

National Park Service
U.S. Department of the Interior



Golden Gate National Recreation Area

Pacific Gas & Electric Gas Pipeline L-109 Replacement Project Environmental Assessment

February 2016



San Francisco Peninsula Watershed

ENVIRONMENTAL ASSESSMENT

PG&E Gas Line 109 Pipeline Replacement Project – San Francisco Peninsula Watershed

Prepared for:

U.S. Department of the Interior, National Park Service, Golden Gate National Recreation Area

Prepared by:

Blue Rock Services

802 Montgomery Street

San Francisco, California 94133

February 2016

TABLE OF CONTENTS

Chapter 1: Introduction.....	1
1.1 Introduction.....	1
1.2 Project History.....	8
1.3 Purpose and Need.....	8
1.4 Objectives in Taking Action.....	8
1.5 Applicable Laws, Policies, and Previous Planning Efforts.....	9
1.6 Permits, Licenses, and Entitlements.....	11
1.7 Scoping.....	12
1.8 Issues and Impact Topics.....	12
1.9 Incorporation By Reference.....	14
Chapter 2: Proposed Action and Alternatives.....	15
2.1 Proposed Action.....	15
2.2 Project Activities.....	16
2.3 No Action Alternative.....	21
2.4 Resource Protection and Mitigation.....	21
2.5 Alternatives Considered but Eliminated from Further Consideration.....	22
2.6 Permit Requirements and Approvals.....	28
2.7 Comparison of Impacts.....	28
Chapter 3: Affected Environment and Environmental Consequences.....	32
3.1 Introduction.....	32
3.2 General Methodology.....	32
3.3 Mitigation Measures.....	33
3.4 Cumulative Effects Analysis Method.....	33
3.6 Land Use.....	37
3.7 Biological Resources.....	44
3.8 Cultural Resources.....	65
3.9 Visual Resources.....	72
3.10 Visitor Use and Experience.....	92
3.11 Air Quality.....	103
3.12 Water Resources.....	115
3.13 Geology, Mineral Resources, and Soils.....	123
3.14 Soundscapes.....	132
3.15 Transportation and Utilities.....	140
3.16 Socioeconomics and Environmental Justice.....	149
3.17 Visitor Health and Safety.....	155
Chapter 4: Consultation and Coordination.....	161
4.1 Scoping and Public Involvement.....	161
4.2 Regulatory Compliance.....	161
4.3 Review of this Environmental Assessment.....	163
4.4 List of Preparers and Contributors.....	163
4.5 List of Recipients.....	164
Chapter 5: References.....	166

LIST OF FIGURES

Figure 1-1 Project Overview Map..... 3
 Figure 1-2 Cañada Road Replacement Segment Map..... 4
 Figure 1-3 Bunker Hill Replacement Segment Map 6
 Figure 1-4 Crystal Springs Replacement Segment Map..... 7
 Figure 2-1 Cañada Road Segment Alternatives Considered but Eliminated Map 23
 Figure 2-2 Bunker Hill Segment Alternatives Considered but Eliminated Map..... 25
 Figure 2-3 Crystal Springs Segment Alternatives Considered but Eliminated Map 27
 Figure 3-1 Photograph – Crystal Springs Valve Station..... 34
 Figure 3-2 Vegetation Communities Map 48
 Figure 3-3 CNDDDB Federal Sensitive Species Occurrence Records Map 51
 Figure 3-4 Photograph – Cañada Road Segment 73
 Figure 3-5 Photograph – Bunker Hill Segment..... 74
 Figure 3-6 Photograph – Crystal Springs Segment 75
 Figure 3-7 Vegetation Control Standards – Underground Pipe 79
 Figure 3-8 Plan View of Vegetation Control Standards 80
 Figure 3-9 Photograph – Edgewater valve lot area, before and after 88
 Figure 3-10 Photograph – Crystal Springs valve lot area, before and after..... 89
 Figure 3-11 Photograph – Half Moon Bay valve lot area, before and after..... 90
 Figure 3-12 Recreational Facilities Map 97
 Figure 3-13 Surface Water Catchment and Groundwater Basin Map 118
 Figure 3-14 Water Quality Vulnerability Zones Map 120
 Figure 3-15 Major Faults in the San Francisco Bay Area Map 126
 Figure 3-16 Liquefaction Risk in the Proposed Project Area Map 127
 Figure 3-17 Transportation, Cañada Road Segment Map 143
 Figure 3-18 Transportation, Bunker Hill Segment Map..... 144
 Figure 3-19 Transportation, Crystal Springs Segment Map 145

