, at the intersection of Leveroni Road, in the City of Sonoma.

County: Sonoma Landowner / Mgr.: private

Quad Name: Sonoma Elevation: 60 ft

T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____ T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____

UTM: Zone: _____ (10, 11) Datum: _____ (NAD83, NAD27, WGS84, other)

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

UTM Coordinates _____

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

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

Other rare species? No

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

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

Visible disturbances / possible threats: Invasive plants.

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

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

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

Photographs: *(check one or more)*

	Slide	Print
Plant / animal	☐	☐
Habitat	☐	☐
Diagnostic feature	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

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

Polyconic projection

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

UMA RIVER)
1460 II NE

GN MN
0°21'
6 MILS
17°
302 MILS

1000

SONOMA 7½' QUAD

California Native Species Field Survey Form

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

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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

Scientific Name: Navarretia cotulifolia

Common Name: cotula navarretia

Species Found? ☑ yes ☐ no _____ If not, why?

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

Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.

Collection? If yes: 2,334.00 (Number) Jepson Herbarium (Museum / Herbarium) Yes, Occ. #

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

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

Plant Information

Phenology: _____ % vegetative 100.00 % flowering _____ % fruiting

Animal Information

Age Structure: _____ # adults _____ # juveniles _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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

Eastern base of Sonoma Mountain, approx. 0.2 mile southwest of west end of Felder Creek Road.

County: Sonoma Landowner / Mgr.: private

Quad Name: Glen Ellen Elevation: 135 m

T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____ T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____

UTM: Zone: 10 (10, 11) Datum: NAD 83 (NAD83, NAD27, WGS84, other)

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

UTM Coordinates 0542034,4235700

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

Annual grassland, moist clay hollow, with Lasthenia californica, Delphinium variegatum, Achyrachaena mollis, Microseris douglasii, Trifolium faucibarbata, Sisyrhynchium bellum.

Other rare species? No

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: cattle grazing

Visible disturbances / possible threats:

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

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

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

Photographs: *(check one or more)*

	Slide	Print
Plant / animal	☐	☐
Habitat	☐	☐
Diagnostic feature	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

California Native Species Field Survey Form

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

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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

Scientific Name: Ranunculus lobbii

Common Name: Lobb's aquatic buttercup

Species Found? ☑ yes ☐ no _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

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

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

Plant Information

Phenology: _____ % vegetative 100.00 % flowering _____ % fruiting

Animal Information

Age Structure: _____ # adults _____ # juveniles _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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

Sonoma Mountain, approx. 0.1 mile northeast of intersection of electric transmission line and Rodgers Creek.

County: Sonoma Landowner / Mgr.: private

Quad Name: Glen Ellen Elevation: 550 ft

T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____ T _____ R _____ _____ 1/4 of _____ 1/4 of Section _____

UTM: Zone: _____ (10, 11) Datum: _____ (NAD83, NAD27, WGS84, other)

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

UTM Coordinates _____

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

Natural vernal pool in annual grassland, with Lilaea scilloides, Plagiobothrys bracteatus, Montia fontana, Eryngium aristulatum, Callitriche heterophylla ssp. bolanderi. Vernal pool large for area (20m in diameter), round, shallow, isolated. Coast live oak woodland on slopes nearby.

Other rare species? No

Site Information Overall site quality: ☐ Excellent ☑ Good ☑ Fair ☐ Poor

Current / surrounding land use: cattle grazing

Visible disturbances / possible threats: Pool heavily trampled by cattle.

Comments: The flora of these isolated vernal pools on Sonoma Mountain has not been well-studied. These pools do not fit any of the categories in Holland or Sawyer & Keeler-Wolf. Not possible to estimate numbers of plants. Plants covered approx. 40 square meters.

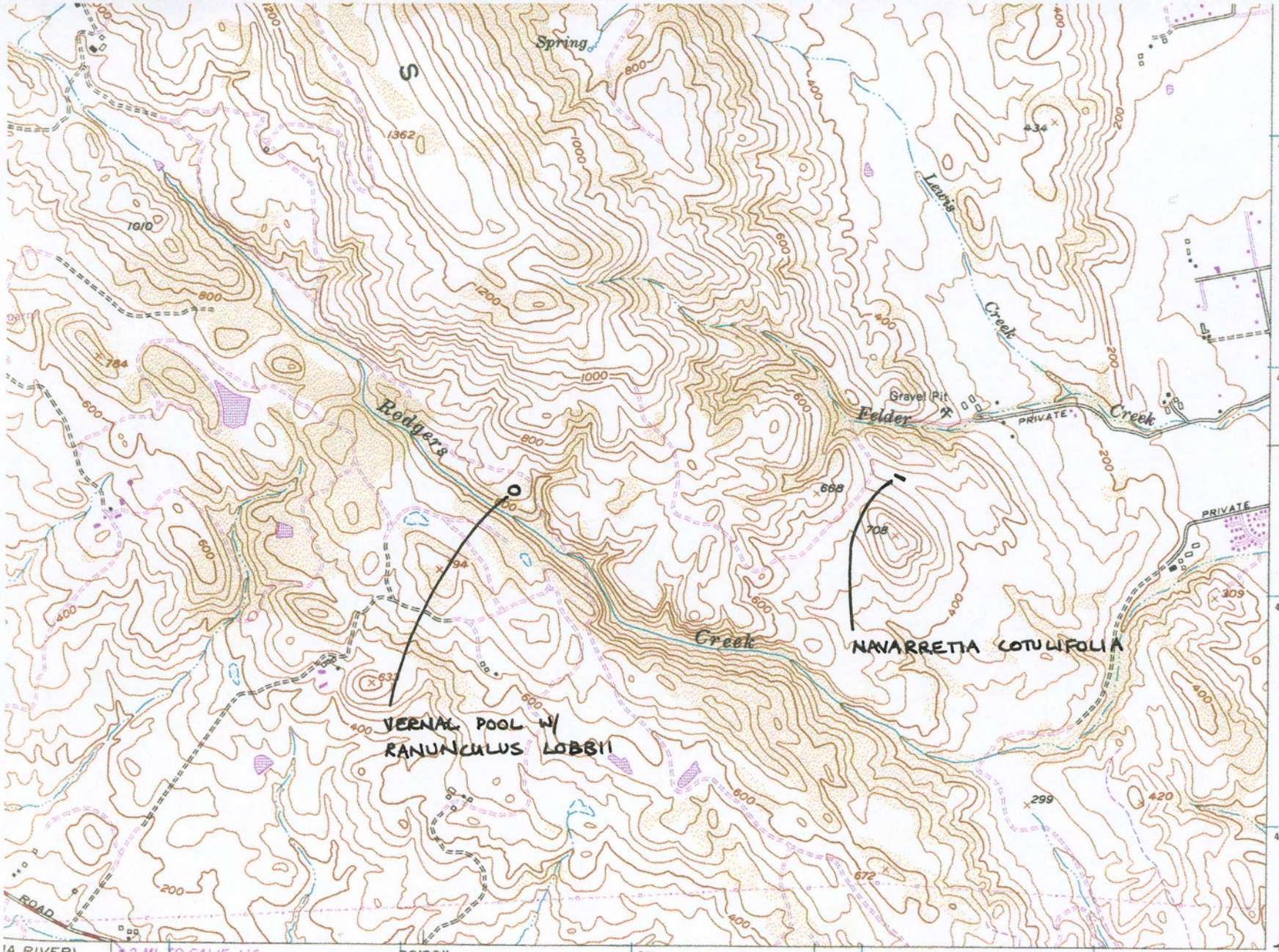
Determination: *(check one or more, and fill in blanks)*

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

Photographs: *(check one or more)*

	Slide	Print
Plant / animal	☐	☐
Habitat	☐	☐
Diagnostic feature	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no



IA RIVER)
II NE

1:24000

1 MILE

00 4000 5000 6000 7000 FEET

1 KILOMETER

RVAL 40 FEET
ENT 10 FOOT CONTOURS

CALIF

ROAD CLASSIFICATION

Medium-duty Light-duty

Unimproved dirt

State Route

GLEN ELLEN 7 1/2' QUAD

(SEARS POINT)
1560 III NW

839-7
707

APPENDIX D

California Red-legged Frog Habitat Assessment and Protocol Surveys

July 2004

CALIFORNIA RED-LEGGED FROG HABITAT ASSESSMENT AND PROTOCOL SURVEYS FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Prepared For:

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

Prepared By:

Garcia and Associates (GANDA)
1 Saunders Avenue
San Anselmo, CA 94960
(Job 359-3A, 3E)

GARCIA and ASSOCIATES

NATURAL & CULTURAL RESOURCE CONSULTANTS

GANDA

Revised Final Report

CALIFORNIA RED-LEGGED FROG HABITAT ASSESSMENT AND PROTOCOL SURVEYS FOR THE LAKEVILLE – SONOMA 115 kV TRANSMISSION LINE PROJECT

Prepared For:

Pacific Gas and Electric Company
Technical and Ecological Services
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GANDA

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1.0 Executive Summary

Habitat assessment and protocol surveys for California red-legged frog (*Rana aurora draytonii*) were conducted by Garcia and Associates (GANDA) for Pacific Gas and Electric Company's (PG&E) Lakeville – Sonoma 115 kV Transmission Line Project. The surveys followed the U.S. Fish and Wildlife Service (USFWS) protocol for California red-legged frog site assessment and field surveys (USFWS 1997). Habitat assessment surveys were performed from August 15 to October 10, 2002, September 25 to 26, 2003, and June 17 to July 20, 2004 at aquatic sites identified within approximately 0.6 kilometer (km) (0.4 mile) of the project corridor. Suitable aquatic habitat for California red-legged frog was identified at 25 sites in the vicinity of the proposed route. Protocol surveys (two daytime and two nighttime surveys) were conducted in October 2002, May, June, and October 2003, and June and July 2004 at 15 of these suitable habitat sites where California red-legged frogs or their habitat could potentially be affected by project activities, absent impact avoidance and minimization measures. Six adult California red-legged frogs were found in June 2004 in the upper portion of Felder Creek and an adjoining tributary near the eastern portion of segment 1. Western pond turtles (*Clemmys marmorata*), a federal species of concern and California Species of Special Concern, also were identified at two ponds in the vicinity of segment 1. In light of these findings, recommendations are provided to avoid potential adverse effects on California red-legged frog individuals and minimize impacts to suitable aquatic and terrestrial habitats for this species.

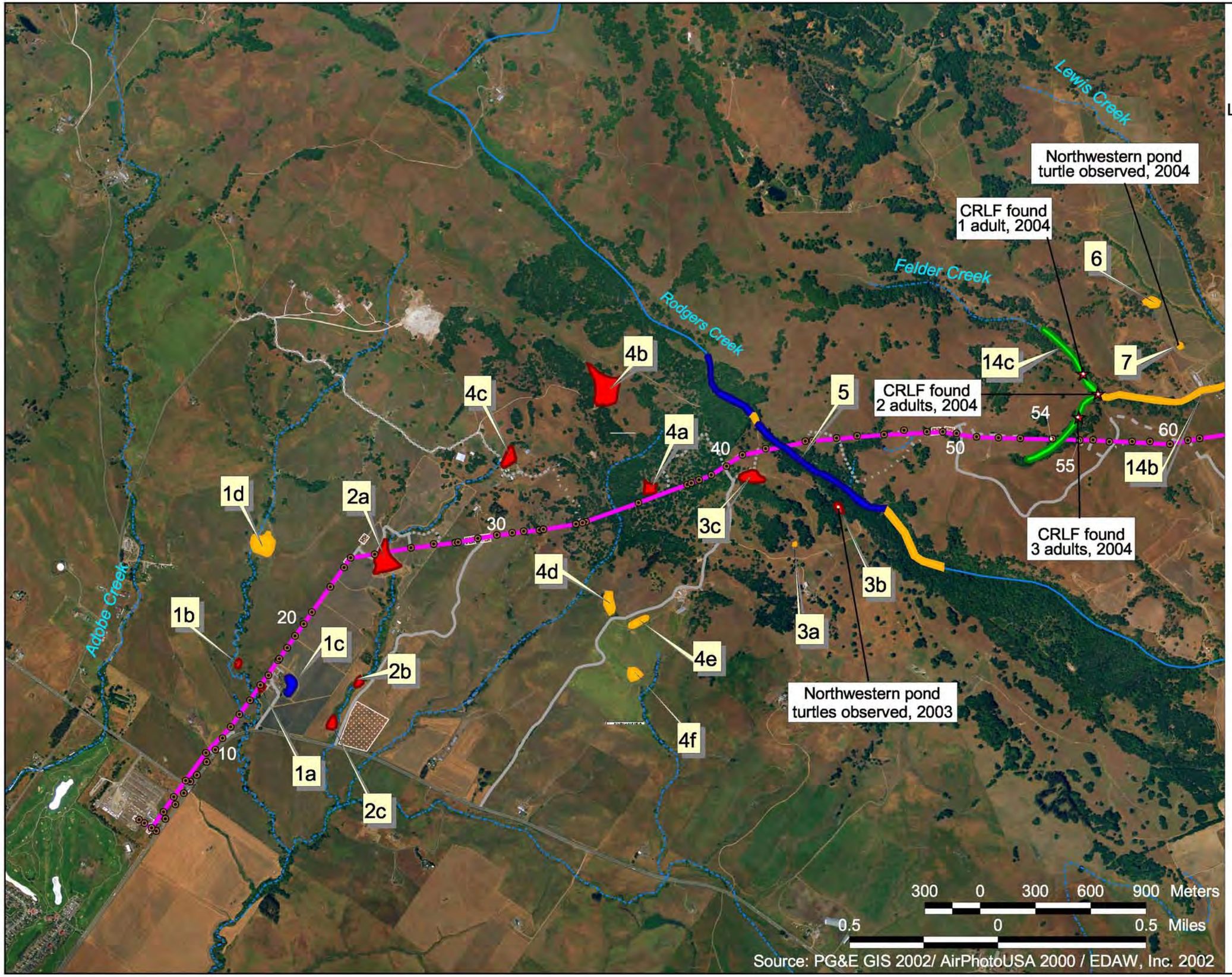
2.0 Introduction

2.1 Project Location and Environmental Setting

The proposed Lakeville – Sonoma 115 kV Transmission Line Project is located in southeastern Sonoma County, California (Figures 1a and 1b). It extends from the Lakeville substation east of the City of Petaluma to the Sonoma substation in the City of Sonoma. The project is composed of three transmission line segments (numbered 1, 2, and 17) which follow the route of an existing transmission line. The route covers a distance of approximately 11.6 km (7.2 miles). Segment 1 has a length of 7.4 km (4.6 miles), segment 2 of 1.4 km (0.9 mile), and segment 17 of 2.8 km (1.7 miles). Project activities will include:

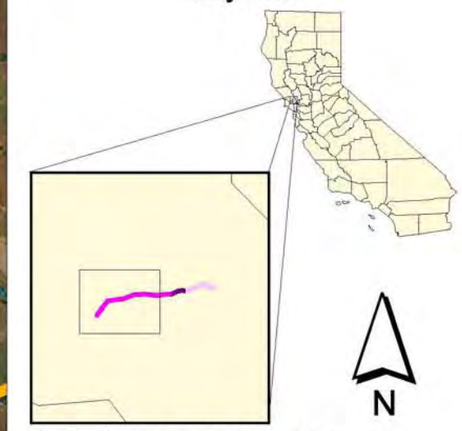
- substation improvements;
- construction of new access roads and improvement of existing roads;
- installation of stream crossing structures on access roads;
- vegetation clearing and grading of landing zones, staging areas, and conductor pull sites;
- operation of project vehicles, helicopters, and heavy equipment;
- installation of new transmission poles and removal of existing poles; and
- installation of new conductors.

These activities could affect California red-legged frogs if they are present within the project area.



Source: PG&E GIS 2002/ AirPhotoUSA 2000 / EDAW, Inc. 2002

Figure 1a.
California Red-legged Frog Habitat Assessment and Field Survey Site Locations:
Segment 1 West
Lakeville-Sonoma 115kV Transmission Line Project
July 2004



- California Red-legged Frog Occupied Habitat
- Suitable California Red-legged Frog Aquatic Habitat, With Potential Impact
- Suitable California Red-legged Frog Aquatic Habitat, No Potential Impact
- Unsuitable California Red-legged Frog Aquatic Habitat
- California Red-legged Frogs Observed in 2004 Surveys
- Proposed Transmission Line (Segment 1)
- Proposed Transmission Line (Segment 2)
- Proposed Transmission Line (Segment 17)
- 30 Poles (Numbered in increments of 10)
- Intermittent or Ephemeral Stream
- Perennial Stream
- Existing Permanent Road
- Existing Temporary Road
- New Permanent Road
- New Temporary Road
- Landing Zone/Staging Area
- Pull Site

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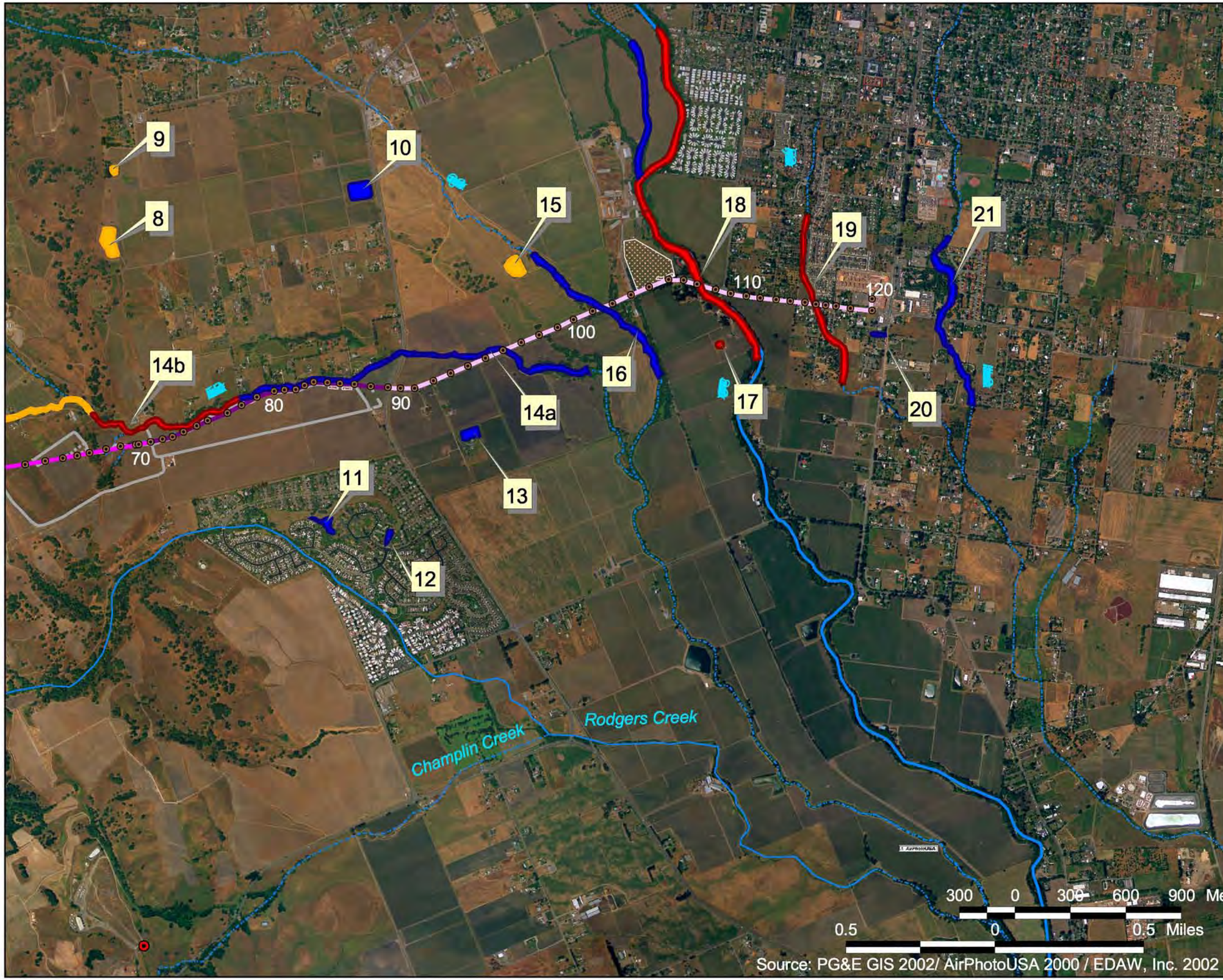
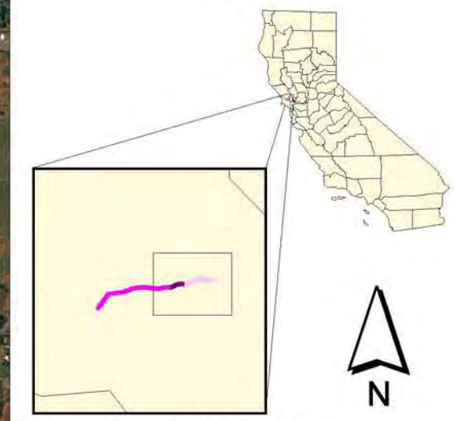
Figure 1b.
California Red-legged Frog Habitat Assessment and Field Survey Site Locations:
Segments 1 East, 2, and 17

Lakeville-Sonoma 115kV Transmission Line Project
July 2004





- Suitable California Red-legged Frog Aquatic Habitat, With Potential Impact
- Suitable California Red-legged Frog Aquatic Habitat, No Potential Impact
- Unsuitable California Red-legged Frog Aquatic Habitat
- California Red-legged Frog Occurrence (CDFG 2003)
- Proposed Transmission Line (Segment 1)
- Proposed Transmission Line (Segment 2)
- Proposed Transmission Line (Segment 17)
- 30 Poles (Numbered in increments of 10)
- Intermittent or Ephemeral Stream
- Perennial Stream
- Existing Permanent Road
- Existing Temporary Road
- New Permanent Road
- New Temporary Road
- Landing Zone/Staging Area
- Pull Site

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The project segments traverse mostly private lands, including agricultural land (cattle grazing and vineyards) and residential properties. Vegetation types found in the project area and vicinity include California annual grassland, vernal pool, freshwater marsh, seasonal wetland, riparian forest and woodland, oak forest and woodland, California bay forest and woodland, redwood forest, agriculture, and urban landscape. Wildlife habitat types are defined according to the California Wildlife Habitat Relationships (CWHR) System (CDFG 2002a) and correspond to equivalent vegetation types except for unvegetated, open water areas of aquatic habitats. Terrestrial wildlife habitats in the project area include coastal oak woodland, coastal mixed conifer forest, annual grassland, and vineyards/irrigated row crops. Wetland and riparian habitats include valley foothill riparian, fresh emergent wetland, and seasonal wetland. Aquatic habitats in the project vicinity include several ponds (permanent and seasonal) and creeks (perennial, intermittent, and ephemeral).

2.2 Status and Natural History of California Red-legged Frog

The California red-legged frog is a federally-listed threatened species and a California Species of Special Concern. Historically, populations of this subspecies were found from Shasta County to Baja California, along both the coast range and the west slope of the Sierra Nevada Mountains, at elevations below 1,500 meters (m) (4,900 feet (ft)) (Jennings and Hayes 1994). Their current range is greatly reduced, with only a few, highly localized populations in the Sierra Nevada and most remaining populations occurring along the coast ranges from Marin County to Ventura County.

California red-legged frogs occur primarily in perennial ponds or pools and perennial or ephemeral streams where water remains long enough for breeding and development of young (Jennings and Hayes 1994). Habitats with the highest densities of frogs may contain dense emergent or shoreline riparian vegetation closely associated with fairly shallow to deep (> 0.5 m or 1.6 ft), still or slow-moving water. The types of riparian and wetland vegetation that seem to be most structurally suitable are willows (*Salix* sp.), cattails (*Typha* sp.), and bulrushes (*Scirpus* sp.). Another key habitat indicator for California red-legged frogs is the absence or near-absence of introduced predators such as bullfrogs (*Rana catesbeiana*) and predatory fish, particularly centrarchids (i.e., sunfish and bass), which may feed on the larvae at higher levels than naturally co-evolved predators (Jennings and Hayes 1994). Emergent vegetation, undercut banks, and semi-submerged rootballs afford shelter from predators (USFWS 1997).