LIST OF TABLES

Table 2-1 Project Segments..... 20
 Table 2-2 Summary of Environmental Impacts 29
 Table 3-1 Vegetation Communities within the Authorized Work Area 46
 Table 3-2 Vegetation Planned for Removal 57
 Table 3-3 Summary of Pertinent Easement Restrictions and Covenants 72
 Table 3-4 Visual Resources 75
 Table 3-5 Visual Receptors 76
 Table 3-6 Visual Resources 80
 Table 3-7 Visual Receptors 82
 Table 3-8 Visual Resources Cumulative Effects Summary..... 85
 Table 3-9 Valve Lot and Replacement Projects Visual Resource Impacts 90
 Table 3-10 Valve Lot and Replacement Projects Visual Receptors 91
 Table 3-11 Recreational Resources by Jurisdiction near Project Area 95
 Table 3-12 State and Federal Criteria Pollutant Standards..... 106
 Table 3-13 San Mateo Monthly Climate Data..... 108

Table 3-14	San Francisco Bay Area Air Basin Air Quality Attainment Status	108
Table 3-15	Local Area Air Quality Levels from the Redwood City Air Monitoring Station.....	110
Table 3-16	Drainages Crossed by Project	119
Table 3-17	Characteristics of Geologic Formations in the Project Corridor	124
Table 3-18	Summary of Soil Characteristics in the Project Area	128
Table 3-19	Typical Sound Levels Measured in the Environment.....	133
Table 3-20	Yearly Average Equivalent Sound Levels Identified as Requisite to Protect the Public Health and Welfare With an Adequate Margin of Safety	134
Table 3-21	Estimated Construction Equipment Noise Levels	136
Table 3-22	Summary of Major Roadway Characteristics	142
Table 3-23	Unemployment Rate and Median Household Income	150
Table 3-24	General Demographic Profiles	151

APPENDICES

Appendix A	Visual Simulations
Appendix B	Scoping Material
Appendix C	Biological Resources Tables
Appendix D	Summary of Impact Minimization and Mitigation Measures

ACRONYMS

ACHP	Advisory Council on Historic Preservation	DHS	Department of Homeland Security
APM	Applicant Proposed Measures	DO	Director's Order
		DOI	U.S. Department of the Interior
BAAQMD	Bay Area Air Quality Management District	EA	Environmental Assessment
BCB	Bay Checkerspot Butterfly	EIS	Environmental Impact Statement
BMP	Best Management Practices	EO	Executive Order
CAAQS	California Ambient Air Quality Standards	EPA	Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Program	ERC	Emission Reduction Credits
CalEEMod	California Emission Estimator Model	ESA	Endangered Species Act
Caltrans	California Department of Transportation	F	Fahrenheit
CARB	California Air Resources Board	FERC	Federal Energy Regulatory Commission
CCSF	City and County of San Francisco	FONSI	Finding of No Significant Impact
CDFW	California Department of Fish and Wildlife	GGBR	Golden Gate Biosphere Reserve
CDP	Census Designated Places	GGNRA	Gate National Recreation Area
CEQ	Council of Environmental Quality	GMP	General Management Plan
CEQA	California Environmental Quality Act	GO	General Order
CFR	Code of Federal Regulations	HDD	Horizontal Directional Drill
CHRIS	California Historic Resource Information System	I-280	Interstate 280
CNDDDB	California Natural Diversity Database	ILI	In-line Inspection
CO	Carbon Monoxide	IS/MND	Initial Study / Mitigated Negative Declaration
CORP	California Outdoor Recreation Plan	KOP	Key observation points
CPUC	California Public Utility Commission	L-109	Gas Line 109
CRLF	California Red-legged Frog	L-132	Gas Line 132
CWA	Clean Water Act	Ldn	Average dBA occurring over a 24-hour period
dB	Decibels	Leqa	Given time period
dBA	A-weighted decibel scale	LOP	Limited Operating Period
DBH	Diameter at Breast Height	MBB	Mission Blue Butterfly
DFM	Distribution Feeder Main	MBTA	Migratory Bird Treaty Act

MND	Mitigated Negative Declaration	RWQCB	Regional Water Quality Control Board
MROSD	Midpeninsula Regional Open Space District		
		SAA	Streambed Alteration Agreement
NAAQS	National Ambient Air Quality Standards	SamTrans	San Mateo County Transit District
NAGPRA	Native American Graves Protection and Repatriation Act	SCADA	Supervisory Control and Data Acquisition
NAHC	Native American Heritage Commission	SFBAAB	San Francisco Bay Area Air Basin
NEPA	National Environmental Policy Act	SFB RWQCB	San Francisco Bay Regional Water Quality Control Board
NO ₂	Nitrogen Dioxide	SFGS	San Francisco Garter Snake
NO _x	Nitrogen Oxides	SFPUC	San Francisco Public Utilities Commission
NPDES	National Pollutant Discharge Elimination System	SFWD	San Francisco Water Department
NPS	National Park Service	SHMA	Seismic Hazards Mapping Act
NRCS	Natural Resource Conservation Service	SHPO	State Historic Preservation Office
NRHP	National Register of Historic Places	SO ₂	Sulfur Dioxide
NWP	Nationwide Permit	SR	State Route
O ₃	Ozone	SWPPP	Stormwater Pollution Prevention Plan
OGAL	Office of Grants and Local Services	SWRCB	State Water Resources Control Board
OHWM	Ordinary High Water mark	TCE	Temporary Construction Easement
OSHA	Occupational Safety and Health Administration	TCP	Traditional Cultural Properties
PCE	Primary Constituent Element	UNESCO	United Nations Educational, Scientific, and Cultural Organization
PEPC	NPS Planning, Environment, and Public Comment	USACE	U.S. Army Corps of Engineers
PG&E	Pacific Gas and Electric Company	USDOT	U.S. Department of Transportation
PM ₁₀	Particulate matter ten micrometers in diameter and smaller	USFWS	U.S. Fish and Wildlife Service
PM ₁₀	Suspended Particulate Matter	USGS	United States Geologic Survey
PM _{2.5}	Suspended Particulate Matter		
POTW	Publicly-owned Treatment Works	VOC	Volatile Organic Compounds
PSEP	PG&E's Pipeline Safety Enhancement Plan	Watershed	San Francisco Peninsula Watershed
ROW	Right-of-way		

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The Golden Gate National Recreation Area (GGNRA), a unit of the National Park Service (NPS), is considering the impacts of Pacific Gas and Electric Company's (PG&E) proposed Gas Line 109 Pipeline Replacement Project – San Francisco Peninsula Watershed (Watershed), Phase 2 (Project). The Project is located in the Watershed in San Mateo County, California and would entail the replacement of three segments of Gas Line 109 (L-109), i.e., the Cañada Road, the Bunker Hill, and the Crystal Springs segments, totaling approximately 4.7 miles of new pipeline. For construction and future maintenance of the new segments, the project would require approximately 37.3 acres of temporary construction easements and approximately 11.4 acres of permanent expansions of PG&E's existing easements.

The Watershed is owned by the City and County of San Francisco (CCSF) and managed by the San Francisco Public Utilities Commission (SFPUC). The GGNRA holds two easements—a Scenic and Recreation Easement and a Scenic Easement over the entire Watershed; these easements grant the GGNRA concurrence/approval authority for new construction projects, including construction outside of PG&E's existing utility easements within the Watershed. When approving development and construction as provided by both GGNRA easements, such approval constitutes a federal action under the National Environmental Policy Act (NEPA). The President's Council on Environmental Quality (CEQ) provides federal agency regulations, in this case the NPS, for reviewing and documenting the potential environmental effects of a proposed project prior to project approval and implementation.

For this Project, the NPS is the lead agency under NEPA; this environmental assessment (EA) has been prepared as required by the NPS Director's Order-12 (DO-12) and satisfies CEQ regulations by assessing potential environmental effects and issuing, if appropriate, a Finding of No Significant Impact (FONSI). The EA evaluates PG&E's Proposed Action Alternative and the No Action Alternative. Additionally, this document discusses alternatives that were considered but not analyzed, and provides justifications for their elimination. It is noted here that preparation of this EA was initiated prior to approval of the new 2015 DO-12 Handbook and therefore primarily follows NPS guidance under the 2001 DO-12. However, guidance provided by the new version has been incorporated into this EA where feasible.

1.1.1 Background

PG&E is in the process of upgrading, repairing, and, in some cases, re-aligning existing transmission gas pipelines throughout their system. The improvements are necessary to conduct inspections in accordance with a U.S. Department of Transportation (USDOT) mandate concerning pipeline integrity (Code of Federal Regulations [CFR] Title 49 Part 192, Subpart O). Additionally, the Project is required by the California Public Utility Commission (CPUC) General Order (GO) 112-E and the 2011 CPUC Decision Number 11-06-017.

Recently, the CPUC has authorized PG&E to take actions as part of PG&E's Pipeline Safety Enhancement Plan (PSEP) to improve reliability and facilitate future maintenance of its natural gas transmission pipelines. The CPUC has sole discretionary jurisdiction over the siting, design, construction, and operation of PG&E's natural gas pipeline facilities. In the case of this Project, the planned improvements would require work or pipeline replacement in areas outside of the previously approved easements in order to accommodate on-going operation and maintenance activities. Therefore, PG&E requests 11.4 acres of new easement for portions of this Project and is in the process of acquiring easements and authorizations from the CCSF.

The U.S. Department of the Interior (DOI) NPS GGNRA holds a Scenic Easement and a Scenic and Recreation Easement over lands in the Watershed. The Scenic and Recreation Easement was authorized January 15, 1969 and requires SFPUC to obtain concurrence/approval from the GGNRA for certain actions

that may affect the scenic and recreation resources, and that the activity—with agreed upon mitigation—is compatible with the purposes of these easements (GGNRA 2005).

As part of earlier 2012 gas line improvements, PG&E obtained approximately 5.6 acres of additional easement for efforts associated with automated valve lot upgrades and two pipeline segment replacements within the SPFUC watershed. Although all ground disturbance for the proposed activities associated with this current project proposal would be located within the Scenic and Recreation Easement, cumulatively, the Scenic Easement and the Scenic and Recreation easements would be affected by the proposed Project and the earlier gas line improvements.