California red-legged frogs lay their eggs from late November to late April in ponds or in backwater pools of creeks, attaching them to emergent vegetation such as cattails and bulrushes. Larvae remain in these aquatic habitats until metamorphosis. Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. California red-legged frog may disperse upstream, downstream, or upslope of their breeding habitat to forage and seek sheltering habitat. They take shelter in small mammal burrows and other refugia up to several dozen meters from the water any time of the year (Jennings and Hayes 1994). During wet periods, California red-legged frog can move long distances between aquatic habitats, traversing upland habitats or ephemeral drainages up to 1.6 km (one mile) from the nearest known frog populations. Seeps and springs in open grasslands can function as foraging habitat or refugia for wandering frogs (Jennings and Hayes 1994).

Multiple factors may be responsible for the decline of California red-legged frog populations (Davidson et al. 2001). The main factor appears to be habitat destruction due to urbanization, but ultraviolet (UV-B) radiation and wind-borne chemicals from upwind agricultural land uses may also be contributing to their decline. Other factors include diseases, trematode parasites, and introduced species such as bullfrogs and mosquitofish (*Gambusia* sp.).

Critical habitat for California red-legged frog was designated by the USFWS in 2001; however, most of this designation was vacated by a U.S. District Court ruling in 2002. The USFWS (2004) recently re-issued proposed critical habitat designations for this species. The project area is not within any proposed critical habitat for California red-legged frog. The closest proposed critical habitat to the project area is Unit 10, Stage Gulch and Lower Petaluma River, which extends as far north as southeastern Petaluma, approximately one mile south of Lakeville substation.

3.0 Methods

3.1 Habitat Assessment

Prior to conducting the habitat assessment, several current information sources on California red-legged frog were reviewed, including the California Natural Diversity Database (CNDDB) (CDFG 2002b and 2004), *A Field Guide to Western Reptiles and Amphibians* (Stebbins 1985), *Guidance on Site Assessment and Field Surveys for California Red-legged Frogs* (USFWS 1997), and other relevant literature including Jennings and Hayes (1994). Additionally, major museum collection databases (California Academy of Sciences, Santa Barbara Natural History Museum, and Stanford University) were consulted.

The habitat assessment was conducted by GANDA biologist Pierre Fidenci from August 15 to October 10, 2002, September 25 to 26, 2003, June 17 to 18, and July 1-20, 2004 according to the site assessment guidelines provided in the USFWS (1997) protocol. A literature search was conducted for known localities of California red-legged frog within 8 km (5 miles) of the project area. Aquatic habitats within 1.6 km (one mile) of the proposed route segments were inventoried using topographic maps and aerial photographs. The inventory consisted of identifying aquatic habitat types (wetlands, ponds, reservoir, creeks) that could support California red-legged frog, and barriers (e.g., major roads) that would minimize or preclude California red-legged frog movement. Based on the results of the map inventory, detailed field assessments were performed at aquatic sites where California red-legged frogs or their habitat could potentially be affected by project activities. Most of the field assessment sites were located within approximately 0.6 km (0.4 mile) of the proposed route (segments 1, 2 and 17). The field assessment involved documenting the aquatic habitat types and conditions, and evaluating habitat suitability for California red-legged frog. All sites visited in the field assessment were numbered and mapped on aerial photographs.

At each site assessed, data were recorded on habitat type, habitat conditions, percentage cover of vegetation, and signs of disturbance such as cattle grazing. Habitat suitability criteria important

to California red-legged frog were recorded, including width and depth of water bodies, bank gradient, water flow, substrate, percent of floating and emergent vegetation, and percent of shade (Appendix A, Table 1). Care was taken to avoid disturbing sediments, vegetation, and any visible aquatic life during the site visits. Sites identified as potential habitat were mapped on aerial photographs. Representative photographs of sites assessed are included in Appendix B. All reptiles and amphibians encountered during the habitat assessment were recorded on the survey data forms (Appendix C). Presence of fish and bullfrog was also recorded because of their potential to impact California red-legged frogs. Fish were detected by scanning aquatic habitats with binoculars. Also, any indicators left from fishermen (e.g., fishing line) were used as indirect evidence of fish presence. A combination of visual and auditory observation was used to detect bullfrogs.

3.2 Protocol Surveys

Following the initial habitat assessment, protocol surveys (USFWS 1997) were conducted by GANDA biologists Pierre Fidenci, Chloe Scott, Kevin Wiseman, Jeff Mitchell, and Jeff Steinman from October 21 to 31, 2002, May 1 to June 30 and October 20 to 30, 2003, and June 17 to July 20, 2004. The protocol surveys consisted of two daytime and two nighttime surveys. The surveys were conducted at fifteen suitable habitat sites along the proposed route that could potentially be affected by the project: sites nos. 1a, 1b, 2a, 2b, 2c, 3b, 3c, 4a, 4b, 4c, 14b, 14c, 17, 18, and 19. Protocol surveys were not performed at sites that would not be affected because of their distance from the proposed transmission line or access roads (sites 1d, 3a, 4d, 4e, 4f, 6, 7, 8, 9, and 15).

Daytime surveys were conducted by visually scanning all aquatic habitats and shoreline areas with binoculars. Nighttime surveys were conducted using binoculars and a 6-volt flashlight. Both visual (eyeshine detection) and auditory methods (listening for frog calls) were used to detect frogs. In cases where no view was available, the vegetation was parted where possible to uncover hidden pools. Care was used while walking to avoid disturbing sediment, vegetation, and amphibian larvae.

Daytime surveys were conducted during October 2002, May, June, and October 2003, and June and July 2004 between 0930 and 1700 hours. Nighttime surveys were conducted during May, June, and October 2003, and July 2004, between 2000 hours and midnight. At least 24 hours elapsed before repeating surveys at the same site.

To reduce the risk of spread of disease agents and parasites that affect amphibians between study sites, GANDA biologists followed the Code of Practice prepared by the Declining Amphibian Populations Task Force (DAPTF 1998). After surveying each site, field equipment (e.g., boots, nets) was rinsed with sterilized water (e.g., boiled or treated) and then scrubbed with 70% ethanol solution and rinsed clean with sterilized water.

4.0 Results

4.1 Occurrences in the Project Vicinity

The CNDDB (CDFG 2004) contains one record of California red-legged frog within 8 km (5 miles) of the project area. This occurrence is north of Highway 116, approximately 2.8 km (1.7 miles) south of segments 1 and 2 (2004; Figure 1b). Here, one adult and two tadpole California red-legged frogs were found in an abandoned pond in May 2002. The next nearest CNDDB occurrence is about 8.3 km (5.2 miles) southwest of the project area and west of the City of Petaluma. This sighting is isolated from the project area by significant barriers (e.g., Highway 101).

The project area is within the historic and current range of California red-legged frog, and several suitable habitat sites were identified within the assessment area (Figures 1a and 1b; Appendix A, Table 1).

4.2 Habitat Assessment

In general, aquatic habitats in the project vicinity consist of many ponds (permanent and seasonal) and creeks (permanent and seasonal). The major drainages traversed by the proposed route are Rodgers Creek, Felder Creek, Carriger Creek, and Sonoma Creek. Fryer Creek, a smaller creek, crosses the route just west of Sonoma substation. Habitat quality is generally good for California red-legged frog at most of these aquatic sites. Artificial stock ponds are the predominant aquatic habitats along segments 1 and 2. These ponds are mostly permanent and lack dense emergent vegetation, but most have submerged vegetation along their banks. Sonoma Creek, Felder Creek, and Fryer Creek also contain suitable habitat for California red-legged frog in the project area. Portions of these creeks have dense riparian vegetation along the banks, shallow to deep waters for juveniles and adults, and some backwater areas protected from potential fish predation. Habitat assessment results are discussed in more detail below (Appendix A, Table 1).

<u>Segment 1</u>
Seventeen ponds (site nos.1a, 1b, 1d, 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 4d, 4e, 4f, 6 and 7) provide potential breeding habitats for California red-legged frog in the assessment area along segment 1 (Table 1 and Figures 1a and 1b). Of the seventeen ponds, ten (sites 1a, 1b, 2a, 2b, 2c, 3b, 3c, 4a, 4b, and 4c) are located where potential impact to California red-legged frogs or their habitat could occur during project activities, absent avoidance and minimization measures. These ponds are all permanent, artificial stock ponds, except for 3a. Ponds 1a (Photo 1) and 1b are small ponds; Pond 2a (Photo 2) is a larger water body. They are used to provide surface storage water for vineyards. Ponds 2b and 2c are large artificial ponds with shallow and deep water. They are mostly bordered by emergent vegetation providing suitable basking and refuge sites for California red-legged frog. Ponds 3b (Photo 3), 3c (Photo 4), 4a, 4b, and 4c are located near the middle of segment 1. These ponds provide suitable habitat characteristics for California red-legged frog. Their banks offer potential basking sites (areas with full sun or mixed sun and

shade). Frogs could bask on logs, vegetation, and bare banks. Other favorable habitat characteristics at these sites include emergent vegetation, shallow to deep water, terrestrial refuge sites, and minimal human disturbance.

Rodgers Creek (site 5) and Felder Creek (sites 14b and 14c) are the major lotic habitats along segment 1. Rodgers Creek is a medium-sized perennial creek with small pools and riffles. Rodgers Creek is well shaded and mostly does not provide potential habitat for California red-legged frog due to the lack of aquatic vegetation, areas of sun, and sufficient pool size. However, a few pools located about 700 m (2,300 ft) downstream from the transmission line, and one isolated pool located about 200 m (650 ft) upstream from the line provide suitable habitat for California red-legged frog. In general, these pools are medium sized and lack emergent vegetation.

Felder Creek and its unnamed tributary along segment 1 provide suitable habitat for the California red-legged frog. Site 14c includes the tributary and the main branch of Felder Creek to just downstream of the tributary confluence. The creek in this area is a medium-sized, permanent to intermittent creek bordered by a dense riparian and coast live oak (*Quercus agrifolia*) canopy. The stream bed is mostly composed of silt, gravel, and cobble. The tributary has characteristics similar to upper Felder Creek but has a narrower channel and is confined within a steep ravine. Site 14b encompasses Felder Creek from just downstream of the tributary confluence to Arnold Road at the eastern end of segment 2. The topography becomes more gradual downstream and the channel contains dense thickets of blackberry (*Rubus discolor*) in some areas. At both sites, water flow ceases by later summer and the stream bed becomes mostly dry. However, some water continues to percolate underground from one pool to another and a few deep pools (0.8 m or 2.6 ft deep) appear to persist until the first rains of fall. These pools provide suitable habitat for all California red-legged frog life stages and could be used for breeding sites. Both sites provide moist open banks devoid of aquatic vegetation.

The upper reach of Felder Creek and its tributary are heavily impacted by livestock, particularly in the vicinity of the tributary confluence. Signs of cattle trampling and manure were evident within the stream bed and along the banks. This likely has reduced bank vegetation and affects water quality in the creek. Indeed, turbidity was high from cattle trampling and associated erosion, with possible high nitrogen and sulfate content from cattle urine and feces.

<u>Segment 2</u>

Potential habitat for California red-legged frog is located within Felder Creek along the western portion of segment 2 (site 14b). The creek in this area is an intermittent, low gradient stream which is well shaded by dense riparian vegetation (Photo 5). The creek is bordered by vineyards and rural-residences and a paved road runs along the north side of the creek. The substrate is composed of silt, gravel, and cobble. Water flow ceases in this reach by late summer; however, a few deep pools that could be used by California red-legged frogs appear to persist through the summer and into early fall. The banks generally lack aquatic vegetation and contain semi-submerged root balls and woody debris. The presence of fish and bullfrogs could limit frog breeding success in this section of the creek, possibly making it unsuitable for tadpoles and metamorphs. Farther downstream in the eastern portion of segment 2, Felder Creek becomes totally dry by mid summer and is not suitable habitat.

Two ponds within 1 mile of segment 2 to the north (sites 8 and 9) also provide potential habitat (Figure 1b). These two ponds are permanent and artificial, and are small to moderate in size. The ponds are isolated from segment 1 by vineyards and dirt roads, and are not expected to be impacted by project activities.

Segment 17

Two ponds (sites 15 and 17) and two creeks (Sonoma Creek, site 18, and Fryer Creek, site 19) provide suitable habitat for California red-legged frog (Table 1 and Figure 1b). Ponds 15 and 17 are permanent artificial water bodies. Site 15 is a medium-sized pond with deep areas. Site 17 is a small-sized pond with deep areas along Sonoma Creek. Both ponds lack emergent vegetation but provide potential submerged basking and foraging sites along the banks. The shallow and deep pools of both ponds offer suitable aquatic habitat for all California red-legged frog life stages. However, based on its location relative to planned project activities, site 15 is considered to be outside the impact area.

Sonoma Creek (Site 18) is a major permanent creek with dense riparian vegetation along the shoreline (Photo 6). The creek is characterized by deep pools (> 1 m or 3 ft) with riffles. The substrate is mainly composed of gravel, cobble, and boulder. In general, the creek supports a wide range of habitat characteristics suitable for California red-legged frogs: suitable breeding sites (deep and shallow pools with few backwaters protected from fish predation); basking sites (e.g., rocks, gravel, logs); and refuge retreats (e.g., dense riparian vegetation, deep pools, and woody debris).

Fryer Creek (site 19) is characterized by shallow pools with silt, clay, and gravel substrate. The tributary section within the project area has permanent water all year providing suitable breeding sites for California red-legged frogs (Photo 7). The banks are mostly covered by dense riparian vegetation. Semi-submerged root balls are found along the banks. In general, the creek offers suitable habitat characteristics for California red-legged frog: breeding sites (e.g., large pools), basking sites (e.g., banks with sun exposure), and refuge retreats (e.g., riparian vegetation, woody debris or root balls).

The other creeks (sites 14a, 16 and 21) located within the segment 17 survey corridor do not provide suitable habitat for California red-legged frogs (Table 1, Figure 1b). Those creek reaches lack permanent water, deep pools and aquatic vegetation. During the field habitat assessment conducted along segment 17, these three creeks were dry.

4.3 Protocol Surveys

Weather conditions were favorable for conducting California red-legged frog protocol surveys. During daytime surveys, air temperatures ranged from 15°C to 28°C (59°F to 82°F) with winds from zero to 5 m/s (0-10 mph). Water temperatures at 5 cm (2 inches) depth ranged from 14°C to 25°C (57°F to 77°F). During nighttime surveys, air temperatures ranged from 15°C to 24°C (59°F to 75°F) with winds from 0-5 m/s (0-10 mph), and water temperatures ranged from 15°C to 25°C (59°F to 77°F).

California red-legged frogs were present at one site along the eastern portion of segment 1. This site (14c) includes the upper branch of Felder Creek and its adjoining tributary (Figure 1a). Six adult frogs were observed here on June 17, 2004. Two of them were found at the downstream end of a concrete culvert where a private dirt road crosses Felder Creek (Photo 8). As noted above, this location showed impacts from livestock that use this area of the creek for drinking. Three of the frogs were located adjacent to a small pool in the tributary (Photo 9) approximately 90 m (300 ft) north of where the transmission line spans over the tributary. One frog was found in a pool in the main branch of Felder Creek, approximately 60 m (200 ft) upstream of the tributary confluence (Photo 10). California red-legged frogs were not observed at any of the other protocol survey sites visited during any of the daytime or nighttime surveys, including sites farther downstream in Felder Creek adjacent to the transmission line route.

Other Herpetofauna Encountered

Other native amphibians and aquatic reptiles detected during the field surveys included California newt (*Taricha torosa*), Pacific treefrog (*Hyla = Pseudacris regilla*), and western pond turtle, a federal species of concern and California Species of Special Concern. Two western pond turtle adults were observed near segment 1 at site 3b and one adult was observed at site 7. Non-native bullfrogs were present, often at high population densities, at several of the sites surveyed (sites 1a, 1b, 2a, 2b, 2c, 3c, 3b, 4a, 4b, 4c, 5, 7, 14b, 17, and 18).

5.0 Discussion and Recommendations

5.1 Potential Effects on the California Red-legged Frog

Construction activities, including pole installation, pole removal, access road construction, and conductor installation in the vicinity of Felder Creek could affect California red-legged frogs if they are present in the work areas. The survey results indicate that California red-legged frogs are present in the upper Felder Creek watershed near the proposed project area. Results were negative farther downstream where the transmission line route runs adjacent to Felder Creek, and this area of the creek was almost completely dry in July 2004. This supports the conclusion that the species is probably absent in this lower reach of the creek during the dry season. However, since stream zones provide potential dispersal corridors, and red-legged frogs can move one mile or more during the wet season, it is possible that individuals could move into this downstream area and adjacent upland habitats during the wet season.

The proposed transmission line spans the tributary to Felder Creek approximately 90 m (300 ft) from where California red-legged frogs were observed. Project activities would not affect aquatic habitat in this area and would have minimal effect on adjacent upland habitats. Pole 54, on the northwest side of the tributary, is located within oak woodland which could provide suitable estivation or dispersal habitat (Photo 11). This pole is proposed to be removed by crews walking in to the site and will be carried away by helicopter. There will be no new pole installed at this location. Pole 55, which is closest to the tributary on the east side, is also proposed to be removed in the same manner. It is located on a ridge top in open grassland high above the creek (Photo 12) and there is no suitable estivation habitat within the proposed pole footprint or work area.

A new upland access road is proposed that would avoid the crossing of Felder Creek where California red-legged frogs were found. This new unpaved road would be located approximately 120 m (400 ft) from the creek at its closest point. Construction of this road would take place during the dry season (June 1 to October 15), which would avoid potential impacts to individual frogs or their habitat in the vicinity of Felder Creek.

Segment 2 and the eastern end of segment 1 (poles 69-87) are located adjacent to Felder Creek approximately 1.3 to 2.4 km (0.8 to 1.5 miles) downstream from where California red-legged frogs were found. In this segment, several poles are situated at or near the edge of the riparian woodland corridor of Felder Creek (Photo 13). Most project activities in this area, including installation of pole foundations and structures and construction/improvement of access roads, will be performed during the dry season. As noted above, the negative survey results and dry conditions observed in this reach of the creek during the summer indicate that the species is not likely to occur there during the dry season. Therefore, project activities in this area during the dry season are not likely to affect California red-legged frogs. In addition, the new poles will be set back farther from Felder Creek than the existing poles and will be outside of the riparian vegetation zone. This will avoid impacts to potential estivation habitat.

Some project activities such as conductor installation, topping of wood poles, removal of poles 54 and 55, and installation of pole 77 (above-ground attachment of the tubular steel pole to the foundation prepared in the dry season), are proposed to be conducted during the wet season. This is necessary to enable electricity shutdown clearances to be obtained; clearances are generally only feasible during periods of lower power demand. It is possible that individual frogs could move into work areas along portions of the route adjacent to Felder Creek during the wet season. Thus, there is some potential for individual frogs to be affected in this area, absent avoidance and minimization measures described below.

The negative survey results at sites other than the upper Felder Creek area indicate that California red-legged frogs may not occur elsewhere along the project route. However, while absence may be concluded in accordance with the USFWS (1997) protocol, it is possible (although unlikely) that California red-legged frogs could be present but not detected in the surveys. Small numbers of individuals are especially difficult to find in dense vegetation. The presence of bullfrogs (in some instances in large numbers) at most of the protocol survey sites reduces, but does not eliminate, the chance of finding viable populations of California red-legged frogs at these sites. With the high densities of bullfrogs that were observed, predation by larger bullfrogs on smaller California red-legged frogs would be inevitable. Other exotic predators that could impact California red-legged frogs such as introduced fish and crayfish were also encountered (e.g., sites 2b, 2c, 3c and 19).

5.2 Avoidance and Minimization Recommendations

To avoid potential adverse effects on California red-legged frogs and other special-status aquatic species and minimize potential impacts to their habitat, GANDA recommends that the following measures be implemented prior to and during construction:

- Before construction begins, a qualified biologist should provide environmental awareness training for all project personnel. This training should include topics such as recognition of California red-legged frogs and their habitat, what to do to avoid and minimize impacts to habitat, and what to do if a California red-legged frog is found.

- Driving to work sites should be limited to established roadways and identified access routes.

- All fueling and vehicle maintenance areas should be located away from creeks (at least 30 m [100 ft] from edge of a creek) and ponds (at least 90 m [300 ft] from edge of a pond), and away from any other sensitive biological resource exclusion areas marked by a qualified biologist.

- To the extent practicable, ground-disturbing construction activities such as site grading, access road construction, and installation of pole foundations should be done during the dry season (June 1 to October 15). The dry season window may begin as early as May 1 if ground conditions at the work sites and access routes are determined to be sufficiently dry by a qualified biologist. If work must occur during the wet season (November 1 to May 31), use appropriate erosion control measures for the local site, which might include one or more of: tacked straw, erosion control fabrics, silt fencing, and graded bedding on roads. For wet-season work in the vicinity of Felder Creek, apply the following measures.

- Immediately prior to wet-season work activities in the vicinity of Felder Creek, a qualified biologist should perform a preconstruction survey for California red-legged frog. The survey area should consist of all proposed wet-season work sites within one mile of Felder Creek and should include all suitable aquatic and upland habitats within 90 m (300 ft) of these proposed work sites.

  If a California red-legged frog is found nearby but outside a proposed work area, it should not be disturbed. Temporary construction fencing should be installed to mark the limits of the affected work area(s) and to limit construction personnel and equipment to the designated work area. The location of the fencing should be determined by the biologist in coordination with the construction supervisor. In addition, as recommended by the biologist, a temporary drift fence (e.g. silt-fence) barrier should be installed to prevent California red-legged frogs from entering those work area(s) during project activities.

  If CRLF are found within a work area prior to construction, the biologist, with prior authorization from the USFWS, will relocate the frogs out of harm's way. Immediately thereafter, a temporary silt-fence barrier will be installed to prevent CRLF from re-entering the work area.

- A qualified biologist should monitor work activities in the vicinity of Felder Creek and other streams, wetlands, and riparian habitats that could be affected during project implementation. The monitor should be present full time during all work activities in the wet season within 90 m (300 ft) of Felder Creek, and periodically in the vicinity of other wetland and stream areas. The monitor will verify that environmental fencing, erosion and sediment control measures, and any other protection measures are properly installed and are effective. If problems are found, the monitor will recommend remedial measures.

If a CRLF is encountered during construction, project activities will cease in the area where the frog is found until the biologist, with prior authorization from the USFWS, relocates the frog out of harm's way and/or takes other appropriate steps previously authorized by the USFWS to protect the animal. Work may resume once the biologist has determined that construction activities will not harm any CRLF and barrier fencing has been installed to prevent the animal from re-entering the work area. The USFWS will be contacted within 24 hours of the finding and informed of actions taken.