1.1.2 Project Overview

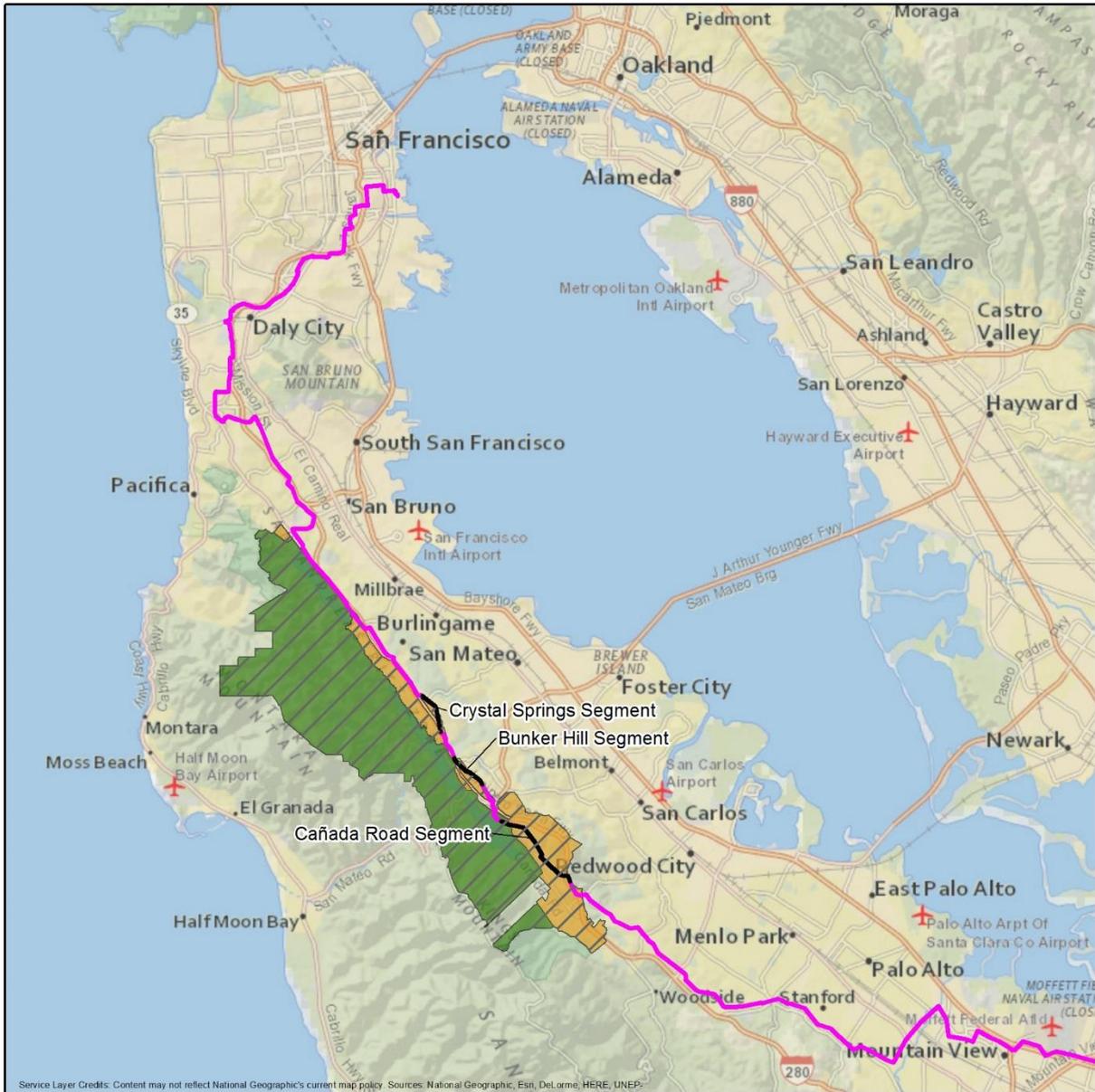
Pipeline improvement activities are planned for three L-109 segments within the SFPUC Peninsula Watershed: the Cañada Road, Bunker Hill, and Crystal Springs segments. Activities would involve replacing these segments, which would modernize the pipe and standardize pipe sizes to allow for the use of automated, in-line inspection tools. Currently, these tools are unusable due to variations in pipe diameter. Two segments, Cañada Road and Bunker Hill, require additional, permanent right-of-way (ROW) to adequately reconstruct the line, limit outage duration, and manage the line. The remaining segment, Crystal Springs, is planned for reconstruction within its existing ROW. A map depicting the location of all three Project segments is included below as Figure 1-1.

1.1.2.1 Cañada Road

Cañada Road, the southern-most segment, is composed of two 22-inch-diameter sub-segments—southern and northern—which would be replaced with new 24-inch-diameter pipe. The southern and northern sub-segments are separated by a small portion of L-109 (approximately 2,010 feet) that does not require replacement. The Cañada Road segment totals approximately 2.4 miles. To avoid three separate drainages, this segment would consist of two aerial spans and one underground pipeline. A horizontal directional drill (HDD) would be used to install the approximately 2,415-foot-long subsurface pipeline. Three original above-ground spans would be removed and the remaining pipe would be filled and abandoned in place. A map depicting the existing line and the affected areas is included below (Figure 1-2).

The southern sub-segment of the Cañada Road segment is approximately 0.9 mile long and begins 0.5 mile north of Edgewood Road and several hundred feet west-southwest of Interstate 280 (I-280); it continues west-northwest to its northern terminus located south of the Pulgas Water Balancing Reservoir. The northern sub-segment is approximately 1.5 miles long and begins north of the Pulgas Water Balancing Reservoir, paralleling Cañada Road to the east for approximately 1.2 miles. Near the existing overhead electric transmission lines, the northern Cañada Road sub-segment traverses north-northwest towards its terminus, approximately 0.9 mile south of the intersection of Cañada Road and State Route 92 (SR 92). The majority of the new pipeline for both the southern and northern sub-segments would be located adjacent and parallel to the existing L-109 with an offset of about five feet. However, the northernmost 1,900 feet (0.37 mile) of the northern replacement would be located outside the current corridor, including approximately 1,000 feet constructed along Cañada Road.

For both sub-segments of the Cañada Road segment, approximately 6.1 acres of disturbance would occur within existing permanent ROWs. PG&E is proposing the acquisition of approximately 6.3 acres of new permanent easement from the CCSF, and approximately 19.2 acres of temporary construction easement (TCE). The total work area for the Cañada Road segment would be approximately 31.6 acres. The additional ROW would allow safe and effective construction and future maintenance.



Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP.



0 5 Miles

Legend

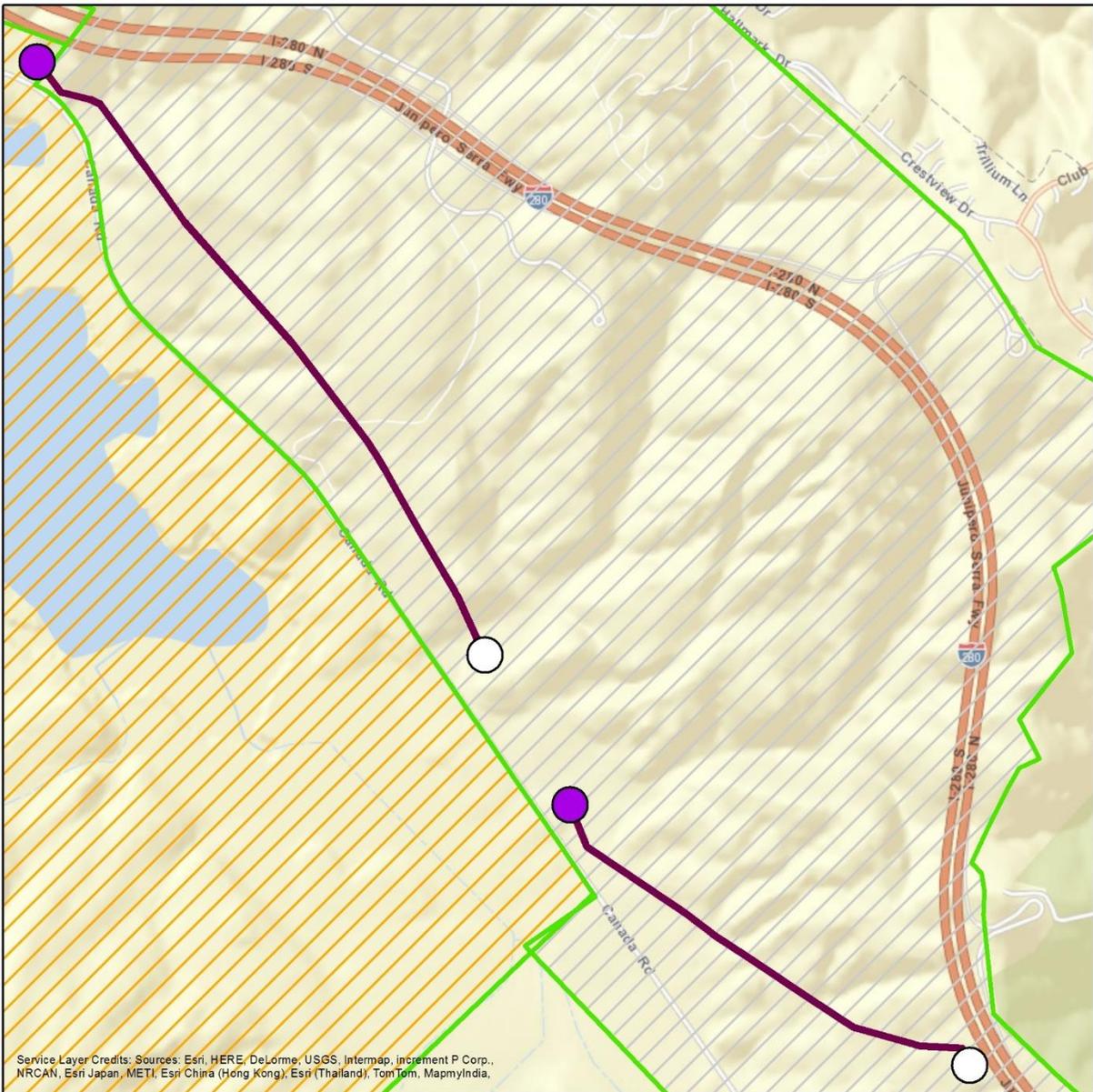
-  Project Segment
-  Gas Line 109
-  Peninsula Watershed
-  GGNRA Scenic Easement
-  GGNRA Scenic and Recreation Easement