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Appendix A

Table 1. Habitat Assessment For California Red-legged Frog in the Vicinity of the Lakeville – Sonoma 115 kV Transmission Line Project

Table 1. Habitat Assessment For the California Red-legged Frog (*Rana aurora draytonii*) in the Vicinity of the Lakeville – Sonoma 115 kV Transmission Line Project

Site number/ Habitat type	**Segment number(s)**	**Water Bodies: permanent or seasonal**	**Width/ Max. Depth (meters)**	**Bank gradient/ Water flow**	**Dominant Substrate**	**% floating vegetation % emergent vegetion % shade**	**Potential habitat for CRLF?**	**Potential project-related impacts (absent avoidance or minimization)?**	**Herpetofauna species and predators encountered**
1a Pond	1	permanent	20 2	Medium to high/ None	Silt-clay	10-20 0 0	Yes	Yes	BF Raccoon
1b Pond	1	permanent	20 1.5	Medium/ None	Silt-clay	1-10 0 0	Yes	Yes	BF Blue heron, raccoon
1c Pond	1	permanent	25 2	High/ None	Silt-clay	0 0 0	No	Yes	None
1d Pond	1	permanent	30 2	Medium/ None	Silt-clay	ND ND ND	Yes	No	None
2a Pond	1	permanent	150 2	Low/ None	Silt-clay	0 10 10	Yes	Yes	BF, TF Raccoons
2b Pond	1	permanent	20 2	Low/ None	Silt-clay	10 10 10	Yes	Yes	BF Fish, crayfish, heron
2c Pond	1	permanent	20 2	Medium/ None	Silt-clay	10 10 5	Yes	Yes	BF Fish, crayfish, heron
3a Pond	1	Seasonal	15 0.3	Low/ None	Silt-clay	5 5 10	No	Yes	None
3b Pond	1	permanent	30 1.5	Low/ None	Silt-clay	5 10 30	Yes	Yes	BF, WPT Fish (*Gambusia*)

Site number/ Habitat type	Segment number(s)	Water Bodies: permanent or seasonal	Width/ Max. Depth (meters)	Bank gradient/ Water flow	Dominant Substrate	% floating vegetation % emergent vegetion % shade	Potential habitat for CRLF?	Potential project-related impacts (absent avoidance or minimization)?	Herpetofauna species and predators encountered
3c Pond	1	permanent	30 1.5	Low/ None	Silt-clay	80 20 20	Yes	Yes	BF Fish (*Gambusia*)
4a Pond	1	permanent	20 2	Low/ None	Silt-clay	70 10 10	Yes	Yes	BF, TF Fish
4b Pond	1	permanent	50/ 3	Low/ None	Sand/silt	1 1 1	Yes	Yes	BF Fish, heron
4c Pond	1	permanent	8/ 1.5	Low/ None	Sand/silt	10 0 0	Yes	Yes	BF
4d Pond	1	permanent	10/ 1.5	Low/ None	Sand/silt	40 1 10	Yes	No	BF
4e Pond	1	permanent	8/ 1.5	Low/ None	Sand/silt	10 0 0	Yes	No	none
4f Pond	1	permanent	10/ 1.5	Low/ None	Sand/silt	10 0 0	Yes	No	none
5 Rodgers Creek	1	permanent	2-3/ 0.8	Low to high/ Low to medium	Silt-clay, cobble	70 0 0	No	No	BF, TF, Fish: sculpin and trout
6 Pond	1, 2	permanent	NA	Low/ none	Sand/silt	NA	Yes	No	None
7 Pond	1, 2	permanent	20/ 2	Low/ None	Sand/silt	5 5 1	Yes	No	WPT, BF

Site number/ Habitat type	Segment number(s)	Water Bodies: permanent or seasonal	Width/ Max. Depth (meters)	Bank gradient/ Water flow	Dominant Substrate	% floating vegetation % emergent vegetion % shade	Potential habitat for CRLF?	Potential project-related impacts (absent avoidance or minimization)?	Herpetofauna species and predators encountered
8 Pond	2	permanent	20/ 2	Low/ None	Sand/silt	0 0 0	Yes	No	None
9 Pond	3	permanent	NA	Low/ None	Sand/silt	NA	Yes	No	None
10 Pond	2, 17	permanent	10 2	Low/ None	Sand/silt	NA	No	No	None
11 Pond	2	permanent	10 1.5	Low/ Low	Cement	0 0 0	No	No	None
12 Pond	2	permanent	10 1.5	Low/ None	Cement	0 0 0	No	No	None
13 Pond	17	permanent	10/ 1.5	Low/ None	Sand/silt	5 5 1	No	No	None
14a Felder Creek, lower reach	17	temporary	2-3/ 0.3	Low/ None	Silt, gravel, cobble	0 0 20	No	Yes	None
14b Felder Creek, middle reach	2, eastern end of 1	permanent	2-4/ 0.8	Low/ Low	Silt, gravel, cobble	0 0 80-90	Yes	Yes	BF Fish
14c Felder Creek, upper reach and tributary	1	permanent	2-4/ 0.6	Low/ Low	Silt, gravel, cobble	0 0 80	Yes	Yes	**CRLF** TF
15 Pond	17	permanent	15 2	Low/ None	Sand/silt	10 0 0	Yes	No	None

Site number/ Habitat type	Segment number(s)	Water Bodies: permanent or seasonal	Width/ Max. Depth (meters)	Bank gradient/ Water flow	Dominant Substrate	% floating vegetation % emergent vegetion % shade	Potential habitat for CRLF?	Potential project-related impacts (absent avoidance or minimization)?	Herpetofauna species and predators encountered
16 Carriger Creek	17	seasonal	2-3/ 0.5	Low/ None	Silt, gravel, cobble	0 0 0	No	Yes	None
17 Pond	17	permanent	10/ 2	Low/ None	Sand/silt	10 0 0	Yes	Yes	BF Raccoon
18 Sonoma Creek	17	permanent	4-10/ 1.5	Low to high/ Low to medium	Silt, gravel, cobble, boulder	0-5 0-20 70-80	Yes	Yes	BF Fish, crayfish, raccoon
19 Fryer Creek	17	permanent	2-4/ 1	Low to medium/ Low	Silt, clay, gravel	0 5 40	Yes	Yes	Fish (*Gambusia*) and crayfish
20 Pond	17	permanent	5/ 1	Low/ None	Plastic cover	0 0 0	No	No	None
21 Nathanson Creek	17	seasonal	2/ 0.5	Low to high/ None in August '02	Silt, gravel, cobble	0 0 60	No	No	None

Gradient: Low < 4 %, Medium 4-35%, High >35%; BF: bullfrog, CN: California newt, CRLF: California red-legged frog, TF: Pacific treefrog, WPT: western pond turtle.

Appendix B

Photographs

Photo 1. Suitable habitat for California red-legged frog, site 1a (segment 1).

Photo 2. Suitable habitat for California red-legged frog, site 2a (segment 1).

Photo 3. Suitable habitat for California red-legged frog, site 3b (segment 1).

Photo 4. Suitable habitat for California red-legged frog, site 3c (segment 1).

Photo 5. Suitable habitat for California red-legged frog along Felder Creek, site 14b (segment 2).

Photo 6. Suitable habitat for California red-legged frog along Sonoma Creek, site 18 (segment 17).

Photo 7. Suitable habitat for California red-legged frog along Fryer Creek, site 19 (segment 17).

Photo 8. Culvert at upper Felder Creek where California red-legged frogs were found in June 2004 (site 14c, segment 1).

Photo 9. California red-legged frog adults at an unnamed tributary to Felder Creek, June 2004 (site 14c, segment 1).

Photo 10. Pool in upper Felder Creek where California red-legged frog was found (site 14c, segment 1).

Photo 11. Pole 54, located in oak woodland upslope of tributary to Felder Creek near where California red-legged frogs were found.

Photo 12. Pole 55, located upslope and east of tributary to Felder Creek near where California red-legged frogs were found.

Photo 13. Transmission line along the edge of riparian vegetation of Felder Creek approximately 1.5 miles downstream from California red-legged frog location.

Appendix C

California Red-legged Frog Protocol Survey Data Forms

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/23/02	Begin time 10:00 AM	End time 10:30	Observer (s): PF, KW

Site #: 1a	Locality: Segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: foggy	Wind: 0	Air Temp.: 15°C Time: 10:00	Water Temp.: 15°C Time: 10:00

Habitat Habitat type/name:

Site length: 20 m	Site width: 20 m	Ave Depth: 1 m	Water Flow: 0
Water: 2 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 20 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 80% Open Water (aquatic habitat) 20 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed:	raccoon
Fish observed:	none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/28/12	Begin time 12:30	End time 12:55	Observer (s): P. F

Site #: 1a	Locality: Segment (pond)		County/State: Sonoma
Elevation: —	USGS Topographic Map: —	UTM North: GPS map —	UTM East: GPS map —
Mile Point: —			

Weather: clear	Wind: 0	Air Temp.: 21 Time: 12:30	Water Temp.: 15°C Time: 12:30

Habitat Habitat type/name: pond

Site length: 20	Site width: 20	Ave Depth: 1	Water Flow: NA
Water: 2 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 20 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

___% Herbaceous _____ Type

Non Vegetated: 80 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2m

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed:	none
Fish observed:	none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/18/03	Begin time 11:20PM	End time 12:00 PM	Observer (s): PF; JM

Site #: 1A	Locality: segment 1		County/State: Sonoma
Elevation: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA
Mile Point: NA			

Weather: clear	Wind: 0	Air Temp.: 15°C Time: 11:20 PM	Water Temp.: 22°C Time: 11:20 PM

Habitat Habitat type/name: Pond

Site length: 20	Site width: 20	Ave Depth: 1	Water Flow: 0
Water: 4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 20

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 20 % Floating _____ Type ___% Woody _____ Type

20% Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	≥3			
Treefrogs	2			

Other amphibian observations:

none

Predator observed: bullfrogs
Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/20/03	Begin time 10:30PM	End time 11:00PM	Observer (s): P.F; JM

Site #: 1A	Locality: Segment 1		County/State: Sonoma
Elevation: NA Mile Point: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA.

Weather: clear	Wind: 0	Air Temp.: 17 C Time: 10:30 PM	Water Temp.: 23 C Time: 10:30 PM

Habitat Habitat type/name: Pond

Site length: 20	Site width: 20	Ave Depth: 1	Water Flow: NA (0)
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 20

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 20% Floating _____ Type ___% Woody _____ Type

20% Herbaceous _____ Type

Non Vegetated: ___% Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N) Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	2	1		
Treefrog		1		

Other amphibian observations:

none

Predator observed: none beside bullfrogs

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/23/02	Begin time 10:30	End time 10:55	Observer (s): P.F; KW

Site #: 1b	Locality: segment 1		County/State: Sonoma
Elevation: –	USGS Topographic Map: –	UTM North: GPS map –	UTM East: GPS map –
Mile Point: –			

Weather: foggy - clear	Wind: 0	Air Temp.: 15°C Time: 10:30	Water Temp.: 15°C Time: 10:30

Habitat Habitat type/name:

Site length: 35 m	Site width: 20 m	Ave Depth: 0.5	Water Flow: 0
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 1 % Herbaceous algae Type

0 %Woody Type

Aquatic Vegetation: 1 % Floating Type ___% Woody Type

0 % Herbaceous Type

Non Vegetated: 40 % Open Water (aquatic habitat) 40 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed: none

Fish observed: ~~none~~ none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/28/02	Begin time 13:00	End time 13:50	Observer (s): P.F

Site #: 1b	Locality: Pond Segment 1		County/State: Sonoma
Elevation: –	USGS Topographic Map: –	UTM North: GPS map –	UTM East: GPS map –
Mile Point: –			

Weather: clear	Wind: less than 5 mph	Air Temp.: 22 °C Time: 13:00	Water Temp.: 15 °C Time: 13:00

Habitat Habitat type/name: Pond

Site length: 35 m	Site width: 20 m	Ave Depth: 0.5 m	Water Flow: 0
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 20 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 1 % Floating algae Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) 40 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y N	Semi-submerged root balls Y N		dense riparian veg. Y N
Backwater pools Y N	Woody Debris Y N	Shallow pools Y N	Max Depth of pool: 2 m

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed: heron
Fish observed: no

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/18/03	Begin time 10:45pm	End time 11:15pm	Observer (s): PF, JM

Site #: 1B	Locality: Segment 1		County/State: Sonoma
Elevation: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA
Mile Point: NA			

Weather: clear	Wind: 0	Air Temp.: 15°C Time: 10:45 pm	Water Temp.: 23°C Time: 10:45 pm

Habitat Habitat type/name: Pond

Site length: 35	Site width: 20	Ave Depth: 0.8	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 50

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

10 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	2			

Other amphibian observations:

none

Predator observed: none

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/20/03	Begin time 9:45PM	End time 10:20 PM	Observer (s): PF; JM

Site #: 1B	Locality: Segment 1		County/State: Sonoma
Elevation: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA
Mile Point: NA			

Weather: Clear	Wind: 0 mpH	Air Temp.: 18°C Time: 9:45 PM	Water Temp.: 24°C Time: 9:45PM

Habitat Habitat type/name: Pond

Site length: 95	Site width: 20	Ave Depth: 0.8	Water Flow:
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 50

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

10 % Herbaceous _____ Type

Non Vegetated: ___% Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	3			

Other amphibian observations:

none

Predator observed: Bullfrogs
Fish observed: no

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/23/02	Begin time 10:55	End time 11:30	Observer (s): KW ; PF

Site #: 2a	Locality: segment 1		County/State: Sonoma
Elevation: –	USGS Topographic Map: ✓	UTM North: GPS map ✓	UTM East: GPS map ✓
Mile Point:			

Weather: foggy	Wind: 0	Air Temp.: 15 C Time: 10:55	Water Temp.: 15 °C Time: 10:55

Habitat Habitat type/name: Pond

Site length: 150	Site width: 100	Ave Depth: 0.5	Water Flow: 0 (NA)
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% ✓ % Sand\Silt

Riparian Veg. 10 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

___% Herbaceous _____ Type

Non Vegetated: 10 % Open Water (aquatic habitat) 80 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

Predator observed: raccoons
Fish observed: no

Observations and Comments

First Daytime Survey
Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey
Second Nighttime Survey

Date: 10/28/02	Begin time 13:20	End time 14:30	Observer (s): P.F

Site #: 2a	Locality: Segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: clear	Wind: 0	Air Temp.: 22°C Time:	Water Temp.: 16°C Time:

Habitat — Habitat type/name: artificial pond

Site length: 150 m	Site width: 100 m	Ave Depth: 0.5	Water Flow: NA
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 10 % Herbaceous _____ Type
/ %Woody _____ Type

Aquatic Vegetation: 10 % Floating alga Type ___% Woody _____ Type
/ % Herbaceous _____ Type

Non Vegetated: ___% Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed: raccoons
Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 6/18/03	Begin time 9:00PM	End time 10:30	Observer (s): Jeff Mitchell, Pierre Fidenci

Site #: 2a	Locality: Segment 1		County/State:
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: Clear, cool	Wind: 0-5 mph	Air Temp.: 15°C Time:	Water Temp.: 23°C Time:

Habitat Habitat type/name:

Site length: 150 m	Site width: 100 m	Ave Depth: 1 m	Water Flow: 0 cfm
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 1%	Under Cut Bank %: 0%	Overhanging Bank Veg. %: 0%

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 5 % Floating _____ Type 0 % Woody _____ Type

5 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools Y (N)	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrog	1	0	0	0

Other amphibian observations:

Pacific tree frog (vocalizations)

Predator observed:	N
Fish observed:	N

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/20/03	Begin time: 11:20	End time: 11:55PM	Observer (s): P.F.; JM

Site #: 2a	Locality: segment 1		County/State: Sonoma
Elevation: NA Mile Point: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA

Weather: clear	Wind: 0 mpH	Air Temp.: 17 °C Time: 11:25PM	Water Temp.: 23 °C Time: 11:25PM

Habitat Habitat type/name: Pond (artificial)

Site length: 150 m	Site width: 100 m	Ave Depth: 1	Water Flow: none
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 1	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 5 % Floating _____ Type ___% Woody _____ Type

5 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools Y (N) Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	2	1	0	0
Truefrogs	0	1	0	0

Other amphibian observations:

none

Predator observed: bullfrogs

Fish observed: no

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/01/04	Begin time 14:45	End time 17:00	Observer (s): Pierre Fidenci

Site #: Pond #2b + drainage	Locality: pond + drainage north of pond 1, segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0-5 mph	Air Temp.: 26°C Time: 14:45	Water Temp.: 24°C Time: 14:45

Habitat Habitat type/name: pond

Site length: ≥ 50 m	Site width: 15-20 m	Ave Depth: 1.5	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 10%	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 80 % Herbaceous _____ Type

20 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algea Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	1	1		

Other amphibian observations:

Predator observed: crayfish (6) + ~~ci~~ aigrette

Fish observed: yes

Observations and Comments

good habitat. Not possible to walk along the banks, scanned shoreline using the inflatable boat.
and algea + surveyed the drainage (90% shade, moist area) north of the pond

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/07/04	Begin time 12:40	End time 14:30	Observer (s): P.F.

Site #: 2b	Locality: Segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map: /	UTM North: / GPS map	UTM East: — GPS map
Mile Point:			

Weather: clear - Sunny	Wind: 5-10 mph	Air Temp.: 37°C Time: 12:40	Water Temp.: 25°C Time: 12:40

Habitat Habitat type/name: pond (artificial)

Site length: 50	Site width: 15-20 m	Ave Depth: 1 m	Water Flow: 0
Water: Turbidity 5 ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel ___% Sand\Silt

Riparian Veg. 80 % Herbaceous _____ Type

20 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

___% Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

Predator observed: Crayfish + heron
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/12/04	Begin time 22:15	End time 23:25	Observer (s): P.F; J.M

Site #: 2b	Locality: Pond Segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 5-10 mph	Air Temp.: 18°C Time: 22:15	Water Temp.: 22°C Time: 22:15

Habitat Habitat type/name: pond

Site length: 150 m	Site width: 15-20 m	Ave Depth: 1.5	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 80% Herbaceous _____ Type

20% Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	1			

Other amphibian observations:

none

Predator observed: crayfish

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/14/04	Begin time 22:15	End time 23:50	Observer (s): PF; JM

Site #: 2b	Locality: pond - Segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North:	UTM East:
Mile Point:		GPS map	GPS map

Weather: clear	Wind: 0-5 mph	Air Temp.: 22:15 Time: 19°C	Water Temp.: 22:15 Time: 23°C

Habitat Habitat type/name:

Site length: 50 m	Site width: 15-20 m	Ave Depth: 1.5	Water Flow: 0
Water: 4-5 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. ___% Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	2			

Other amphibian observations:

none

Predator observed: crayfish
Fish observed: yb

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/01/04	Begin time 12:40	End time 14:30	Observer (s): Pierre Fidence

Site #: pond 2C	Locality: segment 1, pond near landing zone		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North:	UTM East:
Mile Point:		GPS map	GPS map

Weather: clear	Wind: 0	Air Temp.: 25°C Time: 12:40	Water Temp.: 23°C Time: 12:40

Habitat Habitat type/name: pond

Site length: ≈ 100 m	Site width: 20	Ave Depth: 1.5	Water Flow: 0
Water Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 2	Overhanging Bank Veg. %: 30 – 40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous / Type

___%Woody / Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody ___ Type

0 % Herbaceous ___ Type

Non Vegetated: 10 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	2			

Other amphibian observations:

Predator observed: crayfish, herons
Fish observed: yes

Observations and Comments

good potential for CRLF, walked on the open banks 4 times, and scanned for frogs using the inflatable boat.

First Daytime Survey
Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey
Second Nighttime Survey

Date: 07/07/04	Begin time 10:10	End time 12:10	Observer (s): P.F

Site #: 2C	Locality: Segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear. Sunny	Wind: 0-5 mph	Air Temp.: 27°C Time: 12:00	Water Temp.: 25°C Time: 12:00

Habitat Habitat type/name: pond (artificial)

Site length: ≈100	Site width: 20	Ave Depth: 1.5	Water Flow: 0
Water: 5 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 2	Overhanging Bank Veg. %: 30-40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type
___%Woody _____ Type

Aquatic Vegetation: 20 % Floating algae Type ___% Woody _____ Type
___% Herbaceous _____ Type

Non Vegetated: 70 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrog	1			

Other amphibian observations:

none

Predator observed: crayfish, heron
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/12/04	Begin time 20:50	End time 21:55	Observer (s): P.F; JM

Site #: 2C	Locality: Segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: GPS map /	UTM East: GPS map /
Mile Point:			

Weather: clear - partly cloudy	Wind: 5-10mpH	Air Temp.: 20 °C Time: 20:50	Water Temp.: 23 °C Time: 20:50

Habitat Habitat type/name: Pond

Site length: ≥100 m	Site width: 20 m	Ave Depth: 1.5 m	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 2	Overhanging Bank Veg. %: 30-40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 1 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

/ % Herbaceous _____ Type

Non Vegetated: 10 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrog	1			

Other amphibian observations:

none

Predator observed: crayfish

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/14/04	Begin time 21:00	End time 22:00	Observer (s): P.F; JM

Site #: 2C	Locality: Segment 1		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: Clear	Wind: 0 - 5 mph	Air Temp.: 21 C Time: 21:00	Water Temp.: 24 C Time: 21:00

Habitat Habitat type/name: pond

Site length: 100 m	Site width: 20 m	Ave Depth: 1.5 m	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 2	Overhanging Bank Veg. %: 30 - 40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 10 % Herbaceous ~~algae~~ Type

0 %Woody Type

Aquatic Vegetation: 90 % Floating algae Type ___% Woody Type

0 % Herbaceous Type

Non Vegetated: 10 % Open Water (aquatic habitat) 10 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N) Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed: crayfish, heron

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/22/02	Begin time 10:00	End time 11:00	Observer (s): P.F; KW

Site #: 3b	Locality: Pond ~~stay~~ along segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point:			

Weather: fog - clear	Wind: 0	Air Temp.: 15 °C Time: 10:00 AM	Water Temp.: 15 °C Time: 10:00 AM

Habitat Habitat type/name:

Site length: 40 m	Site width: 30 m	Ave Depth: 0.5	Water Flow: 0
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

___ %Woody _____ Type

Aquatic Vegetation: 40 % Floating _____ Type ___% Woody _____ Type

40 % Herbaceous _____ Type

Non Vegetated: 10 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y N	Semi-submerged root balls Y N	dense riparian veg. Y N
Backwater pools Y N	Woody Debris Y N / Shallow pools Y N	Max Depth of pool: 1.5 m

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	>10		>20	

Other amphibian observations:

Predator observed: 6
Fish observed: Gambusia

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/28/02	Begin time 10.00	End time 10.50	Observer (s): P.F

Site #: 3b	Locality: segment 3		County/State:
Elevation: –	USGS Topographic Map: –	UTM North: – GPS map	UTM East: – GPS map
Mile Point: –			

Weather: clear	Wind: 0	Air Temp.: 20 °C Time: 10:00	Water Temp.: 14 °C Time: 10:00

Habitat Habitat type/name: Pond

Site length: 40 m	Site width: 30 m	Ave Depth: 0.5	Water Flow: 0
Water: 2.3 m Turbidity ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 40

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 40 % Floating _____ Type ___% Woody _____ Type

40 % Herbaceous _____ Type

Non Vegetated: 10 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y N	Semi-submerged root balls Y N		dense riparian veg. Y N
Backwater pools Y N	Woody Debris Y N	Shallow pools Y N	Max Depth of pool: 1.5 m

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs		>10	>20	

Other amphibian observations:

no

Predator observed:

Fish observed: Gambusia

Observations and Comments

→ 2 NPT at pond 3b

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/17/03	Begin time 10:10 PM	End time 10:50 PM	Observer (s): P.F., CS

Site #: 3B	Locality: Segment 1		County/State: Sonoma
Elevation: NA	USGS Topographic Map: NA	UTM North: NA GPS map	UTM East: NA GPS map
Mile Point: NA			

Weather: clear	Wind: 0-3 mph	Air Temp.: 18 C Time: 10:10 PM	Water Temp.: 22 C Time: 10:10 PM

Habitat Habitat type/name: pond

Site length: 40	Site width: 30	Ave Depth: 0.7	Water Flow: 0
Water: Turbidity 3-4 ((1-5) 1=clear)	Mid-day Shade %: 30	Under Cut Bank %: 0	Overhanging Bank Veg. %: 10

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 5 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 90 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	≥ 20			

Other amphibian observations:

Found Bufo boreas on the road to this pond.

Predator observed:

Fish observed: Gambusia (mosquito fish)

Observations and Comments

many adults bullfrogs!

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/19/03	Begin time 10:15PM	End time 11:15 PM	Observer (s): CS, PF.

Site #: 3B	Locality: Segment		County/State:
Elevation: NA Mile Point:	USGS Topographic Map: NA	UTM North: GPS map	UTM East: GPS map

Weather: Clear	Wind: 0	Air Temp.: 17°C Time: 10:15PM	Water Temp.: 21°C Time: 10:15PM

Habitat Habitat type/name: Pond

Site length: 40	Site width: 30	Ave Depth: 0.7	Water Flow: 0
Water: 3 - 4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 30	Under Cut Bank %: 0	Overhanging Bank Veg. %: 10

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 5 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 90 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y N	Semi-submerged root balls Y N	dense riparian veg. Y N
Backwater pools Y N	Woody Debris Y N / Shallow pools Y N	Max Depth of pool: 1.5

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	>5	>5		

Other amphibian observations:

none

Predator observed: fish, bullfrogs

Fish observed: yes Gambusia and sun fish

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/22/02	Begin time 12:10	End time 13:10	Observer (s): P.F, KW

Site #: 3c	Locality: segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: fog - Clear	Wind: 0	Air Temp.: 15°C Time: 12:10	Water Temp.: 15°C Time: 12:10

Habitat Habitat type/name:

Site length: 60 m	Site width: 30 m	Ave Depth: 0.4	Water Flow: NA
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 20	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

/ %Woody _____ Type

Aquatic Vegetation: 80 % Floating _____ Type ___% Woody _____ Type

/ % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs		✓		

Other amphibian observations:

none

Predator observed: no
Fish observed: no

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/28/02	Begin time 11:00	End time 11:50	Observer (s): P.F

Site #: 3C	Locality: segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: clear	Wind: 0	Air Temp.: 20°C Time: 11:10	Water Temp.: 16°C Time: 11:10

Habitat Habitat type/name: Pond

Site length: 60 m	Site width: 30 m	Ave Depth: 0.4 m	Water Flow: 0
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 20	Under Cut Bank %: 0	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

1 %Woody _____ Type

Aquatic Vegetation: 80 % Floating _____ Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs		≥100		

Other amphibian observations:

none

Predator observed: none
Fish observed: ~~[illegible]~~ Gambusia

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/17/03	Begin time 9:30pm	End time 10:00pm	Observer (s): P. Fidenci + C. Scott

Site #: 3C	Locality: Segment One		County/State: Sonoma
Elevation: NA Mile Point: NA	USGS Topographic Map: NA	UTM North: NA GPS map	UTM East: NA GPS map

Weather: clear	Wind: mod. light	Air Temp.: 18°C Time: 9:30 pm	Water Temp.: 23°C Time: 9:30m

Habitat Habitat type/name: pond

Site length: 60 m	Site width: 30 m	Ave Depth: 0.5m	Water Flow: 0
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 5 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 75 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous cat tails Type

Non Vegetated: 50 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y (N)	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bull frog	>25			

Other amphibian observations:

Predator observed:

Fish observed: Gambusia observed

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

(second nighttime) ~~First Nighttime Survey~~ ~~Second Nighttime Survey~~

Date: 06/19/2003	Begin time 9:45 pm	End time 10:15 pm	Observer (s): C. Scott + P. Fidenci

Site #: 3C	Locality: Segment One		County/State: Sonoma, CA
Elevation: NA	USGS Topographic Map: NA	UTM North: GPS map NA	UTM East: GPS map NA
Mile Point: NA			

Weather: clear	Wind: 0	Air Temp.: 17°C Time: 9:45 pm	Water Temp.: 20°C Time: 9:45 pm

Habitat Habitat type/name: pond

Site length: 60 m	Site width: 30 m	Ave Depth: 0.5 m	Water Flow: 0
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 5	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 5 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 75 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous cattails Type

Non Vegetated: 5 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y (N)	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bull frog	±50			

Other amphibian observations:

Predator observed:

Fish observed: Gambusia observed

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/22/02	Begin time 13:20	End time 14:20	Observer (s): PF, KW

Site #: 4a	Locality: Segment 1		County/State: Sonoma Co
Elevation: ✓	USGS Topographic Map: ✓	UTM North: ✓ GPS map	UTM East: ✓ GPS map
Mile Point: ✓			

Weather: foggy - Clear	Wind: 0	Air Temp.: 15°C Time:	Water Temp.: 15°C Time:

Habitat Habitat type/name: Pond

Site length: 50 m	Site width: 20 m	Ave Depth: 0.6 m	Water Flow: 0
Water: Turbidity 2 ✓ ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

___% Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs		3		

Other amphibian observations:

none

Predator observed: none
Fish observed: no

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/28/02	Begin time 15:30	End time 16:15	Observer (s): P.F

Site #: 4a	Locality: Segment 1		County/State: Sonoma Co.
Elevation: –	USGS Topographic Map: –	UTM North: – GPS map	UTM East: – GPS map
Mile Point: –			

Weather: clear	Wind: 0	Air Temp.: 21° C Time: 15:30	Water Temp.: 15°C Time: 15:30

Habitat Habitat type/name: Pond

Site length: 2	Site width: 20 m	Ave Depth: 0.6	Water Flow: NA
Water: Turbidity 2 ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 10 % Floating algae Type ___% Woody _____ Type

___% Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) . N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs		7 20		

Other amphibian observations:

none

Predator observed:

Fish observed: fish (bass)

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/24/03	Begin time 22:00	End time 23:00	Observer (s): P.F; JM

Site #: 4A	Locality: Segment 1		County/State: Napa
Elevation: NA	USGS Topographic Map: NA	UTM North: NA GPS map	UTM East: NA GPS map
Mile Point: NA			

Weather: clear	Wind: 0	Air Temp.: 17 Time: 22:00	Water Temp.: 24 C Time: 22:00

Habitat Habitat type/name: pond

Site length: 50 m	Site width: 20 m	Ave Depth: 0.6 m	Water Flow: 0
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 70 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

5 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) 5 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	3			
bullfrogs		4	≥ 50	

Other amphibian observations:

Predator observed:

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/26/03	Begin time 22:00	End time 23:10	Observer (s): P. F; JM

Site #: 4a	Locality: Segment 1		County/State: Napa
Elevation: NA Mile Point: NA	USGS Topographic Map: NA	UTM North: NA GPS map	UTM East: NA GPS map

Weather: clear	Wind: 0	Air Temp.: 24°C Time:	Water Temp.: 25°C Time:

Habitat Habitat type/name: pond

Site length: 50 m	Site width: 20 m	Ave Depth: 0.6 m	Water Flow: 0
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 10	Under Cut Bank %: 0	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 70 % Herbaceous _____ Type

___%Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

5 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) 5 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	4			

Other amphibian observations:

Predator observed:

Fish observed: yes fish (sun fish)

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/14/03	Begin time 9:30	End time 12:30	Observer (s): P. F

Site #: 4b	Locality: segment 1		County/State:
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0-5 mpH	Air Temp.: 28°C Time: 12:00	Water Temp.: 24°C Time: 12:00

Habitat Habitat type/name: pond - small reservoir

Site length: 100	Site width: 50	Ave Depth: 1	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 1	Under Cut Bank %: 0	Overhanging Bank Veg. %: 10

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 1 % Floating _____ Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 3-4 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	10	4		

Other amphibian observations:

none

Predator observed:	heron
Fish observed:	yes

Observations and Comments

none.

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/16/03	Begin time 9:45	End time 12:30	Observer (s): P. F

Site #: 4b	Locality: segment 1		County/State: Sonoma
Elevation: NA	USGS Topographic Map: —	UTM North: — GPS map	UTM East: — GPS map
Mile Point: NA			

Weather: clear	Wind: 0-5 mph	Air Temp.: 26°C Time: 10:00	Water Temp.: 24°C Time: 10:00

Habitat Habitat type/name:

Site length: ≈ 100	Site width: ≈ 50	Ave Depth: 1	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 1	Under Cut Bank %: 0	Overhanging Bank Veg. %: 10

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 1 % Floating _____ Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 3-4m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	≈ 12	1		

Other amphibian observations:

none

Predator observed: none
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/21/03	Begin time 9:30 PM	End time 11:00 PM	Observer (s): P.F.; JM

Site #: 4b	Locality: Segment 1		County/State: Sonoma
Elevation: ✓	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: clear	Wind: 0-5 mph	Air Temp.: 22°C Time: 9:30 PM	Water Temp.: 24°C Time: 9:30 PM

Habitat Habitat type/name: Pond

Site length: 100	Site width: 50	Ave Depth: 1	Water Flow: 0
Water: 4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 1	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 100% Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 1 % Floating _____ Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 3 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	≥ 20	≥ 20		

Other amphibian observations:

none

Predator observed: none
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/23/03	Begin time 9:20 PM	End time 11:00 PM	Observer (s): P. F ; JM

Site #: 4b	Locality: Segment 1		County/State: Sonoma
Elevation: –	USGS Topographic Map: –	UTM North: – GPS map	UTM East: – GPS map
Mile Point:			

Weather: clear	Wind: 0 mpH	Air Temp.: 27 °C Time: 8:30 PM	Water Temp.: 24 °C Time: 9:30 PM

Habitat Habitat type/name:

Site length: 100	Site width: 50	Ave Depth: 1	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 1	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 100 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 1 % Floating _____ Type ___% Woody _____ Type

1 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 3 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrog	≃ 10	L 10		

Other amphibian observations:

none

Predator observed: none

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/14/03	Begin time 13:30	End time 14:50	Observer (s): P.F

Site #: 4 C	Locality: segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: clear	Wind: 0-5 mph	Air Temp.: 30°C Time: 13:00	Water Temp.: 25°C Time: 13:00

Habitat Habitat type/name: small artificial pond

Site length: 10	Site width: 8	Ave Depth: 0.5	Water Flow: 0
Water: 4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

1 %Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) 40 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	≥10	≥50		

Other amphibian observations:

none

Predator observed: none

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/16/03	Begin time 13:40	End time 14:40	Observer (s): P.F

Site #: 4C	Locality: Segment 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: Clear	Wind: 0-5 mpH	Air Temp.: 28°C Time: 13:00	Water Temp.: 25°C Time: 13:00

Habitat Habitat type/name:

Site length: 10	Site width: 8	Ave Depth: 0.5	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

1 %Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) 40 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	≥ 20	≥ 20		

Other amphibian observations:

none

Predator observed: none

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/21/03	Begin time 11:15 PM	End time 12:00 PM	Observer (s): P.F; JM

Site #: 4C	Locality: segment 1		County/State: Sonoma
Elevation: –	USGS Topographic Map: –	UTM North: – GPS map	UTM East: – GPS map
Mile Point:			

Weather: clear	Wind: 0 mph	Air Temp.: 22°C Time: 11:20 PM	Water Temp.: 24°C Time: 11:20 PM

Habitat Habitat type/name: Pond

Site length: 10	Site width: 8	Ave Depth: 0.5	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

1 %Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrog	≥20	≥20		

Other amphibian observations:

none

Predator observed: none

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/23/03	Begin time 11:15 PM	End time 11:50 PM	Observer (s): P.F; JM

Site #: 4C	Locality: Egmont 1		County/State: Sonoma
Elevation: /	USGS Topographic Map: /	UTM North: GPS map /	UTM East: GPS map /
Mile Point:			

Weather: Clear	Wind: 0-5 mpH	Air Temp.: 21°C Time: 11:15	Water Temp.: 24°C Time: 11:15 PM

Habitat Habitat type/name: Pond

Site length: 10	Site width: 8	Ave Depth: 0.5	Water Flow: 0
Water: Turbidity 4 ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

1 %Woody _____ Type

Aquatic Vegetation: 10 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 40 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	≥ 30	≥ 30		

Other amphibian observations:

none

Predator observed: none
Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/17/04	Begin time 16:40	End time 17:00	Observer (s): PF; DC

segment 2

Site #: 14 a	Locality: Felder Creek (lower section)		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0-5 mph	Air Temp.: 26°C Time: 16:40	Water Temp.: dry Time: /

Habitat Habitat type/name:

Site length: ≈ 400 - 600 m	Site width: 2-4 m	Ave Depth: ~~0.2~~ dry	Water Flow: ~~very low~~ none
Water: 1-2 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80-90%	Under Cut Bank %: 10 %	Overhanging Bank Veg. %: 70 %

Substrate: ___% Bedrock ___% Boulder 25 % Rock\ Cobble 50 % Gravel 20 % Sand\Silt

Riparian Veg. 30 % Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: ___% Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools Y (N)	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools Y (N)	Max Depth of pool:

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed:

Fish observed:

Observations and Comments

dry, ~~[illegible]~~ no water, no CRLF potential habitat

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/17/04	Begin time 16:00	End time 16:40	Observer (s):

Segments 1-2

Site #: 14b	Locality: Felder Creek (middle section)		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0-5 mph	Air Temp.: 26 C Time:	Water Temp.: Time:

Habitat Habitat type/name:

Site length:	Site width: 2-4 m	Ave Depth: 0.2	Water Flow: very low
Water: 1-2 m Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80-90%	Under Cut Bank %: 10%	Overhanging Bank Veg. %: 70%

Substrate: ___% Bedrock ___% Boulder 25 % Rock\ Cobble 50 % Gravel 25 % Sand\Silt

Riparian Veg. 30 % Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 0.8 m

Frog Observations Y	(N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

Bullfrog 1

Predator observed: none
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/08/04	Begin time 14:50	End time 16:40	Observer (s): P.F.

Site #: 14b	Locality: Felder Creek middle section		County/State: Sonoma
Elevation:	USGS Topographic Map: /	UTM North:	UTM East:
Mile Point:		GPS map /	GPS map /

Weather: partly-Sunny	Wind: 0-5 mph	Air Temp.: 26C Time: 14.50	Water Temp.: 23°C Time: 14:50

Habitat Habitat type/name:

Site length:	Site width: 2-4 m	Ave Depth: 0.2	Water Flow: very low
Water: 1-2 m Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80-90%	Under Cut Bank %: 10%	Overhanging Bank Veg. %: 70%

Substrate: ___% Bedrock ___% Boulder 25% Rock\ Cobble 50% Gravel 25 % Sand\Silt

Riparian Veg. 30% Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) 5 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 0.8

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed: none

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/15/04	Begin time 21:15	End time 23:25	Observer (s): P.F; JM.

Site #: 14b	Locality: Felder Creek Middle Section		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: Clear	Wind: 0-5 mph	Air Temp.: Time: 21:15	Water Temp.: Time: 21:15

Habitat Habitat type/name:

Site length:	Site width: 2-4 m	Ave Depth: 0-2m	Water Flow: very low
Water: 1-2 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80-90	Under Cut Bank %: 10	Overhanging Bank Veg. %: 70%

Substrate: ___% Bedrock ___% Boulder 25 % Rock\ Cobble 50 % Gravel 25 % Sand\Silt

Riparian Veg. 30 % Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) 5 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools (Y) (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 0.8m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed:

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/20/04	Begin time 20:50	End time 23:00	Observer (s): P.F, CS

Site #: 14b	Locality: Felder Creek middle section		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0	Air Temp.: 22°C Time: 20:50	Water Temp.: 21°C Time: 20:50

Habitat Habitat type/name: creek

Site length:	Site width: 2-4 m	Ave Depth: 0.2	Water Flow: very low
Water: 1-2 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80-90%	Under Cut Bank %: 10%	Overhanging Bank Veg. %: 70%

Substrate: ___% Bedrock ___% Boulder 25 % Rock\ Cobble 50 % Gravel 25 % Sand\Silt

Riparian Veg. 30 % Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 5 % Open Water (aquatic habitat) 5 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 0.7m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed:

Fish observed: yes

Observations and Comments

good weather conditions for conducting surveys

→ could last found CRLF

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 06/17/04	Begin time 13:15	End time 14:45	Observer (s): P.F, DC

Site #: 14 c	Locality: Felder Creek upper branch & tributary		County/State: Sonoma
Elevation: –	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point: –			

Weather: clear	Wind: 0-5 mph	Air Temp.: 24°C Time: 13:15	Water Temp.: 24°C Time: 13:15

Habitat Habitat type/name: creek

Site length: ≈ 800-1,000 m	Site width: ≈ 2-4 m	Ave Depth: 0.5 m	Water Flow: almost zero
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80	Under Cut Bank %: 5	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder 10 % Rock\ Cobble 30 % Gravel 60 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 100 % Open Water (aquatic habitat) 100 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 0.6 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Rana aurora draytonii	6	0	0	0
Hyla regilla	0	0	≈ 20	0

Other amphibian observations:

none

Predator observed: none

Fish observed: none

Observations and Comments

heavy impact from cattle grazing along the creek

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/21/03	Begin time 10:00	End time 12:00	Observer (s): Pierre Fidanci

Site #: 17	Locality: Pond site 17 along Sonoma Creek		County/State: Sonoma
Elevation:	USGS Topographic Map: Sonoma	UTM North: GPS map —	UTM East: GPS map —
Mile Point:			

Weather: clear - Sunny	Wind: 0 mpH	Air Temp.: 28 C Time: 11:00 AM	Water Temp.: 20 °C Time: 11:00 AM

Habitat Habitat type/name: unnamed artificial pond

Site length: ≈ 10 m	Site width: ≈ 10 m	Ave Depth: 0.8	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 100 % Open Water (aquatic habitat) 100 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	3			

Other amphibian observations:

none

Predator observed: none
Fish observed: none

Observations and Comments

irrigation pond for vineyards

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/23/03	Begin time 10:15	End time 12:30	Observer (s): Pierre Fidenci

Site #: 17	Locality: pond along segment 17, along Sonoma lk.		County/State: Sonoma
Elevation: /	USGS Topographic Map: Sonoma	UTM North: — GPS map	UTM East: — GPS map
Mile Point: /			

Weather: Clear	Wind: 0 mph	Air Temp.: 29 °C Time: 11:15	Water Temp.: 20 °C Time: 11:15

Habitat Habitat type/name: unnamed pond

Site length: 10	Site width: 10	Ave Depth: 0.8	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 100 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	2	2		

Other amphibian observations:

none

Predator observed: none
Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/27/03	Begin time 8:00 PM	End time 9:10 PM	Observer (s): P.F; JS

Site #: 17	Locality: Segment 17 along Sonoma Creek		County/State: Sonoma
Elevation: —	USGS Topographic Map: Sonoma	UTM North: — GPS map	UTM East: — GPS map
Mile Point: —			

Weather: clear	Wind: 0 mpH	Air Temp.: 24°C Time: 8:00 PM	Water Temp.: 17°C Time: 8:00 PM

Habitat Habitat type/name: unnamed pond

Site length: 10 m	Site width: 10 m	Ave Depth: 0.8	Water Flow: 0
Water: 3-4 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 100 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)	dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N) Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	4	1		

Other amphibian observations:

none

Predator observed: ~~non~~ raccoon tracks

Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/30/03	Begin time 8:00 PM	End time 9:15 PM	Observer (s): P.F; JS.

Site #: 17	Locality: Segment 17 along Sonoma Creek		County/State: Sonoma
Elevation: /	USGS Topographic Map: Sonoma	UTM North: / GPS map	UTM East: / GPS map
Mile Point: /			

Weather: clear	Wind: 0	Air Temp.: 16°C Time: 8:00 PM	Water Temp.: 15 Time: 800 PM

Habitat Habitat type/name: ~~stream~~ unnamed pond

Site length: 10 m	Site width: 10 m	Ave Depth: 0.8	Water Flow: 0
Water: 3-4 m	Mid-day Shade %: 0	Under Cut Bank %: 0	Overhanging Bank Veg. %: 0
Turbidity ((1-5) 1=clear)			

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100 % Sand\Silt

Riparian Veg. 0 % Herbaceous _____ Type

0 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 100 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls Y (N)		dense riparian veg. Y (N)
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 2 m

Frog Observations Y	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs	2			

Other amphibian observations:

none

Predator observed: raccoon
Fish observed: none

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/21/02	Begin time 9:45	End time 12:45	Observer (s): PF

Site #: 18	Locality: segment 17		County/State: Sonoma
Elevation:	USGS Topographic Map: ✓	UTM North: ✓ GPS map	UTM East: ✓ GPS map
Mile Point:			

Weather: clear	Wind: 0	Air Temp.: 18 °C Time: 10:00 PM	Water Temp.: 14 °C Time: 10:00 PM

Habitat Habitat type/name: Sonoma Creek

Site length: 1000 m	Site width: 4 - 6 m	Ave Depth: 0.4	Water Flow: ≤ 7 m/h
Water: 2-3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 70	Under Cut Bank %: 30	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock 10 % Boulder 30 % Rock\ Cobble 30 % Gravel 30 % Sand\Silt

Riparian Veg. 30 % Herbaceous _____ Type

70 %Woody _____ Type

Aquatic Vegetation: 5 % Floating algae Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools (Y) (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1.5

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed:

Fish observed: yes

Observations and Comments

Garbage in the Creek

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/21/02	Begin time 10:00 AM	End time 14:00 PM	Observer (s): P.F

Site #: 6 18	Locality: Sonoma Creek		County/State: Sonoma
Elevation: NA Mile Point: NA	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map

Weather: Clear	Wind: 0 mph	Air Temp.: 21 C Time: 10:00 AM	Water Temp.: 15 C Time: 10:00 AM

Habitat Habitat type/name: Creek

Site length: 1000 m	Site width: 4-6 m	Ave Depth: 0.6 m	Water Flow: <2 sec
Water: Turbidity 2 ((1-5) 1=clear)	Mid-day Shade %: 70	Under Cut Bank %: 30	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock 10 % Boulder 30 % Rock\ Cobble 30 % Gravel 30 % Sand\Silt

Riparian Veg. 35 % Herbaceous / Type

70 %Woody / Type

Aquatic Vegetation: 5 % Floating / Type ___% Woody ___ Type

0 % Herbaceous / Type

Non Vegetated: ___% Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y N	Woody Debris (Y) N Shallow pools (Y) N	Max Depth of pool: 1.5

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs
none				

Other amphibian observations:

none

Predator observed:

Fish observed: fish gb.

Observations and Comments

Napa-Sonoma Electric Upgrate Project

Privileged and Cofidential-
Attorney Work Product

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date:	Begin time	End time	Observer (s):
6-24-03	2142	2248	KEVIN WISEMAN

Site #: 18	Locality: SONOMA CREEK		County/State: SONOMA CO., CA
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point: 2.0 (2) 1.2 (3)			

Weather: CLEAR	Wind: NONE	Air Temp.: 23°C Time: 2142	Water Temp.: 20°C Time: 2152

Habitat Habitat type/name: CREEK

Site length: ≈1000m	Site width: 2-3 m	Ave Depth: 0.5 m	Water Flow: 0-10 cm/s
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 40	Under Cut Bank %: 30	Overhanging Bank Veg. %: 30

Substrate: 10 % Bedrock 20 % Boulder 30 % Rock\ Cobble 30 % Gravel 10 % Sand\Silt

Riparian Veg. 40 % Herbaceous CATTAILS, SEDGE, GRASSES Type

60 %Woody OAKS, COTTONWOOD, WILLOW, ALDER Type

Aquatic Vegetation: 10 % Floating ALGAE Type 20 % Woody WILLOW Type

70 % Herbaceous CATTAILS/SEDGE Type

Non Vegetated: 30 % Open Water (aquatic habitat) 70 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools (Y) N	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
RANA CATESBEIANA		2	>20	

Other amphibian observations:

Predator observed: CRAYFISH

Fish observed: CYPRINID MINNOWS, SCULPIN

Observations and Comments

- Barn Owl, Bats obs. over creek

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 6-29-03	Begin time 2141	End time 2310	Observer (s): KEVIN WISEMAN

Site #: 18	Locality: SONOMA CREEK		County/State: SONOMA Co., CA
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point: 2.0(2) 1.2(3)			

Weather: CLEAR	Wind: none	Air Temp.: 21°C Time: 2141	Water Temp.: 21.5°C Time: 2148

Habitat Habitat type/name: CREEK

Site length: ≈1000m	Site width: 2-3m	Ave Depth: 0.5m	Water Flow: 0-10 cm/s
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 40	Under Cut Bank %: 30	Overhanging Bank Veg. %: 30

Substrate: 10 % Bedrock 20 % Boulder 30 % Rock\ Cobble 30 % Gravel 10 % Sand\Silt

Riparian Veg. 40 % Herbaceous CATTAILS, GRASSES, SEDGE Type

60 %Woody OAKS, COTTONWOOD, WILLOW, ALDER Type

Aquatic Vegetation: 10 % Floating ALGAE Type 20 % Woody WILLOW Type

70 % Herbaceous CATTAILS/SEDGE Type

Non Vegetated: 30 % Open Water (aquatic habitat) 70 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools (Y) N	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
RANA CATESBEIANA		1	61	

Other amphibian observations:

Predator observed: OPPOSUM, RACCOON, CRAWFISH
Fish observed: SCULPIN, CYPRINID MINNOWS

Observations and Comments

Bats obs. over creek;

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/02/04	Begin time 10:30	End time 14:50	Observer (s): Pierre Fidenci

Site #: 18 (extension)*	Locality: Sonoma Creek ~~section 2~~ upper section		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0	Air Temp.: 23°C Time: 10:30	Water Temp.: 23°C Time: 10:30

Habitat Habitat type/name:

Site length: 1000 m	Site width: 5-10 m	Ave Depth: 0.8 m	Water Flow: low
Water: 2-3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80%	Under Cut Bank %: 20	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble ___% Gravel 100% Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

50 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: ~1.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrog	1			

Other amphibian observations:

none

Predator observed:	turkeys.
Fish observed:	yes

Observations and Comments

*Survey area was extended northward due to proximity of proposed landing zone/staging area.

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/08/04	Begin time 10:00	End time 14:00	Observer (s): P.F

Site #: 18 (extension)	Locality: Sonoma Creek upper section		County/State: Sonoma
Elevation: –	USGS Topographic Map: –	UTM North: – GPS map	UTM East: – GPS map
Mile Point: –			

Weather: partly sunny	Wind: 0-5 mph	Air Temp.: 22°C Time:	Water Temp.: 22°C Time:

Habitat Habitat type/name: Sonoma Creek

Site length: 1000	Site width: 6-10 m	Ave Depth: 0.8	Water Flow: low
Water: Turbidity 2-3 ((1-5) 1=clear)	Mid-day Shade %: 80	Under Cut Bank %: 20	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder 20 % Rock\ Cobble 60 % Gravel 20 % Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

50 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed: turkey again!