Project Overview

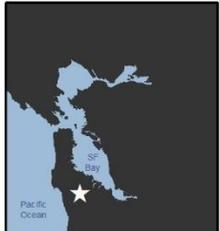
San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 1-1



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia,



0 2,000 Feet

Legend

-  Replacement Start
-  Replacement End
-  Cañada Road Segment
-  GGNRA Scenic Easement
-  GGNRA Scenic and Recreation Easement

Cañada Road Replacement Segment

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 1-2

1.1.2.2 Bunker Hill

The Bunker Hill segment is located a little over one mile north of the Cañada Road segment and would require the replacement of approximately 1.1 miles of L-109 pipeline. A map depicting the existing line and affected areas for this segment is included below (Figure 1-3). The existing pipeline at Bunker Hill has a 22-inch-diameter and would be replaced with new 24-inch-diameter pipe. With the exception of the two sections of the installation, the new Bunker Hill pipeline segment would be installed about five feet offset of the existing L-109 alignment. The existing pipe would be filled and abandoned in place.

The Bunker Hill segment begins at the Half Moon Bay Valve Lot located southwest of Lexington Avenue and White Plains Court and extends northwest roughly parallel along Highlands Fire Trail and crosses Bunker Hill Drive. To avoid open trenching through a rare plant community and Bunker Hill Drive, an HDD would be used to install 2,300 feet of pipeline underneath the road and approximately 42 feet off the current alignment. The segment continues northwest along an improved access road until its northern terminus, which is southwest of Laurel Hill Drive near a PG&E substation and I-280. At the northern end of the Bunker Hill segment, the proposed alignment would deviate from the current L-109 alignment for approximately 200 feet. This deviation would be required to avoid constraints associated with existing electric transmission towers, an electric substation, and I-280.

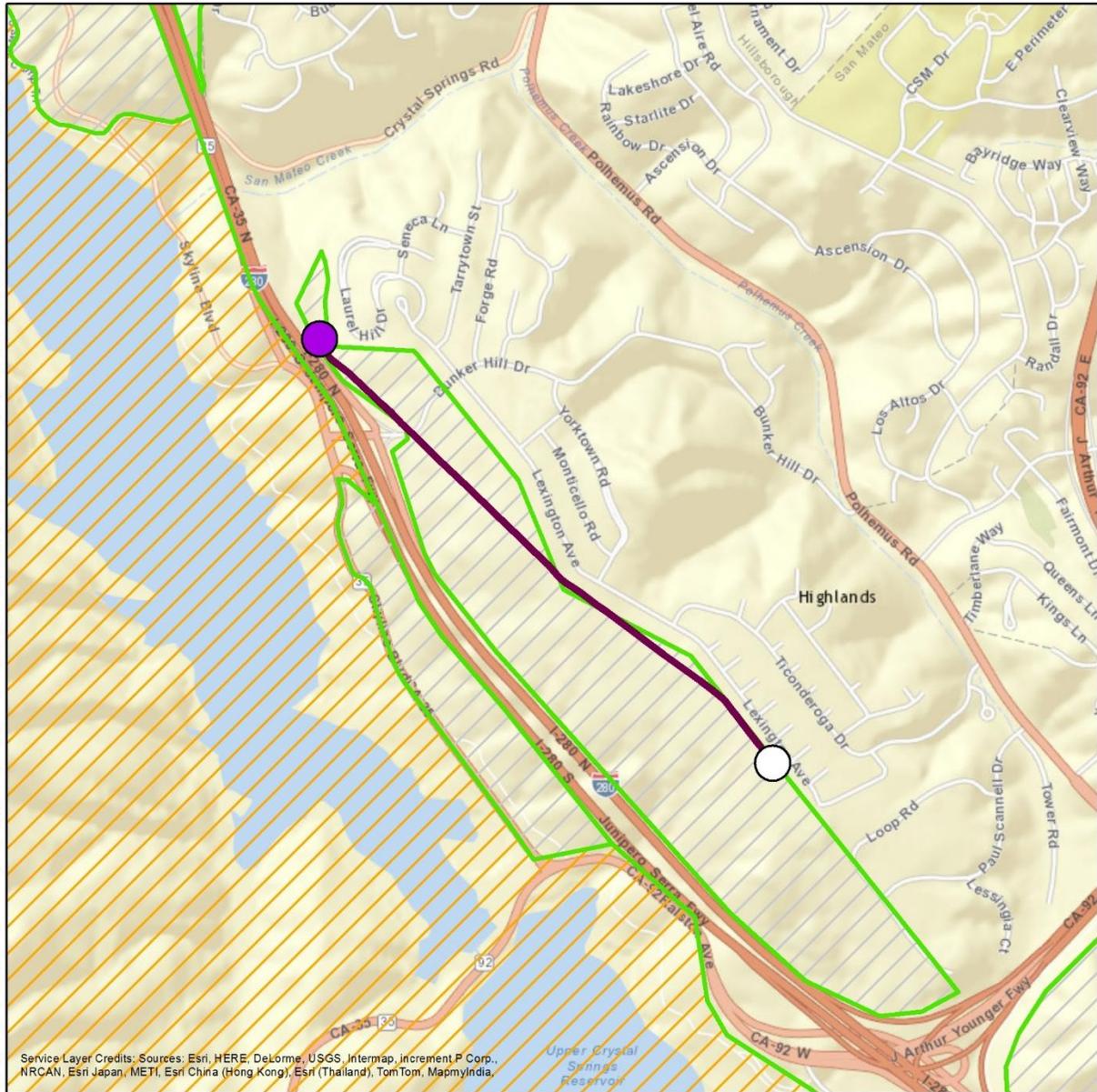
In addition to the existing L-109 easement, PG&E is proposing to acquire approximately 5.1 acres of new permanent easement and 7.1 acres of TCE from CCSF. The total work area for the Bunker Hill segment would be approximately 13.1 acres.