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/13/04	Begin time 20:30	End time 23:45	Observer (s): P.F; JM

segment 17

Site #: 18 (extension)	Locality: Sonoma Creek upper Section		County/State: Sonoma
Elevation:	USGS Topographic Map: /	UTM North:	UTM East:
Mile Point:		GPS map	GPS map

Weather: clear	Wind: 0	Air Temp.: 21°C Time: 20:40	Water Temp.: 23°C Time: 20:40

Habitat Habitat type/name: Creek

Site length: ~1000 m	Site width: 6-10 m	Ave Depth: 0.8 m	Water Flow: low
Water: 2-3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 80%	Under Cut Bank %: 20	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder 20 % Rock\ Cobble 60 % Gravel 20 % Sand\Silt

Riparian Veg. 50 % Herbaceous / Type

50 %Woody / Type

Aquatic Vegetation: 0 % Floating ___ Type ___% Woody ___ Type

0 % Herbaceous ___ Type

Non Vegetated: 0 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrog			1	

Other amphibian observations:

Predator observed: crayfish, turkey

Fish observed: yes (trout and Sitters)

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 07/19/04	Begin time 20:30	End time 10:30	Observer (s): PF; CS

Site #: 18 (extension)	Locality: Sonoma Creek		County/State: Sonoma
Elevation:	USGS Topographic Map:	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: clear	Wind: 0 mph	Air Temp.: 23C Time: 20:30	Water Temp.: 23C Time: 10:30

Habitat Habitat type/name: Creek

Site length: 1000 m	Site width: 6-10 m	Ave Depth: 0.8	Water Flow: low
Water: Turbidity 2 ((1-5) 1=clear)	Mid-day Shade %: 80	Under Cut Bank %: 20	Overhanging Bank Veg. %: 70

Substrate: ___% Bedrock ___% Boulder 20 % Rock\ Cobble ___% Gravel ___% Sand\Silt

Riparian Veg. 50 % Herbaceous _____ Type

50 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

0 % Herbaceous _____ Type

Non Vegetated: 0 % Open Water (aquatic habitat) ___% Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 1.5 m

Frog Observations Y (N)

Species	Adults	Subadults	Tadpoles	Eggs

Other amphibian observations:

none

Predator observed: crayfish (4)

Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/20/03	Begin time 10:50AM	End time 15:30PM	Observer (s): Pierre Fidenci

Site #: 19	Locality: Fryer Creek		County/State: Sonoma
Elevation:	USGS Topographic Map: Sonoma Quad.	UTM North: / GPS map	UTM East: / GPS map
Mile Point:			

Weather: clear	Wind: 0 mph	Air Temp.: 25°C Time: 10:50 AM	Water Temp.: 19°C Time: 10.50AM

Habitat Habitat type/name: Fryer Creek.

Site length: 1000 m	Site width: 2 - 4 m	Ave Depth: 0.5 m	Water Flow: 7
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 60%	Under Cut Bank %: 2 - 10	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble 20 % Gravel 80 % Sand\Silt

Riparian Veg. 90 % Herbaceous _____ Type

10 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 2 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N	Shallow pools (Y) N	Max Depth of pool: 0.5m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs	1		≥ 50	

Other amphibian observations:

none

Predator observed:	1 crayfish
Fish observed:	yes mosquito fish

Observations and Comments

First Daytime Survey | **California Red-legged Frog Survey Data Sheet** | First Nighttime Survey

Second Daytime Survey | Second Nighttime Survey

Date: 10/22/03	Begin time 9:45	End time 14:45	Observer (s): Pierre Fidenci

Site #: 19	Locality: Fryer Creek		County/State: Sonoma
Elevation:	USGS Topographic Map: Sonoma	UTM North: GPS map	UTM East: GPS map
Mile Point:			

Weather: Clear	Wind: 0 mph	Air Temp.: 24°C Time: 10:00 AM	Water Temp.: 19°C Time: 10:00 AM

Habitat — Habitat type/name: Creek Fryer Creek

Site length: 1,000 m	Site width: 2 - 4 m	Ave Depth: 0.5 m	Water Flow: ?<
Water: Turbidity 3 ((1-5) 1=clear)	Mid-day Shade %: 60%	Under Cut Bank %: 2-10	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble 20 % Gravel 80 % Sand\Silt

Riparian Veg. 90 % Herbaceous _____ Type

10 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 2 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 0.7 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
Bullfrogs			≥ 100	

Other amphibian observations:

Predator observed: Crayfish (dead)
Fish observed: yes.

Observations and Comments

good weather conditions

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/27/03	Begin time 9:30 PM	End time 12:00 PM	Observer (s): P.F; JS

Site #: 19	Locality: Fryer Creek along ~~Sonoma Creek~~ Segment 19		County/State: Sonoma
Elevation: —	USGS Topographic Map: Sonoma	UTM North: — GPS map	UTM East: — GPS map
Mile Point: —			

Weather: clear	Wind: 0 mpH	Air Temp.: 22 °C Time: 10:00 PM	Water Temp.: 18 C Time: 10:00 PM

Habitat Habitat type/name: Creek

Site length: 1000 m	Site width: 2-4 m	Ave Depth: 0.5	Water Flow: >,7
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 60%	Under Cut Bank %: 2-10	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble 20 % Gravel 80 % Sand\Silt

Riparian Veg. 90 % Herbaceous _____ Type

10 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 2 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N	dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris (Y) N / Shallow pools (Y) N	Max Depth of pool: 0.7 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrog	1		>,50	

Other amphibian observations:

none

Predator observed: crayfish
Fish observed: yes

Observations and Comments

First Daytime Survey

Second Daytime Survey

California Red-legged Frog Survey Data Sheet

First Nighttime Survey

Second Nighttime Survey

Date: 10/30/03	Begin time 9:35 AM	End time 12:00 PM	Observer (s): P.F; JS

Site #: 19	Locality: Fryer Creek along segment 17		County/State: Sonoma
Elevation: —	USGS Topographic Map: Sonoma	UTM North: / GPS map	UTM East: / GPS map
Mile Point: —			

Weather: Clear	Wind: 0.5m pH	Air Temp.: 15°C Time: 10:00 PM	Water Temp.: 14°C Time: 10:00 PM

Habitat Habitat type/name: Fryer Creek

Site length: 1,000 m	Site width: 2-4 m	Ave Depth: 0.5	Water Flow: ≥7
Water: 3 Turbidity ((1-5) 1=clear)	Mid-day Shade %: 60%	Under Cut Bank %: 2-10	Overhanging Bank Veg. %: 5

Substrate: ___% Bedrock ___% Boulder ___% Rock\ Cobble 20 % Gravel 80 % Sand\Silt

Riparian Veg. 90 % Herbaceous _____ Type

10 %Woody _____ Type

Aquatic Vegetation: 0 % Floating _____ Type ___% Woody _____ Type

20 % Herbaceous _____ Type

Non Vegetated: 2 % Open Water (aquatic habitat) 0 % Bare Ground (riparian habitat)

Specific frog habitat present or not

Deep pools (Y) N	Semi-submerged root balls (Y) N		dense riparian veg. (Y) N
Backwater pools Y (N)	Woody Debris Y (N)	Shallow pools (Y) N	Max Depth of pool: 0.7 m

Frog Observations (Y)	N

Species	Adults	Subadults	Tadpoles	Eggs
bullfrogs		≥50		

Other amphibian observations:

none

Predator observed: crayfish
Fish observed: yes

Observations and Comments

none.

APPENDIX E

PG&E Vegetation Management Sudden Oak Death Protocols

Vegetation Management		Pacific Gas and Electric Company
Sudden Oak Death Protocols	Created	11/1/02
Version 2	Revised	6/9/04

IN COUNTIES WHERE SUDDEN OAK DEATH IS CONFIRMED

BE CAREFUL:

Oak trees killed by Sudden Oak Death (SOD) tend to fail much more quickly than trees killed by other means, probably because the tree is starting to rot while it still appears to be alive. The typical location of tree failure is at breast height. Extreme care must be taken when working in infected areas, as stem failure can occur at any time, even on green oaks.

HOST SPECIES (TREE SPECIES ONLY):

Coast live oak	Toyon	Buckeye	Big leaf maple
Canyon live oak	Tanoak	California Black Oak	Redwood (<1" diameter)
Shreve oak	Madrone	California bay laurel	Douglas-fir (<1" diameter)

Many shrub species are infected and the best current list can be found at ***suddenoakdeath.org***

INFESTED AREAS:

Portions of the following counties have been confirmed with *Phytophthora ramorum*, the fungus that causes SOD: Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma. Current maps which show the locations of disease centers and the quarter mile radius can be obtained from website ***suddenoakdeath.org*** to determine the infested area.

PRE-INSPECTION PROTOCOL:

Within areas infested with SOD and ¼ mile radius (see up-to-date maps), pre-inspectors must assume that host material is infested. Enter the following information into the handheld computer:

1. Under Alerts, enter 'SOD'.
2. In address comments field, enter 'SOD Infested, leave host vegetation on site'.

3. On oak trees, prescribe a heavy prune that does not require utility crews to return to the tree – protect the power facilities by removing overhangs and branches which could hit the lines in the event of failure. In tree comments field, enter 'SUS SOD'.
4. On other host trees, in tree comments field enter 'SUS SOD' and "leave host vegetation on site'.
5. On non-host trees, prescribe and comment without reference to SOD.

BEST MANAGEMENT PRACTICES FOR TREE CREWS:

1. In infested areas, all debris from host species (wood, branches and chips) shall be left on site.
2. Tools used to perform work shall be disinfected before leaving heavily infested sites.
3. State Law requires that host material not be transported from an infected county into an uninfected county without a compliance agreement filed with both the receiving and departing county agricultural commissioners.

APPENDIX F

PG&E Treated Wood Protocol

TREATED WOOD

Treated wood is used for structures such as utility poles, cross arms, flumes, cooling towers, and synchronous condensers. Treated wood typically contains preservatives in order to prevent deterioration and prolong service life. Treatment chemicals are typically added to the wood during the manufacturing process, but may also be added after it is in service.

Treatment chemicals most commonly used by manufacturers include pentachlorophenol, creosote, and chromium copper arsenate. Chemicals used to treat in-service utility poles include copper naphthenate and sodium methyldithiocarbamate (MITC fume). Petroleum products such as diesel are often used as the "carrier" or solvent for pole treatment chemicals.

The following specific management requirements must be followed when handling treated wood: employees must be trained on treated wood handling, a protocol must be followed when treated wood is given away to employees or the public, and specific waste management requirements must be followed when treated wood is disposed of. *Treated wood must not be burned in open fires, stoves or fireplaces because toxic chemicals may be produced. In addition, treated wood must not be used in areas or structures where human or animal contact is likely.*

EMPLOYEE TRAINING

Information about the hazards and proper handling practices shall be communicated to employees who handle treated wood as part of their Hazard Communication training, and as part of their training in specific work practices. Consult the PG&E Hazard Communication Manual issued by the Safety, Health, and Claims Dept. for specific details that must be covered to comply with this training requirement. Properties and Hazards associated with treated wood may be found in the Manual under Group 6: Pesticides and Wood Preservatives.

MATERIAL SAFETY DATA SHEETS

PG&E currently uses the following treated wood products:

McFarland Cascade Corp. - Wolamized Treated Wood and Lumber (chromated copper arsenate)
McFarland Cascade Corp. - Creosote Treated Wood
McFarland Cascade Corp. - Pentachlorophenol Treated Wood

PG&E uses copper naphthenate and sodium methyldithiocarbamate to treat in-service utility poles.

Material Safety Data Sheets for these products may be obtained from 3E Company (1-800-360-3220).

PROTOCOL FOR MANAGEMENT AND DISPOSAL OF SURPLUS TREATED WOOD

Treated Wood Give Away

Surplus treated wood products (including utility poles) that are still useable may be given way to employees or the public, *provided that specific conditions are met*. If the wood is given away, PG&E must provide the recipient with (1) a letter of agreement, to be signed by the recipient and a PG&E representative, stating that the recipient will use the wood only for specified purposes (see Figure 1), and (2) a warning statement indicating that the wood contains preservative chemicals (see Figure 2). In addition, each piece of wood given away must have the warning statement affixed to it (see Figure 2).

Transportation of Treated Wood

Treated wood may be transported from the field to a consolidation site without shipping papers. However, if treated wood utility poles have a copper naphthenate paper wrap, the paper wrap may require special handling. (See the section on Management of Copper Naphthenate Paper Wrap for transportation requirements applicable to paper that is removed from the poles). **NOTE: If treated wood is temporarily left unattended at a job-site that is accessible to the public, each piece of wood must have the treated wood warning statement (Figure 2) attached to it.**

Disposal as Waste

Treated wood that is not useable or that will not be given away is to be disposed of as non-hazardous waste at a landfill that is under contract to PG&E and is permitted by the State of California to accept it. Consult PEDS for a listing of treated wood disposal facilities. Although it is not required by law, use of a non-hazardous waste manifest (see Figure 4) is recommended when shipping treated wood to a landfill to help track the quantity of treated wood sent for disposal.

Management of Copper Naphthenate Paper Wrap

Treated wood utility poles may be wrapped around the base with copper naphtehanate paper. When new, copper naphthenate paper wrap may contain up to 14% copper naphthenate by weight. (This is equivalent to 140,000 mg/kg of copper compound. The hazardous waste limit for copper compounds is 2,500 mg/kg). However, some of the copper naphthenate originally present in the paper is absorbed into the wood during use. The amount left behind in the paper is not known unless the paper is tested.

The following requirements apply to the management of copper naphthenate paper found on utility poles:

- If the paper is in good condition and is securely attached to the poles, the poles may be transported from the field to a consolidation site with the paper intact. (No shipping paper is required).

- If the paper is in poor condition and there is the possibility that it will tear off during transport, remove the paper in the field before transporting. If the amount of copper naphthenate paper removed in the field is > 10 lb, it must be bagged, labeled as hazardous waste (see label example in Fig. 3), and transported to a PG&E consolidation site using a hazardous waste remote-site shipping paper. (If $\leq$ 10 lb. of copper naphthenate paper is shipped, a log describing the waste must be kept at the consolidation site).

- Remove the paper from the poles before they are given away or disposed of (wear gloves when handling paper).

- Manage the paper as hazardous waste.

- Use the following information for disposal of copper naphthenate paper:

Proper Shipping Name: Non-RCRA Hazardous Waste, Solid (Paper with Copper Naphthenate)
State Waste Code: 181
EPA Waste Code: Non-RCRA
Disposal Facility: Chemical Waste Management - Kettleman Hills
Profile #: DZ3532

Figure 1. - Treated Wood Letter of Agreement
(To be used with treated wood that is given away to employees or the public).

AGREEMENT
(M&S Code 62-4954)

(Used wood pole(s), crossarms(s), and/or other treated wood products)

Recipient hereby acknowledges that PG&E would not have conveyed the used wood pole(s), crossarm(s), and/or other treated wood products contemplated herein without Recipient's express agreement to the following terms and conditions:

1. ASSUMPTION OF RISK:

Recipient understands that, in coming onto PG&E's or any third party's property to load and remove the used wood pole(s), crossarms(s), and/or other treated wood products, Recipient undertakes activities involving significant risks of harm, injury and damage to persons and property. Recipient further understands that any use of the wood pole(s), crossarm(s) and or other treated wood products conveyed herein may also involve significant risks of harm, injury, or damage to persons or property, including without limitation the risks specified below. Therefore, with respect to the wood pole(s), crossarm(s), and/or other treated wood products conveyed herein and regardless of any assistance provided by PG&E to Recipient, Recipient hereby expressly assumes now and forever all risks of injury or death to any person including without limitation employees or agent of Recipient, PG&E or any third party, and also assumes all risks of injury or damage to any property, including without limitation property of Recipient, PG&E or any third party.

In addition, I understand that I, the Recipient, will be waiving the provisions of Section 1542 of the California Civil Code which provides that: "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

2. INDEMNIFICATION:

Recipient shall indemnify, defend and hold harmless PG&E, its officers, directors, agents, and employees, from and against all claims, demands losses, damages, costs, expenses, including workers' compensation expenses incurred by PG&E, and legal liability connected with or resulting from injury to or death of persons, including but not limited to employees of PG&E or Recipient, or a third party, or to natural resources, or violation of any local, state or federal law or regulation, including but not limited to, environmental laws or regulations, or strict liability imposed by any law or regulation; arising out of, related to or in any way connected with Recipient's performance of this AGREEMENT, however caused, regardless of any strict liability or negligence of PG&E, whether active or passive, excepting only such claims, demands losses, damages, costs, expenses, liability or violation of law or regulation as may be caused by the sole negligence or willful misconduct of PG&E, its officers, agents, or employees.

Recipient acknowledges that any claims, demands, losses, damages, costs, expenses, and legal liability that arise out of, result from, or are in any way connected with the release or spill of any legally designated hazardous material or waste as a result of the work performed under this AGREEMENT are expressly within the scope of this indemnity, and that the costs, expenses, and legal liability of environmental investigations, monitoring, containment, abatement, removal, repair, cleanup, restoration, remedial work, penalties, and fines arising from the violation of any local, state, or federal law or regulation, attorney's fees, disbursements, and other response costs are expressly within the scope of this indemnity.

Recipient shall, on PG&E request, defend any action, claim or suit asserting a claim covered by this indemnity. Recipient shall pay all costs that may be incurred by PG&E in enforcing this indemnity, including reasonable attorney's fees.

3. **DISCLAIMER OF ALL EXPRESS AND IMPLIED WARRANTIES**: PG&E MAKES NO WARRANTY, WRITTEN OR ORAL, WITH RESPECT TO THE WOOD POLE(S), CROSSARMS(S), AND/OR OTHER TREATED WOOD PRODUCTS CONVEYED HEREIN. PG&E CONVEYS THE WOOD POLE(S), CROSSARM(S), AND/OR OTHER TREATED WOOD PRODUCTS ON AN "AS IS AND WHERE IS" BASIS AND DOES NOT WARRANT THAT THEY ARE OF MERCHANTABLE QUALITY OR THAT THEY CAN BE USED FOR ANY PARTICULAR PURPOSE. NO AGENT, EMPLOYEE, OR REPRESENTATIVE OF PG&E HAS ANY AUTHORITY TO BIND PG&E TO ANY REPRESENTATION OR WARRANTY CONCERNING THESE WOOD POLE(S), CROSSARM(S), AND/OR OTHER TREATED WOOD PRODUCTS. ANY SUCH REPRESENTATION OR WARRANTY SHALL NOT CONSTITUTE A PART OF THIS AGREEMENT AND SHALL NOT BE ENFORCEABLE IN ANY WAY.

4. **WARNING: THE WOOD POLE(S), CROSSARM(S), AND/OR OTHER TREATED WOOD PRODUCTS CONVEYED HEREIN MAY CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM. DO NOT BURN TREATED WOOD BECAUSE TOXIC SUBSTANCES MAY BE PRODUCED. BURNING MAY RELEASE TOXIC SUBSTANCES CAPABLE OF CAUSING SERIOUS INJURY OR DEATH. DO NOT USE FOR INTERIOR FURNITURE, PLAY STRUCTURES, OR ANIMAL FEED OR PRODUCE CONTAINERS. DO NOT USE IN AREAS WHERE DOMESTIC ANIMALS OR LIVESTOCK ARE LIKELY TO CRIB (BITE) OR LICK THE WOOD, OR IN AREAS WHERE FOOD IS PACKAGED, PROCESSED, HANDLED, OR STORED. AVOID FREQUENT OR PROLONGED SKIN CONTACT OR INHALATION OF SAWDUST. THE WOOD POLE(S), CROSSARMS(S), AND/OR OTHER TREATED WOOD PRODUCTS SHOULD BE INSPECTED FOR DEFECTS OR DAMAGE PRIOR TO USE. DISPOSE OF CUTOFFS AND PIECES FROM CUTTING OR SANDBLASTING IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS.**

RECIPIENT_____DATE_____20____

PG&E APPROVER_____DATE_____20____

Figure 2. - Treated Wood Caution Label and Warning Statement

(M&S Code 37-3290)

WARNING

TREATED WOOD POLES MAY CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

THIS WOOD HAS BEEN CHEMICALLY TREATED WITH PRESERVATIVES.

DO NOT BURN IN OPEN FIRE, STOVE OR FIREPLACE BECAUSE TOXIC CHEMICALS MAY BE PRODUCED.

DO NOT USE FOR INTERIOR FURNITURE, PLAY STRUCTURES, ANIMAL FEED, OR PRODUCE CONTAINERS.

DO NOT USE IN AREAS WHERE DOMESTIC ANIMALS OR LIVESTOCK ARE LIKELY TO CRIB (BITE) OR LICK THE WOOD, OR IN AREAS WHERE FOOD IS PACKAGED, PROCESSED, HANDLED, OR STORED.

AVOID FREQUENT OR PROLONGED INHALATION OF SAWDUST. AVOID FREQUENT OR PROLONGED SKIN CONTACT.

DISPOSE OF CUT-OFFS AND PIECES FROM TRIMMING, CUTTING OR SANDING IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE, & LOCAL LAWS.

PACIFIC GAS & ELECTRIC CO.

Figure 3. - Copper Naphthenate Paper Hazardous Waste Label

HAZARDOUS WASTE

STATE & FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE CALIFORNIA DEPT. OF TOXIC SUBSTANCES

GENERATOR INFORMATION:

NAME: Pacific Gas & Electric Company

ADDRESS: PHONE:

CITY: STATE: CA ZIP:

EPA ID NO./MANIFEST DOCUMENT NO.: /

EPA WASTE NO.: Non-RCRA CA WASTE NO.: 181 ACCUMULATION START DATE:

CONTENTS, COMPOSTION: Paper containing copper naphthenate wood preservative.

PHYSICAL STATE: ☒ SOLID ☐ LIQUID

HAZARDOUS PROPERTIES: ☐ FLAMMABLE ☒ TOXIC ☐ CORROSIVE ☐ REACTIVE ☐ OTHER

NON-RCRA HAZARDOUS WASTE, SOLID

(PAPER WITH COPPER NAPHTHENATE)

D.O.T PROPER SHIPPING NAME AND U.N or N.A NO. WITH PREFIX

HANDLE WITH CARE!

62-1126 (9/92)

(NO D.O.T. LABEL IS REQUIRED)

Figure 4. Non-Hazardous Waste Manifest for Treated Wood.

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of
3. Generator's Name and Mailing Address Generator's Phone			
5. Transporter 1 Company Name	6. US EPA ID Number	A. State Transporter's ID B. Transporter 1 Phone	
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID D. Transporter 2 Phone	
9. Designated Facility Name and Site Address **Fill in appropriate disposal facility information (See "Disposal as Waste" section).**	10. US EPA ID Number	E. State Facility's ID F. Facility's Phone	

GENERATOR

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. **Non-Regulated Solid Waste (Treated Wood)**				P
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above **11a. - Treated wood.**	H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Profile #: (See "Disposal as Waste" section for profile numbers).

16. GENERTOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date *Month Day Year*

TRANSPORTER

17. Transporter 1 Acknowledgment of Receipt of Materials		Date
Printed/Typed Name	Signature	*Month Day Year*
18. Transporter 2 Acknowledgment of Receipt of Materials		Date
Printed/Typed Name	Signature	*Month Day Year*

FACILITY

19. Discrepancy Indication Space		
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		Date
Printed/Typed Name	Signature	*Month Day Year*

Figure 5. Hazardous Waste Manifest for Copper Naphthenate Paper.

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. **Fill In Appropriate No.**	Manifest Document No. **Must Include #**	2. Page 1 of	Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address C.G.T. Facility Location Address City/State Location	A. State Manifest Document Number
4. Generator's Phone ( ) Facility Phone Number	B. State Generator's ID HYHQ36008798
5. Transporter 1 Company Name **Transporter Name & Address** / 6. US EPA ID Number **Fill In Appropriate No.**	C. State Transporter's ID **Transp. ID No.** / D. Transporter's Phone **Transp. Phone No.**
7. Transporter 2 Company Name / 8. US EPA ID Number	E. State Transporter's ID / F. Transporter's Phone
9. Designated Facility and Site Address **Final Destination Name & Physical Site Address** / 10. US EPA ID Number **Fill In Appropriate No.**	G. State Facility's ID / H. Facility's Phone **Recommended**

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. **NON RCRA HAZARDOUS WASTE, SOLID, (Paper with Copper Naphthenate)**		**DM**		**P**	State **181** / EPA/Other **Non RCRA**
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above	K. Handling Codes for Wastes Listed A bove	
Paper containing copper naphthenate wood preservative. **Profile #: DZ3532**	a.	b.
	c.	d.

15. Special Handling Instructions and Additional Information

24-hour Emergency Contact: 1-800-321-1030
ERG # 171
Avoid contact with skin, eyes, and clothing. Wear gloves and protective equipment as appropriate).

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to mimimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name **Person Completing/Approving Manifest**	Signature **Approver's Signature**	Date: **Current Date**

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials		
Printed/Typed Name **Transporter's Representative**	Signature **Transporter's Signature**	Date: **Current Date**
18. Transporter 2 Acknowledgement of Receipt of Materials		
Printed/Typed Name	Signature	Date:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name **Final Destination Representative**	Signature **Representative's Signature**	Date: **Current Date**

APPENDIX G

Mitigation Monitoring, Reporting and Compliance Program

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

MITIGATION MONITORING, REPORTING AND COMPLIANCE PROGRAM

PACIFIC GAS & ELECTRIC COMPANY'S LAKEVILLE-SONOMA 115 KV TRANSMISSION LINE PROJECT
(APPLICATION NO. 04-11-011)

INTRODUCTION

This document describes the mitigation monitoring, reporting and compliance program (MMRCP) for ensuring the effective implementation of the mitigation measures required for the California Public Utilities Commission (CPUC) approval of the Pacific Gas and Electric Company (PG&E) application to construct and operate an approximately 7.23-mile transmission line between the Lakeville and Sonoma Substations. All mitigations are presented in Table G-1 provided at the end of this MMRCP.

If the project is approved, the MMRCP would serve as a self-contained general reference for the Mitigation Monitoring Program adopted by the Commission for the project. If and when a project has been approved by the Commission, the CPUC will compile the Final Plan from the Mitigation Monitoring Program in the Final MND, as adopted.

California Public Utilities Commission – MMRCP Authority

The California Public Utilities Code in numerous places confers authority upon the CPUC to regulate the terms of service and the safety, practices and equipment of utilities subject to its jurisdiction. It is the standard practice of the CPUC, pursuant to its statutory responsibility to protect the environment, to require that mitigation measures stipulated as conditions of approval be implemented properly, monitored, and reported on. In 1989, this requirement was codified statewide as Section 21081.6 of the Public Resources Code. Section 21081.6 requires a public agency to adopt a MMRCP when it approves a project that is subject to preparation of a Mitigated Negative Declaration and where the MND for the project identifies potentially significant environmental effects. CEQA Guidelines Section 15097 was added in 1999 to further clarify agency requirements for mitigation monitoring and reporting.

The purpose of a MMRCP is to ensure that measures adopted to mitigate or avoid significant impacts of a project are implemented. The CPUC views the MMRCP as a working guide to facilitate not only

the implementation of mitigation measures by the project proponent, but also the monitoring, compliance and reporting activities of the CPUC and any monitors it may designate.

The Commission will address its responsibility under Public Resources Code Section 21081.6 when it takes action on PG&E's application for a Certificate of Public Convenience and Necessity. If the Commission approves the application, it will also adopt a Mitigation Monitoring, Compliance, and Reporting Program that includes the mitigation measures ultimately made a condition of approval by the Commission.

Project Description

PG&E, who currently owns a single-circuit 115 kV electric transmission system in the Petaluma–Napa–Sonoma area of the San Francisco Bay Area Region, requests to install a second 115 kV transmission circuit within its existing single-circuit 115 kV transmission line route between its Lakeville (at the eastern edge of the City of Petaluma) and Sonoma Substations (at the southern edge of the City of Sonoma). The second 115 kV transmission line would be installed on a rebuilt version of PG&E's existing single-circuit 115 kV transmission line, thus co-locating the two circuits on a single set of poles. The transmission line would begin at the Lakeville Substation, parallel Adobe Road for approximately 1.2 miles, and then pass northeast through vineyards and ranch lands for approximately 3.6 miles. The line roughly would then parallel Felder Road for approximately .08 miles from the junction of Felder Road and Felder Creek east to the junction of Felder Road and Leveroni Road where would continue, approximately 1.7 miles, following Leveroni Road, to the Sonoma Substation. The final 3,060-foot length of the new circuit between approximately Fifth Street West and the Sonoma Substation would be installed underground.

PG&E, as part of this project, also proposes to modify the Lakeville and Sonoma Substations. At the Lakeville Substation, PG&E proposes modification to the existing substation yard as well as installation of facilities to support a 115 kV line position. One new tubular steel pole (TSP) would be located within the substation property line. Similarly, at the Sonoma Substation, PG&E would install facilities to support the new 115 kV line position and replace an existing wood pole with a TSP.

Because the CPUC must decide whether or not to approve the PG&E application and because the application may cause either direct or reasonably foreseeable indirect effects on the environment, the California Environmental Quality Act (CEQA) requires the CPUC to consider the potential environmental impacts that could occur as the result of its decisions and to consider mitigation for any identified significant environmental impacts.

If the CPUC approves PG&E's application for authority to construct and operate the transmission line and modify its substations, PG&E would be responsible for implementation of any mitigation measures governing both construction and future operation of the transmission line and substations. Though other state and local agencies would have permit and approval authority over the construction transmission line, the CPUC would continue to act as the lead agency for monitoring compliance with all mitigation measures required by this Draft MND. All approvals and permits obtained by PG&E would be submitted to the CPUC for mitigation compliance prior to commencing the activity for which the permits and approvals were obtained.

In accordance with CEQA, the CPUC reviewed the impacts that would result from approval of the application. The activities considered include the construction of the new transmission line and modifications to the Lakeville and Sonoma Substations, and the future operation of the transmission line and substations. The CPUC review concluded that all potential impacts could be mitigated to less than significant levels. PG&E has agreed to incorporate all the proposed mitigation measures into the project. The CPUC has included the stipulated mitigation measures as conditions of approval of the application and has circulated a Draft MND.

The attached Mitigated Negative Declaration presents and analyzes potential environmental impacts that would result from construction and operation of the new transmission line and substation modifications, and proposes mitigation measures, as appropriate.

Based on the Mitigated Negative Declaration, approval of the application would have no impact or less than significant impacts in the following areas:

- Geology, Soils, and Seismicity
- Hydrology and Water Quality
- Mineral Resources
- Population and Housing
- Land Use and Planning ~~Mandatory Findings of Significance~~

The ~~Draft~~ Mitigated Negative Declaration indicates that approval of the application would result in potentially significant impacts in the areas of:

- Aesthetics
- Agriculture Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Hazards and Hazardous Materials
- ~~Land Use and Planning~~ Mandatory Findings of Significance
- Noise
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

Roles and Responsibilities

As the lead agency under CEQA, the CPUC is required to monitor this project to ensure that the required mitigation measures and Applicant Proposed Measures are implemented. The CPUC will be responsible for ensuring full compliance with the provisions of this MMRCP and has primary responsibility for implementation of the monitoring program. The purpose of the monitoring program is to document that the mitigation measures required by the CPUC are implemented and that mitigated environmental impacts are reduced to the level identified in the Program. The CPUC has the authority to halt any activity associated with the proposed project if the activity is determined to be a deviation from the approved project or the adopted mitigation measures.

The CPUC may delegate duties and responsibilities for monitoring to other mitigation monitors or consultants as deemed necessary. The CPUC will ensure that the person(s) delegated any duties or responsibilities are qualified to monitor compliance.

The CPUC, along with its mitigation monitor, will ensure that any variance process or deviation from the procedures identified under the monitoring program is consistent with CEQA requirements; no project variance will be approved by the CPUC if it creates new significant environmental impacts. As defined in this MMRCP, a variance should be strictly limited to minor project changes that will not trigger other permit requirements, that does not increase the severity of an impact or create a new impact, and that clearly and strictly complies with the intent of the mitigation measure. A proposed project change that has the potential for creating significant environmental effects will be evaluated to determine whether supplemental CEQA review is required. Any proposed deviation from the approved project and adopted mitigation measures, including correction of such deviation, shall be reported immediately to the CPUC and the mitigation monitor assigned to the construction for their review and approval. In some cases, a variance may also require approval by a CEQA responsible agency.

Enforcement and Responsibility

The CPUC is responsible for enforcing the procedures for monitoring through the environmental monitor. The environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CPUC. The CPUC has the authority to halt any construction, operation, or maintenance activity associated with the project if the activity is determined to be a deviation from the approved project or adopted mitigation measures. The CPUC may assign its authority to their environmental monitor.

Mitigation Compliance Responsibility

PG&E is responsible for successfully implementing all the adopted mitigation measures in this MMRCP. The MMRCP contains criteria that define whether mitigation is successful. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

PG&E shall inform the CPUC and its mitigation monitor in writing of any mitigation measures that are not or cannot be successfully implemented. The CPUC in coordination with its mitigation monitor will assess whether alternative mitigation is appropriate and specify to PG&E the subsequent actions required.

Dispute Resolution Process

This MMRCP is expected to reduce or eliminate many of the potential disputes concerning the implementation of the adopted measures. However, in the event that a dispute occurs, the following procedure will be observed:

- **Step 1.** Disputes and complaints (including those of the public) should be directed first to the CPUC's designated Project Manager for resolution. The Project Manager will attempt to resolve the dispute.

- **Step 2.** Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance action to address deviations from the Proposed Project or adopted Mitigation Monitoring Program.

- **Step 3**. If a dispute or complaint regarding the implementation or evaluation of the MMRCP or the mitigation measures cannot be resolved informally or through enforcement or compliance action by the CPUC, any affected participant in the dispute or complaint may file a written "notice of dispute" with the CPUC's Executive Director. This notice should be filed in order to resolve the dispute in a timely manner, with copies concurrently served on other affected participants. Within 10 days of receipt, the Executive Director or designee(s) shall meet or confer with the filer and other affected participants for purposes of resolving the dispute. The Executive Director shall issue an Executive Resolution describing his/her decision, and serve it on the filer and other affected participants.

- **Step 4.** If one or more of the affected parties is not satisfied with the decision as described in the Resolution, such party(ies) may appeal it to the Commission via a procedure to be specified by the Commission.

Parties may also seek review by the Commission through existing procedures specified in the Commission's Rules of Practice and Procedure for formal and expedited.

General Monitoring Procedures

Mitigation Monitor

Many of the monitoring procedures will be conducted during the construction phase of the project. The CPUC and the mitigation monitor are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with PG&E. To oversee the monitoring procedures and to ensure success, the mitigation monitor assigned to the construction must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The mitigation monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

Construction Personnel

A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of construction personnel and supervisors. Many of the mitigation measures require action on the part of the construction supervisors or crews for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures included in the MMRCP, will be taken:

- Procedures to be followed by construction companies hired to do the work will be written into contracts between PG&E and any construction contractors. Procedures to be followed by construction crews will be written into a separate agreement that all construction personnel will be asked to sign, denoting agreement.

- One or more pre-construction meetings will be held to inform all and train construction personnel about the requirements of the MMRCP.
- A written summary of mitigation monitoring procedures will be provided to construction supervisors for all mitigation measures requiring their attention.

General Reporting Procedures

Site visits and specified monitoring procedures performed by other individuals will be reported to the mitigation monitor assigned to the construction. A monitoring record form will be submitted to the mitigation monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the mitigation monitor. A checklist will be developed and maintained by the mitigation monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The mitigation monitor will note any problems that may occur and take appropriate action to rectify the problems. PG&E shall provide the CPUC with written quarterly reports of the project, which shall include progress of construction, resulting impacts, mitigation implemented, and all other noteworthy elements of the project. Quarterly reports shall be required as long as mitigation measures are applicable.

Public Access to Records

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CPUC on request. The CPUC and PG&E will develop a filing and tracking system.

Condition Effectiveness Review

In order to fulfill its statutory mandates to mitigate or avoid significant effects on the environment and to design a MMRCP to ensure compliance during project implementation (CEQA 21081.6):

- The CPUC may conduct a comprehensive review of conditions which are not effectively mitigating impacts at any time it deems appropriate, including as a result of the Dispute Resolution procedure outlined above; and
- If in either review, the CPUC determines that any conditions are not adequately mitigating significant environmental impacts caused by the project, or that recent proven technological advances could provide more effective mitigation, then the CPUC may impose additional reasonable conditions to effectively mitigate these impacts.

These reviews will be conducted in a manner consistent with the CPUC’s rules and practices.

Mitigation Monitoring and Reporting Program

The table attached to this program presents a compilation of the mitigation measures in the ~~Draft~~ Mitigated Negative Declaration. The purpose of the table is to provide a single comprehensive list of mitigation measures, effectiveness criteria, and timing.

TABLE G-1
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Aesthetics				
Impact 2.9-1: Use of temporary construction staging areas and pull sites 2a, 2b, 3a, 3b, 6a, 6b, 7a, 7b, and 8a (see Figures 1-4(a) through 1-4(d) for exact locations) during the approximately 19-month construction period could result in adverse, albeit temporary, impacts to visual quality.	**Mitigation Measure 2.9-1:** Although PG&E would prepare the pull/tension sites during the dry season to minimize impacts, equipment shall not be placed on such sites any sooner than two weeks prior to the required use. After each pull/tensions site is no longer being used, PG&E and/or its contractor(s) shall clean up the site and restore in accordance with the SWPPP Plan.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance at least once weekly	During all phases of construction
Impact 2.9-2: After construction activities have been completed, if staging areas, ~~and~~ pull/tension sites, and the undergrounded portion of the project area along Leveroni Road have not been restored to preexisting conditions, then the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area.	**Mitigation Measure 2.9-2:** PG&E and/or its contractors shall clean up and restore each staging area, ~~and~~ pull/tension site~~s~~, and the undergrounded portion of the project area along Leveroni Road to preconstruction conditions after construction activities in accordance with the SWPPP Plan.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance	Within one week after construction activities have terminated at each of the staging areas and pull/tension sites
~~**Impact 2.9-3:** After construction activities have been completed, if the portion of the project area encompassed under Mitigation Measure 2.1-1 has not be restored to preexisting conditions, the Proposed Project would result in potentially significant adverse physical effects to the visual character of the area.~~	~~**Mitigation Measures 2.9-3:** PG&E and/or its contractors shall clean up and restore the Leveroni Road construction area encompassed under Mitigation Measure 2.1-1 to preconstruction conditions after construction activities in accordance with the SWPPP Plan.~~	~~PG&E and/or its contractor(s) to implement measure as defined~~	~~CPUC mitigation monitor to monitor compliance~~	~~Within one week after construction activities have terminated along Leveroni Road from Fifth Street West to the Sonoma Substation~~
Agricultural Resources				
Impact 2.2-1: The Proposed Project would result in the temporary removal of farmland that is designated *Prime Farmland* and *Farmland of Statewide Importance*. In total, the construction staging areas, pull sites and crane pads, and new access roads would temporarily reduce the amount of land available for agricultural purposes by about 30 acres, about half of which would be on lands designated as *Prime Farmland* and *Farmland of Statewide Importance*.	**Mitigation Measure 2.2-1:** PG&E shall preserve the topsoil beneath temporary construction activities areas (i.e., on staging areas, pull sites, and temporary access roads) on agricultural lands by laying fabric topped with a layer of gravel over the areas prior to their use. After construction activities are complete, PG&E shall remove the gravel and fabric and implement the measures specified in the SWPPP Plan which shall be prepared and submitted to the CPUC for approval prior to construction.	PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect to ensure that soils are being properly protected and that site is fully restored to pre-construction conditions.	CPUC mitigation monitor to inspect compliance at least once after installation of soil protection and once after restoration is complete.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Air Quality				
Impact 2.3-1: Construction activities associated with the project would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions.	**Mitigation Measure 2.3-1a:** During construction, PG&E shall ensure that its employees and contractors implement the following measures prescribed by BAAQMD to ensure the reduction of the project's contribution to local PM10 concentrations are to a level that is less than significant:			
	• For all active construction areas, water as needed or apply soil stabilizers to control dust.	PG&E shall submit documentation to the CPUC that PG&E has made a binding commitment to participate in the BAAQMD prescribed measures and has given notice of such participation to the Planning Director of the BAAQMD.	Receipt by the CPUC of describes documentation. CPUC mitigation monitor to inspect compliance at least once a week	Submit documentation to CPUC prior to commencing construction activities.
	• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• If applicable, sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at or nearby construction sites.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• Sweep streets daily (with water sweepers) if visible soil materials are carried onto adjacent public streets.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	Mitigation Measure 2.3-1b: The following enhanced control measures shall be implemented at the Leveroni Road staging area or any construction sites greater than four acres pursuant to BAAQMD requirements:			

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Hydroseed or apply (non-toxic) soil stabilizers to previously graded inactive (for more than 10 days) construction areas.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at the site if hydroseeding is needed.	During periods of active use of the staging area and upon reclamation of the site.
	• Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• Limit traffic speeds on unpaved roads to 15 mph.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	Mitigation Measure 2.3-1c: To mitigate equipment exhaust emissions, PG&E shall require its employees and/or construction contractors to comply with the following requirements:			
	• Properly tune and maintain construction equipment in accordance with manufacturers' recommended maintenance schedule, if reasonably available. This applies to vehicles used for construction activities only, and does not apply to commuter vehicles.	If PG&E and/or its contractor(s) do not have the manufacturers' recommended maintenance schedule for a construction vehicle, PG&E must use reasonable effort to assure construction vehicle is properly maintained. A proposed schedule of construction vehicle maintenance shall be submitted to the CPUC for approval	CPUC to review and approve submitted maintenance plan, which is to include implementation method (i.e. manufacturer's recommended maintenance, PG&E managed maintenance, etc.) and schedule	One week prior to and during construction if equipment type changes.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Use best management construction practices to avoid unnecessary emissions (i.e., require trucks and vehicles in loading and unloading queues to turn engines off when not in use).	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• Use diesel trucks which are post-1991 based on CARB inspection program (dated June 3, 1998) for heavy-duty diesel trucks and buses (CARB, 1998).	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week	During all phases of construction
	• Implement a carpooling strategy for construction workers prior to commencing construction (during construction worker orientation and training).	PG&E to prepare and submit a carpooling strategy to the CPUC	CPUC to review and approve submitted carpooling strategy; CPUC mitigation monitor to inspect compliance with carpooling strategy at least once weekly	Carpooling strategy to be submitted at least two weeks prior to construction worker orientation and training; CPUC mitigation monitor to inspect compliance during all phases of construction
~~**Impact 2.3-2:** Construction activities associated with Mitigation Measure 2.1-1 would generate additional emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Implementation of Mitigation Measure 2.1-1 could violate air quality standards or contribute substantially to an existing or projected air quality violation.~~	~~**Mitigation Measure 2.3-2:** Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~	~~See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~	~~See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~	~~See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.~~
Impact 2.3-~~3~~2: Construction activities would generate emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. These activities could expose sensitive receptors to substantial pollutant concentrations.	**Mitigation Measure 2.3-~~3~~2:** Implement Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.	See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.	See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.	See Mitigation Measures 2.3-1a, 2.3-1b, and 2.3-1c.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Biological Resources				
Impact 2.4-1: Construction activities associated with pole removal and installation and equipment access could result in temporary or permanent impacts to special-status plants located within the vicinity of the transmission line alignment.	**Mitigation Measure 2.4-1a**: PG&E shall contract with a Specialist[1] to conduct preconstruction surveys for special status plants. Preconstruction surveys shall occur during the appropriate blooming period immediately prior to the start of construction activities at poles 43 and 44 and poles 58 and 59. The Specialist shall establish an appropriate protection zone around known populations of Lobb's aquatic buttercup and *cotula navarretia* and any new populations of special-status plants observed during preconstruction surveys. The protection zone shall be staked and flagged in the field prior to construction by a qualified botanist. To the extent feasible, poles or other project components shall not be placed in areas where these plant populations have been identified. If avoidance of special-status plants is not feasible, PG&E shall contract with a Specialist to harvest plant seeds and top-soil for post-construction restoration or replanting in an appropriate location. PG&E shall prepare a Special Status Plant Species Protection Plan that shall incorporate the following measures which shall be implemented during all phases of construction in areas marked in the field with temporary fencing:	PG&E and/or its contractor(s) to implement measure as defined.	PG&E to submit contact information, and qualifications of Specialist~~, and copy of contract with that Specialist~~ to CPUC for approval. PG&E will obtain approval of the Specialist prior to conducting rare plant surveys in the event surveys must be initiated before CPUC approval of the project.	One month prior to start of construction.
		PG&E to prepare and submit a Special Status Plant Protection Plan to CPUC.	CPUC to review and approve submitted Special Status Plant Species Protection Plan. CPUC mitigation monitor to inspect compliance at least once a week.	One month prior to start of construction or one month prior to survey initiation. During all phases of construction.
	• Restrict construction personnel and equipment from entering the fenced protected area (exclusion zone and plant habitat) for any purpose. Protection areas shall remain until all construction activities have concluded in known areas of special-status plant species.	PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect compliance at least once a week.	During all phases of construction.

[1] Specialist is defined as a botanist, biologist qualified to handle special status species, paleontologist or other monitor with specialized qualifications.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• During construction activities near areas of known special-status plant occurrences, daily monitoring shall occur using a qualified Environmental Monitor[2] to ensure protection zones and water quality measures are being implemented at construction sites. If direct or indirect impacts to special-status plant species are observed then the monitoring biologist shall notify the construction manager immediately. Examples of impacts may include, but are not limited to damage to exclusionary fencing or water or sediment from construction areas entering exclusion zone. The Environmental Monitor shall report any direct or indirect impacts resulting from construction activities in daily monitoring report.	PG&E's Environmental Monitor shall report any direct or indirect impacts resulting from construction activities in daily monitoring report.	PG&E's Environmental Monitor shall submit the daily monitoring report to CPUC on a weekly basis for review.	During all phases of construction.
	• Keep construction vehicles on designated access routes only. Do not fuel or repair construction vehicles within the vicinity of special status plants.	PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect compliance at least once a week.	During all phases of construction.
Same as above.	**Mitigation Measure 2.4-1b**: Project construction shall avoid known habitat for Lobb's aquatic buttercup to the extent feasible. To the extent feasible, major earthmoving activities in the vicinity of poles 43 and 44 shall occur during the dry season (June 1 to October 15), or, if this is not feasible, the appropriate erosion and sediment control measures to prevent water quality degradation as described in the SWPPP Plan. To the extent feasible, poles and other project components shall not be placed in known habitat for Lobb's aquatic buttercup. If habitat for this species cannot be avoided, Mitigation Measure 2.4-7f shall be implemented to compensate for the direct loss of vernal pool habitat.	See Mitigation Measure 2.4-7f	See Mitigation Measure 2.4-7f	See Mitigation Measure 2.4-7f