1.1.2.3 Crystal Springs

Crystal Springs, the northern-most segment, requires replacement within the existing ROW for a length of approximately 1.2 miles. A map depicting the existing line and affected areas for this segment is included below (Figure 1-4). The existing pipeline has a diameter of 22 inches. The new pipe is planned to vary between 24 and 30 inches in diameter. All original pipe would be removed.

The Crystal Springs segment is located approximately 0.9 mile northwest of the Bunker Hill segment; it begins approximately 0.2 mile north of where Crystal Springs Road crosses I-280 and parallels I-280 from north of Hayne Road to north of Lakeview Drive. It terminates north of Black Mountain Road and approximately 0.1 mile west of the intersection of Ralston Avenue and Darrel Road. Jack-and-bore techniques may be used within the Crystal Springs segment, east of the California Department of Transportation (Caltrans) Crystal Springs Safety Roadside Rest Area, to avoid trenching through the access road. To avoid trenching through Hayne Road and Black Mountain Road north of Hayne Road, the pipeline segment would be installed under the road using jack-and-bore techniques.

Construction is planned on 4.2 acres within the existing ROW and PG&E is proposing to acquire approximately 11.0 acres of TCE. PG&E is not requesting new permanent easement. The total work area for the Crystal Springs segment would be approximately 15.2 acres.



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia.



0 2,000 Feet

Legend

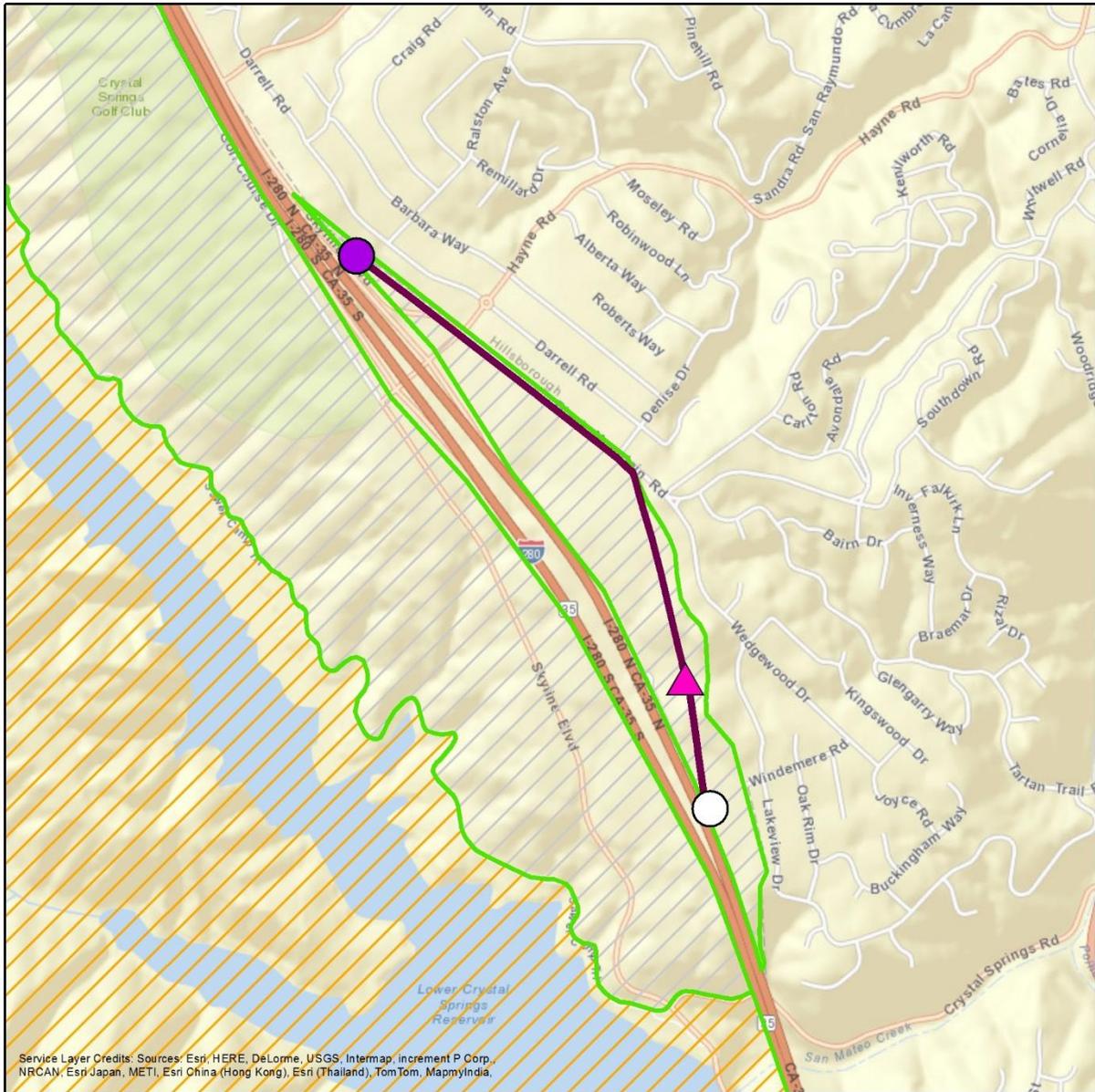
-  Replacement Start
-  Replacement End
-  Bunker Hill Segment
-  GGNRA Scenic Easement
-  GGNRA Scenic and Recreation Easement