2 Environmental Monitor is defined as an individual (generally trained as a biologist) who is qualified to monitor hazardous materials, SWPPP, and biological issues not covered by the specialist.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Impact 2.4-2: Construction of the transmission line could result in temporary and permanent impacts to California red-legged frog breeding and associated upland habitat.	**Mitigation Measure 2.4-2**: PG&E shall implement measures to minimize and avoid "take" of California red-legged frog. These measures include complying with the federal Endangered Species Act and implementation of measures that would substantially reduce the risk of incidental "take" of CRLF within the project area. Prior to and during construction, PG&E shall perform the following actions to minimize adverse effects to California red-legged frog:	PG&E will informally consult with USFWS.	Documentation of USFWS concurrence shall be submitted to the CPUC.	Prior to construction.
	• To the extent feasible, earthmoving activities in the vicinity of Felder Creek shall be conducted during the dry season (June 1-October 1).	PG&E shall submit a construction schedule to CPUC with reasoning for inability to conduct earthmoving activities during the dry season, if necessary.	CPUC to review construction schedule.	Prior to construction.
		PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect compliance at least once a week.	During construction within the vicinity of Felder Creek.
	• PG&E shall contract with ~~a Specialist~~ an environmental monitor and submit the name and credentials of this individual to act as construction monitor(s) to USFWS for approval at least 15 days prior to commencement of any construction activities.	PG&E and/or its contractor(s) to implement measure as defined.	Submit contact information and qualifications of ~~contract with~~ Specialist to CPUC	At least 15 days prior to commencement of any construction activities.
	• Immediately prior to activities in the vicinity of Felder Creek, the USFWS-approved Specialist shall perform a preconstruction survey for California red-legged frog. For wet season work sites, t~~T~~he survey area should consist of all proposed wet season work sites within one mile of Felder Creek and should include all suitable aquatic and upland habitats within 90 m (300 ft) of these proposed work sites.	PG&E shall contract with a USFWS-approved Specialist to survey the work sites two weeks before the onset construction activities.	PG&E shall provide CPUC the survey of the work sites.	Two weeks prior to construction activities.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Preconstruction surveys during the dry season shall consist of all suitable aquatic habitat in Felder Creek and upland habitat within 300 feet of proposed construction activities.	PG&E and/or its contractor(s) to implement measure as defined.	PG&E shall provide CPUC the survey of the work sites.	Two weeks prior to construction activities.
	• If CRLF are found within a work area prior to construction, the Specialist, with prior authorization from the USFWS, would relocate the frogs out of the project area in coordination with USFWS. A temporary silt-fence barrier would be installed around the work area to prevent CRLF from re-entering the work area. If a California red-legged frog is found nearby but outside a proposed work area, it should not be disturbed and USFWS shall be contacted.	PG&E and/or its contractor(s) to implement measure as defined.	PG&E shall provide CPUC the survey of the work sites with documentation as to relocation of any CRLF.	Two weeks prior to construction activities.
	• During wet season construction, temporary construction fencing should be installed to mark the limits of the affected work area(s) and to limit construction personnel and equipment to the designated work area. The location of the fencing should be determined by the Environmental Monitor in coordination with the construction supervisor. In addition, as recommended by the Specialist, a temporary drift fence (e.g. silt-fence) barrier should be installed to prevent California red-legged frogs from entering those work area(s) during project activities.	PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect compliance at least once a week.	During all phases of construction
	• A USFWS–approved Specialist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the any construction activities may occur. The biologist should provide maps of potential CRLF habitat to construction personnel.	PG&E and/or its contractor(s) to implement measure as defined.	PG&E shall submit verification of all construction personnel's attendance at this training session and maps of potential CRLF habitat to the CPUC.	Prior to and during all phases of construction as new crews join the project.
	• Following construction, remove all trash and construction debris from work areas. All trash and construction debris shall be properly contained.	PG&E and/or its contractor(s) to implement measure as defined.	CPUC mitigation monitor to inspect compliance at least once a week.	During and after construction.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Ensure that all fueling and maintenance of vehicles and other equipment and staging areas occurs at least 20 meters from any riparian habitat or water body. PG&E shall ensure contamination of habitat does not occur during such operations. Prior to the start of construction, PG&E shall prepare a plan to ensure a prompt and effective response to any accidental spills.	PG&E and/or its contractor(s) to implement measure as defined.	PG&E shall submit a Hazardous Substance Control and Emergency Response Plan as required under 2.7-1e to CPUC. CPUC mitigation monitor to inspect compliance at least once a week.	Prior to and during all phases of construction. During all phases of construction.
Impact 2.4-3: Project construction activities, such as tree removal and trimming, grading of temporary work areas, improvement of access roads, operation of heavy equipment, installation and removal of poles, and conductor installation, could disturb nesting birds, including raptors. Tree removal or trimming could disrupt nesting behavior or destroy active nests if they occur. Use of helicopters to remove and install poles and transmission line and to move equipment to and from remote areas could also impact nesting birds and raptors. Use of helicopters in nesting areas could cause adult and juvenile birds to flush and abandon the nest.	**Mitigation Measure 2.4-3a**: To the extent feasible, project activities shall not occur during the nesting and breeding season (from March 1 through August 15) to avoid impacts to nesting birds and raptors. If seasonal avoidance is not feasible, then Mitigation Measures 2.4-3b through 2.4-3d shall be implemented to avoid impacts to nesting birds and raptors.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit project construction schedule to the CPUC CPUC mitigation monitor to inspect compliance at least once a week	Two weeks prior to nesting and breeding season During nesting and breeding season

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Same as above.	**Mitigation Measure 2.4-3b**: Prior to any potential nest-disturbing activities during the period from March 1 through August 15, PG&E shall contract with an Environmental Monitor who shall conduct a pre-construction survey for nesting birds. The survey shall be conducted no more than one week prior to the start of work activities and would cover all affected areas including the transmission line route, staging areas, pull sites, and access road improvement areas where substantial ground disturbance or vegetation clearing is required. Additional pre-construction surveys shall be conducted for each new phase of project implementation that occurs during the nesting season, no more than two weeks prior to construction (e.g., prior to road improvement and pole installation, and again prior to conductor installation). If any active nests are found, an appropriate nest protection zone shall be established by the Environmental Monitor. These guidelines for protection zones shall be used: For passerine birds, a 50 - 100-foot protection zone shall be established around active nests; For raptors, a 300-foot protection zone and for golden eagles a 500 foot protection zone shall be established around active nests. These protection zones may be modified on a site-specific basis as determined by the Environmental Monitor or in coordination with CDFG. Active nests within the project area would be monitored for signs of disturbance. If the biological monitor determines that a disturbance is occurring, construction shall be halted, and the agencies shall be contacted as to the measures that shall be implemented.	PG&E and/or its contractor(s) to implement measure as defined	Submit pre-construction survey results for nesting birds to the CPUC showing any applicable protection zones if established. CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During nesting and breeding season

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.4-3c: Use of helicopters shall be restricted to necessary trips to install and remove poles, install the transmission line, and to deliver and remove equipment to areas lacking vehicular access or in areas where access would cause severe erosion. Helicopters may be used in an area if active raptor nests occur if an appropriate buffer has been established in coordination with CDFG. In active nesting areas, helicopters may be used after young have fledged, ~~determined by a qualified biologist in coordination with CDFG~~ set forth in Mitigation Measure 2.4-3b.	PG&E and/or its contractor(s) to implement measure as defined	Submit pre-construction survey results for nesting birds to the CPUC Submit project construction schedule to CPUC for nesting bird period CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction Two weeks prior to construction During nesting and breeding season
Impact 2.4-4: Project construction activities adjacent to Sonoma Creek could have short-term effects on aquatic habitat of the California freshwater shrimp. Construction activities could result in water quality impacts within Sonoma Creek.	**Mitigation Measure 2.4-4**: Certain construction activities at Pole 107 shall be conducted during the dry season (June 1 through October 1) to avoid impacts to California freshwater shrimp. Installation of the Pole 107 foundation and construction/improvement of the access road to Pole 107 shall be done during the dry season to avoid sediment or other debris discharge into Sonoma Creek. Installation of TSPs on top of foundations, wire and wood pole removal shall be done outside of the dry season using BMPs.	PG&E and/or its contractor(s) to implement measure as defined	Submit project construction schedule to CPUC for Poles 107 and 108 CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction at those pole locations During construction at those pole locations

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Impact 2.4-5: Pond turtle habitat could occur throughout the project alignment in detention basins and stock ponds located on agricultural areas and in freshwater streams including Rodgers Creek, Felder Creek, Sonoma Creek, and Fryer Creek. Construction activities in the vicinity of streams or ponds occupied by Western pond turtle could harm individual turtles or temporarily affect their habitat.	**Mitigation Measure 2.4-5**: Prior to the start of construction activities, PG&E shall contract with a Specialist who shall perform pond turtle surveys within Rodgers Creek, Felder Creek, Sonoma Creek, Fryer Creek and in other ponded areas within 700 feet of the project features where ground-disturbing activities would occur. If no turtles are found during surveys, search for turtle nests is then not necessary. If turtles are found in aquatic habitat, then clearance of the nearby terrestrial habitat that would be impacted shall occur prior to construction activities; the biologist(s) shall look for eggs and WPT individuals including over-wintering hatchlings. If eggs are found, the biological monitor shall contact CDFG for the appropriate measures to relocate the eggs. Measures outlined in the SWPPP Plan shall be implemented to avoid impacts to pond turtle aquatic habitat.	PG&E and/or its contractor(s) to implement measure as defined	Submit qualified biologist resume to the CPUC Submit pre-construction survey results to the CPUC CPUC mitigation monitor to inspect compliance at least once a week	Two weeks prior to pre-construction surveys Prior to construction During all phases of construction
Impact 2.4-7: Construction of the Proposed Project could result in impacts to potentially jurisdictional wetlands or waters of the U.S. under the jurisdiction of the Corps and waters of the state under the jurisdiction of the SWRCB or RWQCB. The Proposed Project could also result in impacts to the streambed and banks under jurisdiction of CDFG. Potential impacts include sedimentation of channels downstream of the construction areas during trenching and excavating activities and loss of riparian and instream wetland vegetation. Permanent impacts to jurisdictional features would not be greater than 1/2 acre qualifying the project to be authorized under a Section 404 Nationwide Permit (NWP).	**Mitigation Measure 2.4-7a**: In order to determine the extent of jurisdictional features within the project area, PG&E shall conduct a wetland delineation and submit it to the Corps prior to the start of construction. Potentially jurisdictional features have only been preliminarily identified. To remain in compliance with state and federal CWA, a determination of jurisdictional features shall be made. A wetland delineation, identifying and mapping potentially jurisdictional features subject to CWA Section 404 and 401 jurisdiction shall be completed. The wetland delineation map and report shall be submitted to the Corps for field verification of jurisdiction. The wetland delineation report and Corps verified map shall be submitted to RWQCB and CDFG, and other appropriate regulatory agencies.	PG&E and/or its contractor(s) to implement measure as defined	The wetland delineation report and Corps verified map shall be submitted to the CPUC. CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Same as above.	**Mitigation Measure 2.4-7b**: To the extent feasible, final project design shall avoid impacts to wetlands and other waters. State and federal regulations specify that wetland avoidance is required to the extent feasible. Areas that are avoided shall be subject to Best Management Practices (BMPs). These Best Management Practices (BMPs), or storm water protection methods are standard in the construction industry and are proven effective to reduce water quality degradation. PG&E shall implement specific erosion control and surface water protection methods for each construction activity conducted as part of the project. As discussed in the Regulatory Context of Section 2.8, *Hydrology and Water Quality*, the project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit and therefore, be required to employ specific BMPs for the protection of surface water. PG&E is required to provide details as to the design and monitoring of the BMPs in the Stormwater Pollution Prevention Plan (SWPPP). Examples of standard BMPs, which PG&E would implement as part of the SWPPP and the typical application of those BMPs are as follows:	PG&E and/or its contractor(s) to implement measure as defined	PG&E shall submit a Stormwater Pollution Prevention Plan (SWPPP) to the CPUC CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Site grading operations necessary to develop temporary staging areas and pull and tension sites would be required to use appropriately-placed silt fencing to protect surface water sources from entrainment of sediment. Surfaces of these staging areas would be graveled during wet weather use to minimize erosion and sediment laden runoff. To restore vegetation at disturbed temporary staging areas, measures and monitoring specified in the SWPPP Plan shall be implemented to achieve the performance standards indicated in the Plan. • Silt fencing is proposed as part of the project and is standard BMP to control erosion and siltation from loose or disturbed soil. Silt fencing would be placed as appropriate at each pole installation site, especially those adjacent to natural surface water bodies. Stockpiled soil generated from the excavation of pier foundations or boreholes would not be left at the site. Loose soil would be loaded and used elsewhere or stockpiled in staging areas. Soil stockpiled at the staging area would be managed as required in the SWPPP and be appropriately covered, vegetated, or bermed during rainy periods to ensure that eroded sediments do not runoff to surface water resources.			

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• As part of the Proposed Project, access roads would be in- or out-sloped, as appropriate, providing effective surface sheet flow to avoid formation of erosive gullies caused by concentrated runoff. Where necessary, flow diversions, known as water bars, would be used on roadways exceeding gradients of 10 degrees. Water bars divert runoff from roads before gullies can form. Where necessary, all-weather roads would be covered with gravel base material. The gravel base would reduce the erosive energy to reduce erosion. • NPDES requires that the SWPPP show BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and waste. The SWPPP must also describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage or service areas. The SWPPP would require PG&E to identify equipment storage, cleaning and maintenance areas.			
Same as above.	**Mitigation Measure 2.4-7c**: To the extent practicable, ground-disturbing activities such as access road construction, site grading, and foundation installation shall be conducted during the dry season (June 1 through October 1). The dry season window may begin as early as May 1 if ground conditions at the work sites and access routes are determined to be sufficiently dry by an Environmental Monitor.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit a project grading plan to the CPUC. PG&E to submit construction schedule showing timing of said activities during the dry season CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction Two weeks prior to start of dry season During the dry season
Same as above.	**Mitigation Measure 2.4-7d**: Wetlands and other waters, including vernal pools, shall be avoided during construction activities to the extent feasible. Installation of exclusionary fencing and other appropriate methods shall be installed at specific locations described below.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit a construction plan focusing on wetland and vernal pool avoidance to the CPUC	At least one month prior to start of construction.

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• For the vernal pools between Poles 43 and 44, an Environmental Monitor shall establish an protection zone of the maximum practicable distance, not less than 50 or greater than 100 feet, from the wetland edge. The exclusion zone shall be staked and flagged or delineated with temporary fencing. For work at Pole 107 and its access road near Sonoma Creek, temporary exclusion fencing and silt fencing shall be installed at the downslope edge of the work footprint and not less than 25 feet from the top of the bank of Sonoma Creek. Staking and flagging or fencing shall be completed prior to any construction activities and shall remain in place during all construction activities.		PG&E to submit the resume and/or qualification of the environmental monitor and professional biologist to the CPUC. CPUC mitigation monitor to inspect compliance at least once a week.	At least two weeks prior to construction During all phases of construction
	• For the vernal marsh near Poles 40 and 41, silt fencing shall be installed between the access road and the marsh as close as practicable to the edge of the road improvements footprint to prevent sedimentation impacts to the marsh (see Mitigation Measure 2.4-7b).		Installation of the silt fence shall be monitored by a qualified biologist.	Prior to road improvement work in this area.
	• PG&E shall contract with an Environmental Monitor to monitor protected areas during all work activities in the vicinity of wetlands and sensitive aquatic and riparian habitats including Sonoma Creek, Felder Creek, and other watercourses that may be affected by the project. The Environmental Monitor shall verify that environmental fencing, erosion and sediment control measures, and other protection measures are properly installed and are effective. If problems are found, the Environmental Monitor shall recommend remedial measures. Consistent with project safety, t~~T~~he monitor shall have the authority to stop activities that are likely to adversely affect sensitive aquatic habitats and recommend alternative work practices in consultation with construction personnel.		The Environmental Monitor shall provide the CPUC verification that environmental fencing, erosion and sediment control measures, and other protection measures are properly installed and are effective. CPUC mitigation monitor to inspect compliance at least once a week.	Prior to Construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.4-7e: Prior to the start of construction, for any jurisdictional features identified as a result of implementing Mitigation Measure 2.4-7a, PG&E shall obtain necessary regulatory permits. Construction activities within jurisdictional features including wetlands and vernal pools would require permit approval from the Corps and RWQCB for fill in wetlands and other Waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. Water quality certification from RWQCB would also be required pursuant to Section 401 of the federal CWA. In addition, the CDFG has jurisdiction pursuant to Section 1601-1616 of the Fish and Game Code for construction activities affecting, or within the channels or banks of (or under) Sonoma, Rodgers, Fryer and Felder Creeks which would require Streambed Alteration Agreements. Terms and conditions of the permits would include measures to protect and maintain water quality, restore work sites, and mitigate for permanent and temporary impacts.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit copies of the permits to the CPUC. CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During all phases of construction
	Mitigation Measure 2.4-7f: Measures to prevent erosion and sedimentation and to restore work areas where vegetation would be removed or where bare soil is exposed shall be applied to project elements as specified in the SWPPP Plan.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit copies of the SWPPP Plan to the CPUC. CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During all phases of construction
Impact 2.4-9: Construction activities could potentially spread noxious or invasive weeds into the project area and within the project area where weeds do no currently exist. New noxious or invasive weed species could also be transported into the project area if seeds or plant material is carried on vehicles and construction equipment.	**Mitigation Measure 2.4-9a**: To reduce the likelihood of spreading noxious or invasive weeds within the project area or increasing their abundance in the project area, or introducing new noxious or invasive weed species to the project area, PG&E shall prepare and submit a Vegetation Management & Restoration Plan which includes best management practices for control of noxious weeds**.**	PG&E and/or its contractor(s) to implement measure as defined	PG&E shall submit a Vegetation Management & Restoration Plan to the CPUC for approval prior to construction CPUC mitigation monitor to inspect compliance at least once a week	Prior to construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.4-9b: To reduce the potential for the spread of invasive or noxious weeds, cleaning stations shall be set up at key points along access roads. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance once a week.	During all phases of construction
Impact 2.4-10: The project could result in the spread of the Sudden Oak Death pathogen.	**Mitigation Measure 2.4-10a**: To reduce the potential for the spread of the Sudden Oak Death pathogen, PG&E shall comply with applicable regulations during the construction activities including vegetation trimming, clearing, and removal and by following the practices documented as part of the Vegetation Management & Restoration Plan which shall include the following mitigation measures to reduce the potential for spread of the SOD pathogen.	PG&E and/or its contractor(s) to implement measure as defined	PG&E shall submit the Vegetation Management & Restoration Plan to the CPUC for approval prior to construction CPUC mitigation monitor to inspect compliance at least once a week. <u>During construction of poles on SMI property, PG&E and CPUC mitigation monitors shall provide copies of all routine mitigation monitoring reports submitted to the SCAPOSD and the CPUC on a weekly basis.</u>	Prior to construction During all phases of construction
Same as above.	**Mitigation Measure 2.4-10b**: To reduce the potential for the spread of SOD, **Mitigation Measure 2.4-9b** shall be implemented. Cleaning stations shall be set up at key points along access roads easily accessible for job site personnel and vehicles. Mud and debris shall be scraped, brushed, or hosed from vehicles. A power washer shall be used where feasible. Cleaning of personnel shall include removal of mud and debris from boots and clothing.	See Mitigation Measure 2.4-9b	See Mitigation Measure 2.4-9b	See Mitigation Measure 2.4-9b

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Same as above.	**Mitigation Measure 2.4-10c**: No plant material shall be removed from the project area to the extent feasible. Any branches, limbs, twigs, or other tree debris shall be left onsite. Any plant material trimmed or removed along Leveroni Road shall be removed and disposed of at an appropriate location.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once a week. During construction of poles on SMI property, PG&E and CPUC mitigation monitors shall provide copies of all routine mitigation monitoring reports submitted to the SCAPOSD and the CPUC on a weekly basis.	During all phases of construction
Same as above.	**Mitigation Measure 2.4-10d**: Work in the project area shall be performed during the dry season (May through October) to the extent feasible. If work is performed during the wet season vehicles and personnel shall, to the extent feasible, be kept to paved areas and avoid mud.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit construction schedule to the CPUC	Prior to construction in SOD infected areas Prior to construction during the dry season
Same as above.	**Mitigation Measure 2.4-10e**: PG&E shall institute a sanitation program to be approved by the CPUC including the implementation of **Mitigation Measure 2.4-10b**. Sanitation measures include decontamination of vehicles, personnel, tools and equipment. Mud and debris shall be scraped, brushed, or hosed from vehicles and equipment. A power washer shall be used where feasible. Sanitation of personnel shall include removal of mud and debris from boots clothing, and skin. Sanitation of tools that have contacted vegetation or soils shall be performed after completion of work to using Lysol® spray, a 70% or greater solution of alcohol, or a Clorox® solution (1 part Clorox® to 9 parts water or Clorox clean up®). At the cleaning stations, a person trained by a qualified biologist, botanist or arborist experienced with SOD shall inspect each worker's clothing, especially the shoes. Any branches, limbs, twigs, seeds, or other tree debris shall be removed from worker's clothing. The inspection shall occur daily after work has been completed.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit specific cleaning and sanitation protocols to the CPUC for approval CPUC mitigation monitor to inspect compliance at least once a week. During construction of poles on SMI property, PG&E and CPUC mitigation monitors shall provide copies of all routine mitigation monitoring reports submitted to the SCAPOSD and the CPUC on a weekly basis.	Prior to construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Same as above.	**Mitigation Measure 2.4-10f:** Prior to the start of construction, PG&E shall provide a worker education seminar to all personnel. The seminar shall include distribution of materials that help identify signs of SOD, description of sanitation procedures, and other measures to avoid the spread of the pathogen. The seminar shall be facilitated by a qualified biologist, botanist or arborist or other qualified person experienced with SOD. Any workers who join the construction job after the initial worker education seminar shall be trained by the Environmental Monitor on all topics covered in the seminar.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit distribution materials to the CPUC PG&E to submit resume of qualified biologist, botanist or arborist experienced with SOD to the CPUC. PG&E to submit documentation of worker training in the form of sign in sheets to the CPUC CPUC mitigation monitor to inspect compliance at least once a week. <u>During construction of poles on SMI property, PG&E and CPUC mitigation monitors shall provide copies of all routine mitigation monitoring reports submitted to the SCAPOSD and the CPUC on a weekly basis.</u>	Prior to construction Prior to construction Prior to and during all phases of construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Cultural Resources				
Impact 2.5-1: If construction of the proposed project encounters currently unknown cultural resources, including archaeological resources, pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), this could cause substantial adverse changes to the significance of the resource.	**Mitigation Measure 2.5-1a:** In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and PG&E and/or the CPUC shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of PG&E and/or the CPUC and a Specialist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the CPUC. All significant cultural materials recovered shall be, as necessary, subject to scientific analysis, professional museum curation, and a report prepared by a Specialist according to current professional standards. In considering any suggested mitigation proposed by the Specialist in order to mitigate impacts to historical resources or unique archaeological resources, the CPUC shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit contact information and qualification of trained Specialist to CPUC for approval. PG&E and/or its contractor(s) to provide immediate verbal notification to the archeological expert and the CPUC of any discovered cultural resources. CPUC mitigation monitor to inspect compliance at least once weekly	Prior to start of construction Immediately upon discovery During all phases of construction requiring excavation activities

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.5-1b: PG&E shall retain the services of a Specialist that has expertise in California prehistoric and urban historical archeology to be on-call during ground-disturbing activity within 200 feet of a perennial or seasonal watercourse (see Figures 1-4a through 1-4d). If an intact archeological deposit is encountered, all soil disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/construction crews and heavy equipment until the deposit is evaluated. The archeological monitor shall immediately notify the CPUC of the encountered archeological deposit. The archeological monitor shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the CPUC.	PG&E to contract with a Environmental Monitor to monitor the construction site at all times throughout construction. A specialist shall be retained to be on-call should a significant cultural resource be located during construction within 200 feet of a watercourse.	PG&E to submit contact information, qualifications of Environmental Monitor and On-call Specialist, and copy of contract with these two individuals to CPUC for approval.	At least two weeks prior to start of construction
			CPUC mitigation monitor to inspect compliance at least once weekly	During all phases of construction requiring excavation activities
	If the CPUC, in consultation with the Specialist, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, the CPUC shall require PG&E to:			
	• Re-design the project to avoid any adverse effect on the significant archeological resource; *or*	If a significant archeological resource is present, PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit project re-design to CPUC for approval	Prior to construction of re-design portion of the project
			CPUC mitigation monitor to inspect compliance at least once weekly	During all phases of re-design construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Implement an archeological data recovery program (ADRP) (unless the archaeologist determines that the archeological resource is of greater interpretive use than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archeological data recovery program, an ADRP shall be conducted. The project archaeologist and the CPUC shall meet and consult to determine the scope of the ADRP. The archaeologist shall prepare a draft ADRP that shall be submitted to the CPUC for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archeological resource is expected to contain. That is, the ADRP shall identify the scientific/historical research questions are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Proposed Project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.	If a significant archeological resource is present, PG&E and/or its contractor(s) to implement measure as defined	PG&E shall submit an ADRP to the CPUC for approval CPUC mitigation monitor to inspect compliance at least once weekly	Prior to construction within area determined to warrant an ADRP. Prior to construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Impact 2.5-2: The Proposed Project could adversely affect unidentified paleontologic resources at the pole and road construction sites.	**Mitigation Measure 2.5-2**: In the event of unanticipated paleontologic discoveries, PG&E shall notify a Specialist who shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. In the event of an unanticipated discovery of a breas, true, and/or trace fossil during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995 and SVP, 1996). The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the CPUC determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the CPUC for review and approval.	PG&E to implement measure as defined	PG&E to submit contact information and qualifications of a Specialist to be notified of any unanticipated discoveries during construction PG&E and/or its contractor(s) to provide immediate verbal notification to the paleontologist and the CPUC of any discovered cultural resources; with follow up written documentation noting date of discovery, type of discovery and actions taken to protect the resource(s). CPUC mitigation monitor to monitor compliance	A. Prior to start of construction Immediately upon discovery During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Impact 2.5-3: Project construction could result in damage to previously unidentified human remains.	**Mitigation Measure 2.5-3**: In the event that human skeletal remains are uncovered during construction activities for the Proposed Project, PG&E shall immediately halt work, contact the Sonoma County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, PG&E shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease until appropriate arrangements are made.	PG&E and/or its contractor(s) to implement measure as defined	PG&E and/or its contractor(s) to provide immediate verbal notification to the Sonoma County Coroner and the CPUC of any discovered human remains; with follow up written documentation noting date of discovery, type of discovery and actions taken to protect the resource(s). PG&E to contract Native American Heritage Commission if Coroner determines remains are Native American CPUC mitigation monitor to monitor compliance	Immediately upon discovery Upon notification that remains are Native American remains by the Sonoma County Coroner During all phases of construction
Geology, Soils, and Seismicity				
No mitigation required				
Hazards and Hazardous Materials				
Impact 2.7-1: Construction activities would require the use of certain materials such as fuels, oils, solvents, and other chemical products that, in large quantities, could pose a potential hazard to the public or the environment if improperly used or inadvertently released.	**Mitigation Measure 2.7-1a:** PG&E and/or its contractor(s) shall implement construction best management practices including but not limited to the following: • Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance	During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Avoid overtopping construction equipment fuel gas tanks;	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance	During all phases of construction
	• During routine maintenance of construction equipment, properly contain and remove grease and oils; and • Properly dispose of discarded containers of fuels and other chemicals.	PG&E and/or its contractor(s) to implement measure as defined PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance CPUC mitigation monitor to monitor compliance	During all phases of construction During all phases of construction
	Mitigation Measure 2.7-1b: *Hazardous Substance Control and Emergency Response Plan* – PG&E shall prepare a Hazardous Substance Control and Emergency Response Plan (the Plan) for the project and implement it during construction. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include a discussion of appropriate response actions in the event that hazardous materials are released or encountered during excavation activities.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit the Plan to the Sonoma County Department of Emergency Services, Hazardous Materials Division, the County's Certified Unified Program Agency, and the CPUC for review and approval. CPUC mitigation monitor to inspect compliance at least once weekly	Submit final plan to CPUC at least two weeks prior to start of construction During all phases of construction
	Mitigation Measure 2.7-1c: *Health and Safety Plan* – PG&E shall prepare and implement a Health and Safety Plan to ensure the health and safety of construction workers and the public during project construction. The plan shall include information on the appropriate personal protective equipment to be used during construction.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit the Plan to the CPUC for review and approval. CPUC mitigation monitor to inspect compliance at least once weekly	Submit final plan to CPUC two weeks prior to start of construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.7-1d: *Worker Environmental Awareness Program(WEAP)* – PG&E shall ensure that an environmental training program is established and delivered to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program shall emphasize site-specific physical conditions to improve hazard prevention, and shall include a review of the Health and Safety Plan and the Hazardous Substance Control and Emergency Response Plan. PG&E shall submit documentation to the CPUC mitigation monitor that each worker on the project has undergone this training program.	PG&E and/or its contractor(s) to implement measure as defined	PG&E and/or its contractor(s) to submit a description of the training. PG&E shall submit copies of sign-in sheets from the training session(s) to CPUC to verify compliance	Training to be completed at least tone week prior to start of construction Sign-in sheets to be submitted prior to start of construction
	Mitigation Measure 2.7-1e: *Emergency Spill Supplies and Equipment* – PG&E shall ensure that oil-absorbent material, tarps, and storage drums shall be used to contain and control any minor releases. Emergency spill supplies and equipment shall be kept adjacent to all areas of work, and shall be clearly marked. Detailed information for responding to accidental spills and for handling any resulting hazardous materials shall be provided in the project's Hazardous Substance Control and Emergency Response Plan, which shall be implemented during construction.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to inspect compliance at least once weekly	During all phases of construction
Hydrology and Water Quality				
No mitigation required				

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Land Use, Plans, and Policies				
~~**Impact 2.1-1:** The proposed substation improvements and a portion of the transmission line within the city of Sonoma from about Fifth Street West to the Sonoma Substation would be inconsistent with the City of Sonoma General Plan's intent for the *Gateway Commercial* designation. This would be a less than significant impact with implementation of Mitigation Measure 2.1-1.~~ No mitigation required	~~**Mitigation Measure 2.1-1:** PG&E shall install the new 115 kV single-circuit transmission line underground beneath Leveroni Road from approximately Fifth Street West to the Sonoma Substation (see Figure 2.1-4), where the circuit would emerge through a substation riser structure and terminate on a substation bus structure. Pole 108, which shall be configured to allow the new circuit to be transferred underground and the existing circuit to continue to the next existing pole, shall be the last overhead pole (a 75-foot tall tubular steel riser pole) of the proposed new transmission line. This underground portion of the new transmission line shall be designed and installed as described in *Lakeville-Sonoma 115 kV Transmission Line Project Environmental Assessment Addressing Undergrounding 115 kV Transmission Line along Leveroni Road (between 5th Street West and Sonoma Substation) in the City of Sonoma* (EDAW, 2005).~~	~~PG&E and/or its contractor(s) to implement measure as defined.~~	~~CPUC mitigation monitor to inspect compliance at least once weekly until underground portion of the transmission line has been completed.~~	~~During construction of the underground portion of the transmission line from Fifth Street West to the Sonoma Substation.~~
Mineral Resources				
No mitigation required				
Noise				
Impact 2.11-1: The project could generate noise levels in excess of local standards during project construction.	**Mitigation Measure 2.11-1a:** Construction activity shall be limited to the least noise-sensitive daytime hours between 8:00 a.m. and 7:00 p.m., with some exceptions (as approved by the CPUC) as required for safety considerations or certain construction procedures that cannot be interrupted.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance	During all phases of construction
	Mitigation Measure 2.11-1b: The following noise reduction and suppression techniques shall be employed during project construction to minimize the impact of temporary construction-related noise on nearby sensitive receptors: • Comply with manufacturers' muffler requirements.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to periodically inspect equipment	Prior to and during construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Notify residences in advance of the construction schedule and how many days they may be affected. Provide a phone number for a construction supervisor who would handle construction noise questions and complaints.	PG&E and/or its contractor(s) shall setup a phone noise complaint line and notify, in writing, residents within 300 feet of the project site, who to contact should any observed noise violations occur	PG&E to notify the CPUC if/when complaints are received, within 24 hours of receipt of noise complaint	Prior to start of construction and during all phases of construction for complaints received
	• Minimize idling of engines; turn off engines when not in use, where applicable.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance at least once weekly	During all phases of construction
	• Shield compressors and other small stationary equipment with portable barriers when within 100 feet of residences.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance at least once weekly	During all phases of construction
	• Route truck traffic away from noise-sensitive areas where feasible.	PG&E and/or its contractor(s) to implement measure as defined	CPUC mitigation monitor to monitor compliance	During all phases of construction
Population and Housing				
No mitigation required				

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Public Services				
Impact 2.13-1: Fire and emergency medical services could be required in the event of an accident or emergency during project construction or operation.	**Mitigation Measure 2.13-1a:** PG&E shall prepare a Health and Safety Plan that would address emergency medical services in the case of an emergency. The manual shall list procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations. PG&E shall prepare this manual and distribute it to all PG&E and contract workers involved in the project prior to construction and operation of the Proposed Project.	PG&E to implement measure as defined	PG&E to submit the Plan to the CPUC for review and approval. PG&E to distribute approved plan to all PG&E and contract workers involved in project construction and operations. CPUC mitigation monitor to inspect compliance with the Health and Safety Plan at least once weekly	Submit final plan to CPUC two weeks prior to start of construction Prior to start of construction During all phases of construction
	Mitigation Measure 2.13-1b: Water tanks shall be sited in the project area that would be available to protect against fire. All vehicles shall carry fire suppression equipment. PG&E shall contact and coordinate with the City of Sonoma and Sonoma County fire departments to determine minimum amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks. PG&E shall submit verification of its consultation with the local fire departments and the CPUC mitigation monitor shall ensure these measures are implemented.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit written summary of discussion with City of Sonoma and Sonoma County fire departments staff to the CPUC CPUC mitigation monitor to monitor compliance	Prior to start of construction During all phases of construction
Impact 2.13-2: Project construction and/or operation traffic could affect fire department response times.	**Mitigation Measure 2.13-2:** PG&E shall coordinate with the City of Sonoma and Sonoma County emergency personnel prior to construction to ensure that construction activities and associated lane closures would not significantly affect emergency response vehicles.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit written summary of discussion with City of Sonoma and Sonoma County emergency personal to the CPUC CPUC mitigation monitor to monitor compliance	Prior to start of construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Recreation				
Impact 2.14-1: Construction activities could result in temporary adverse impacts to the Madera Park and the Fryer Creek bike path, which terminates at Leveroni Road.	**Mitigation Measure 2.14-1a:** Construction activities that occur along Leveroni Road from Harrington Drive to Fryer Creek Drive shall only occur during the weekdays or as otherwise permitted by the City of Sonoma. PG&E and/or its contractor(s) shall ensure that Madera Park and the Fryer Creek bike path are fully accessible during weekends, as well as any holidays observed by the City of Sonoma. PG&E shall prepare a work plan to implement this measure and shall provide the work plan to CPUC staff for approval prior to the start of construction. Compliance with this measure shall be monitored by the CPUC mitigation monitor.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit the work plan to the CPUC for review and approval. CPUC mitigation monitor to inspect compliance	Submit final plan to CPUC two weeks prior to start of construction activities occurring along Leveroni Road During all phases of construction
	Mitigation Measure 2.14-1b: PG&E shall provide signage that alerts bicyclists to walk their bicycles through the construction area. PG&E shall also provide notices to local residents of any planned disruption to Madera Park and/or the Fryer Creek bike path (properties within 300 feet of Madera Park). The notices and signage shall include the following details: • Expected dates of Madera Park and/or Fryer Creek bike path disruption. • Description and map of temporary relocation of park facilities. • Name and phone numbers of persons to contact at PG&E and the City of Sonoma. The notices shall be sent to residents and signage posted at least 14 days in advance of any planned construction activities along Leveroni Road between Harrington Road and Fryer Creek Drive. The CPUC mitigation monitor shall verify the posting of signage and notification prior to construction.	PG&E and/or its contractor(s) to implement measure as defined	PG&E to submit map showing location of signage and photographs of the signage to CPUC PG&E to submit proof of mailing of notices to residents to CPUC CPUC mitigation monitor to verify posting signage and notification	At least two weeks prior to start of construction activities along Leveroni Road Prior to start of construction activities along Leveroni Road

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Transportation / Traffic				
Impact 2.15-1: Project construction activities could adversely affect traffic and transportation conditions in the project area.	**Mitigation Measure 2.15-1a:** PG&E shall obtain and comply with local road encroachment permits for roads that are affected by construction activities (i.e., Frates Road, Felder Road, and Leveroni Road).	PG&E to implement measure as defined	PG&E and/or its contractor(s) to attain, comply with, and submit copies of acquired permits to the CPUC	Attain and submit permits to the CPUC two weeks prior to start of construction Comply with permits during all phases of construction
	Mitigation Measure 2.15-1b: PG&E shall prepare and implement a Traffic Management Plan subject to approval by the appropriate local jurisdiction (i.e., Sonoma County or City of Sonoma) prior to construction. The plan shall: • Include a discussion of work hours, haul routes, limits on the length of open trench, work area delineation, traffic control and flagging; • Identify all access and parking restriction and signage requirements; • Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints; • Include a plan to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers would be notified of the timing, location, and duration of construction activities. All roads would remain passable to emergency service vehicles at all times;	PG&E to implement measure as defined	CPUC and the appropriate local jurisdiction (i.e., Sonoma County or City of Sonoma) to review and approve submitted Traffic Management Plan CPUC mitigation monitor to inspect compliance at least once weekly	Submit final plan to CPUC and the appropriate local jurisdiction (i.e., Sonoma County or City of Sonoma) one month prior to start of construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	• Include the requirement that all open trenches be covered with metal plates at the end of each workday to accommodate traffic and access; and • Specify the street restoration requirements pursuant to PG&E's franchise agreements with the local jurisdictions.			
	Mitigation Measure 2.15-1c: PG&E shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) would be used to minimize impacts to traffic flow.	PG&E and/or its contractor(s) to implement measure as defined	PG&E and/or its contractor(s) to submit report identifying information required in the mitigation measure to the CPUC to review and approve. CPUC mitigation monitor to inspect compliance at least once weekly	Submit to CPUC two weeks prior to start of construction During all phases of construction
	Mitigation Measure 2.15-1d: PG&E shall develop circulation and detour plans to minimize impact to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.	PG&E to implement measure as defined	PG&E and/or its contractor(s) to submit circulation and detour plans to the CPUC to review and approve. CPUC mitigation monitor to inspect compliance at least once weekly	Submit to final plans to CPUC two weeks prior to start of construction During all phases of construction
	Mitigation Measure 2.15-1e: PG&E shall encourage construction crews to park at substations to limit lane closures in the public right-of-way.	PG&E to implement measure as defined during environmental training	PG&E and/or its contractor(s) to submit a description of the training. PG&E to submit documentation of worker training in the form of sign in sheets to the CPUC	Prior to and during all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
	Mitigation Measure 2.15-1f: PG&E shall coordinate with Caltrans, Sonoma County, City of Sonoma, and any other appropriate entity, regarding measures to minimize the cumulative effect of simultaneous construction activities in overlapping areas.	PG&E to implement measure as defined	PG&E and/or its contractor(s) to submit plans to minimize the cumulative effect of simultaneous construction activities in overlapping areas to the CPUC to review and approve. CPUC mitigation monitor to inspect compliance at least once weekly	Submit to final plan to CPUC two weeks prior to start of construction During all phases of construction
	Mitigation Measure 2.15-1g: PG&E shall consult with Sonoma County Transit at least one month prior to construction to coordinate bus stop relocations (as necessary) and to reduce potential interruption of transit service.	PG&E to implement measure as defined	PG&E to submit plans to reduce potential interruption of transit service to the CPUC to review and approve. CPUC mitigation monitor to inspect compliance at least once weekly	Submit to final plans to CPUC two weeks prior to start of construction During all phases of construction
Impact 2.15-2: Operation of the “skycrane” helicopters could result in exposure of structures or persons to risk.	**Mitigation Measure 2.15-2:** PG&E shall prepare and comply with a Lift Plan approved by the FAA prior to all “skycrane” construction helicopter operations. The need for short-term road closures, if any, shall be identified in the Lift Plan and shall be coordinated with the appropriate jurisdictions as described in Mitigation Measures 2.15-1a through 2.15-1g. The Lift Plan shall also discuss the potential to adversely affect to nearby residents.	PG&E to implement measure as defined	PG&E to submit FAA approved Lift Plant to CPUC. If coordination with local agencies is required under the Lift Plan, PG&E shall submit written summary of discussion with appropriate jurisdictions to the CPUC CPUC mitigation monitor to inspect compliance at least once weekly	Submit to final approved plan to CPUC two weeks prior to start of construction Prior to construction During all phases of construction

TABLE G-1 (continued)
MITIGATION MONITORING AND REPORTING PROGRAM FOR THE LAKEVILLE-SONOMA 115 kV TRANSMISSION LINE PROJECT

Environmental Impact	Mitigation Measures Proposed in this MND	Implementing Actions	Monitoring/ Reporting Requirements	Monitoring Schedule
Impact 2.15-3: Project construction activities could increase potential traffic safety hazards for vehicles, bicyclists and pedestrians on public roadways.	**Mitigation Measure 2.15-3**: Implement Mitigation Measure 2.15-1b through 2.15-1g.	PG&E to implement measure as defined	See Mitigation Measures 2.15-1b through 2.15-1g.	See Mitigation Measures 2.15-1b through 2.15-1g.
Impact 2.15-4: Project construction activities could result in delays for emergency vehicles on project area roadways.	**Mitigation Measure 2.15-4**: Implement Mitigation Measure 2.15-1b.	PG&E to implement measure as defined	See Mitigation Measure 2.15-1b	See Mitigation Measure 2.15-1b
Impact 2.15-5: Project construction activities could generate a demand for on-street parking spaces to accommodate construction worker vehicles on project area roadways.	**Mitigation Measure 2.15-5**: Implement Mitigation Measure 2.15-1e.	PG&E to implement measure as defined	See Mitigation Measure 2.15-1e	See Mitigation Measure 2.15-1e
Impact 2.15-6: Project construction activities could cause disruptions to transit service on project area roadways.	**Mitigation Measure 2.15-6**: Implement Mitigation Measure 2.15-1g.	PG&E to implement measure as defined	See Mitigation Measure 2.15-1g	See Mitigation Measure 2.15-1g
Utilities and Services				
Impact 2.16-1: Construction activities associated with ~~Mitigation Measure 2.1-1~~ undergrounding a portion of the new transmission line along Leveroni Road could inadvertently contact underground utility lines and/or facilities during underground construction, possibly leading to short-term utility service interruptions.	**Mitigation Measure 2.16-1:** PG&E shall ensure that Underground Service Alert is notified at least 14 days prior to initiation of construction activities of the underground portion of the transmission line. Underground Service Alert verifies the location of all existing underground utilities and alerts the other utilities to mark their facilities in the area of anticipated construction activities. Compliance with this measure shall be verified by the CPUC mitigation monitor.	PG&E to implement measure as defined	PG&E to submit verification that Underground Service Alert was contact to CPUC	At least 14 days prior to start of construction of underground portion of the transmission line
Mandatory Findings of Significance				
Impact 2.17-1: Project construction activities along Leveroni Road could adversely affect local noise and traffic conditions if the Proposed Project is constructed at the same time as the SVRWP segment along Leveroni Road.	**Mitigation Measure 2.17-1:** At least two weeks prior to commencement of project construction activities, PG&E shall contact the Sonoma County Water Agency to determine if construction of the Proposed Project and construction of the SVRWP would occur at the same time along Leveroni Road. If construction of both projects (the Proposed Project and SVRWP) would occur along Leveroni Road at the same time, then PG&E shall incorporate consideration of the SVRWP into its Traffic Management Plan required by Mitigation Measure 2.15-1.	PG&E to implement measure as defined including incorporation of Mitigation Measure 2.15-1	PG&E to submit documentation of correspondence and agreements (if required) between the Sonoma County Water Agency and PG&E.	Prior to construction

APPENDIX H

Certificate of Service and Distribution List for the Draft MND

The following parties received copies of the Final Mitigated Negative Declaration related to Pacific Gas and Electric Company's application (No. A.04-11-001) to the California Public Utilities Commission to construct and operate an approximately 7.23-mile 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to General Order (GO) 131-D:

Name	Title	Organization	Address	City, State, Zip Code
Jack Broadbent	APCO	Bay Area Air Quality Management District	939 Ellis Street	San Francisco, CA 94109
Rob Floerke	Regional Manager	California Department of Fish & Game Region 3 Central Coast	P.O. Box 47	Yountville, CA 94599
Maija Cottle		California Department of Transportation	P.O. Box 23660	Oakland, CA 94623-0660
Ryan Broddrick	Director	California Department of Fish and Game	1416 9th Street, 12th Floor	Sacramento, CA 95814
Dana Cole	Sonoma/Lake/Napa Unit	California Department of Forestry & Fire Protection	1199 Big Tree Road	Saint Helena, CA 94574
Bijan Sartipi	Transportation Planning Dist. 4	California Department of Transportation	P.O. Box 23660	Oakland, CA 94623
Terry Winter	CEO	California Independent System Operator	P.O. Box 639014	Folsom, CA 95763-9014
Robert Feraru	Public Advisor	California Public Utilities Commission	505 Van Ness Ave. Room 5303	San Francisco, CA 94102
Mike Chrisman	Secretary	California Resources Agency	1416 9th Street	Sacramento, CA 95814
R. Austin Wiswell	Chief	CalTrans, Div. Of Aeronautics	P.O. Box 942874	Sacramento, CA 94274-0001
David Goodison	City Planner	City of Sonoma	#1 the Plaza	Sonoma, CA 95476
John Bonnoitt	City Engineer	City of Sonoma	#1 the Plaza	Sonoma, CA 95476-9000
Jim Haire	Board Member	North Bay Agricultural Alliance	29000 Skaggs Island Road	Sonoma, CA 95476
Bruce Wolfe	Executive Officer II	S.F. Bay Regional Water Quality Control Board	1515 Clay Street, Suite 1400	Oakland, CA 94612
Scott Briggs	Environmental Review, Division Manager	Sonoma County Permit & Resource Management	2550 Ventura Avenue (actual location is 2755 Mendocino Ave Suite 202)	Santa Rosa, CA 95403
Gregg Carr	Comprehensive Planning Manager	Sonoma County Planning Department	2550 Ventura Avenue	Santa Rosa, CA 95403-2829
Dave Robertson	Deputy Director	Sonoma County Transportation and Public Works Department	2300 County Center Drive, Suite B 100	Santa Rosa, CA 95403
Richard Dale	Director	Sonoma Ecology Center	205 First Street West	Sonoma, CA 95476
Ralph Benson		Sonoma Land Trust	966 Sonoma Avenue	Santa Rosa, CA 95405
Chris Taylor		Southern Sonoma County Resource Conservation District	1301 Redwood Way, #170	Petaluma, CA 94954
Arthur Baggett Jr.	Chairman	State Water Resources Control Board	P.O. Box 100	Sacramento, CA 95812
Wayne White	Field Supervisor, Region 1	U.S. Fish and Wildlife Service	2800 Cottage Way, W2606	Sacramento, CA 95825-1846

Name	Title	Organization	Address	City, State, Zip Code
Valerie Brown	Supervisor District 1	Sonoma County Board of Supervisors	575 Administration Drive, Room 100A	Santa Rosa, CA 95403-2887
Mike Kerns	Supervisor District 2	Sonoma County Board of Supervisors	575 Administration Drive, Room 100A	Santa Rosa, CA 95403-2887
Milford Wayne Donaldson	State Historic Preservation Officer	Office of Historic Preservation	P.O. Box 942896	Sacramento, CA 94296
Bob Therleksen	Executive Director	California Energy Commission	1516 Ninth Street, Mail Stop 39	Sacramento, CA 95814
Alan Haley (3 copies)	Vice President	Haley and Bilheimer	505 Coyote St., Suite A	Nevada City, CA 95959
Diana Bonta	Director	California Department of Health Services	P.O. Box 942732	Sacramento, CA 94234-7320
Catherine Witherspoon	Executive Officer	Calif. State Air Resources Control Board	P.O. Box 2815	Sacramento, CA 95812
Katie Crump	Executive Assistant	City of Petaluma City Council	11 English St.	Petaluma, CA 94952
Ann Winsor		City of Petaluma Planning Commission	11 English St.	Petaluma, CA 94952
Debbie Pilas-Treadway	Environmental Specialist 3	California Native American Heritage Commission	915 Capitol Mall, Room 364	Sacramento, CA 95814
Adam Sachs	Attorney	Folger Levin & Kahn for Rancho Petaluma LLC	Embarcadero Center West 275 Battery Street, 23rd	San Francisco, CA 94111
Jo Lynn Lambert	Attorney	Best Best & Kreiger LLP	PO Box 1028	Riverside, CA 92502-1028
David Thomas (5 copies)	Project Manager	PG&E	245 Market St.	San Francisco, CA 94105-1702
Charlette Epifanio		Natural Resource Conservation District	1301 Redwood Way, #170	Petaluma, CA 94954
Marta Puente	Open Space Planner	Sonoma County Agricultural Preservation & Open Space District	747 Mendocino Ave, Suite 100	Santa Rosa, CA 94401
Lori MacNab		Sonoma County Agricultural Preservation & Open Space District	747 Mendocino Ave Ste 100	Santa Rosa, CA 95401
Chris Finlay		Sonoma Valley Vintners and Growers Association	P. O. Box 238,	Sonoma, CA 95476
City Council		City of Sonoma	#1 the Plaza	Sonoma, CA 95476
Katherine Higgins	Air Traffic Division	Federal Aviation Administration	15000 Aviation Blvd.	Hawthorne, CA 90250
Sandy Hesnard	Aviation Environmental Specialist	Department of Transportation, Division of Aeronautics, M.S.#40	1120 N. Street, PO Box 942873	Sacramento, CA 94274-0001
		U.S. Army Corps of Engineers	333 Market Street	San Francisco, CA 94105
		Sonoma County Clerks Office	2300 County Center Drive Suite B177	Santa Rosa, CA 95403
		Petaluma Regional Library	100 Fairgrounds Drive	Petaluma, CA 94952
		Sonoma Valley Regional Library	755 West Napa Street	Sonoma, CA 95476

CERTIFICATE OF SERVICE

I, Anthony Padilla, certify that I have on this date caused the following:

Notice of Availability of a Final Mitigated Negative Declaration, regarding the Pacific Gas and Electric Company's (PG&E's) Application (No. A.04-11-011) to the California Public Utilities Commission to construct and operate an approximately 7.23-mile 115 kilovolt (kV) single-circuit transmission line between the Lakeville and Sonoma Substations pursuant to General Order (GO) 131-D, to be served by United States Postal Service mail to the owners of property adjacent to the Sonoma and Lakeville Substations and the proposed transmission line.

I declare under penalty of perjury pursuant to the laws of the State of California that the foregoing is true and correct.

Executed on March 23, 2006 in San Francisco, California.

Anthony Padilla

Anthony Padilla