Bunker Hill Replacement Segment

San Francisco Peninsula Watershed Gas Line 109 Replacement Project

Figure 1-3





Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia.



0 2,000 Feet

Legend

-  Crystal Springs Valve Lot
-  Replacement Start
-  Replacement End
-  Crystal Springs Segment
-  GGNRA Scenic Easement
-  GGNRA Scenic and Recreation Easement

Crystal Springs Replacement Segment

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 1-4

1.2 PROJECT HISTORY

Provided below is a summary of past events affecting the project.

- 1932: L-109 installed serving customers located on the San Francisco Peninsula with natural gas.
- 1932–Current: PG&E continues regular operations and maintenance activities on L-109.
- 1969: CCSF grants two easements over the Watershed lands to the DOI. The approximately 19,000-acre Scenic Easement covers lands generally west of Crystal Springs and San Andreas reservoirs. The approximately 4,000-acre Scenic and Recreation Easement pertains to lands generally east of the Crystal Springs and San Andreas reservoirs. These easements place restrictive covenants on non-water related construction projects within the Watershed
- 1972: GGNRA is established.
- 1980: Congress transfers administrative responsibility of the Scenic Easement and the Scenic and Recreation Easement to the NPS/GGNRA from the DOI Bureau of Outdoor Recreation. The Easements have a number of binding restrictions, covenants, conditions, reservations, and exceptions for certain activities within the Watershed, including NPS/GGNRA concurrence/approval authority for these activities.
- 2011: PG&E files the PSEP with CPUC.
- 2011: PG&E initiates the first phase of the PSEP.
- 2012: The CPUC approves the PG&E PSEP.
- 2014: Golden Gate National Recreation Area Muir Woods National Monument Final General Management Plan/Environmental Impact Statement (EIS)/Record of Decision (1/2015).

1.3 PURPOSE AND NEED

The purpose of the Project is to upgrade and replace existing transmission gas pipeline segments in PG&E's gas system as part of their modernization and safety program. Specifically, these activities require the replacement of aging infrastructure and the standardization of pipe sizes in order to accommodate automated, in-line pipe inspection tools. The three L-109 segments requiring replacement – Cañada Road, Bunker Hill, and Crystal Springs – contain pipe which was installed in 1932 and is a diameter that prohibits PG&E's ability to operate automated in-line inspection (ILI) gauges and other inspection/integrity management tools. The Project would increase the reliability and integrity of the natural gas delivery system in the state of California and ensure reliable delivery to PG&E customers located on the San Francisco Peninsula.

The Project is required by CFR 192, Subpart O, which codifies "Gas Transmission Pipeline Integrity Management" in the United States. Additionally, the Project is required by the State of California pursuant to the CPUC GO 112-E and the 2011 CPUC Decision Number 11-06-017. The CPUC has directed PG&E to complete these improvements as required by the PSEP.

Replacing the lines in their current alignment for the Cañada Road and Bunker Hill segments was considered infeasible or carried an unreasonable risk to the gas system due to required length of L-109 outage duration for replace-in-place construction. Therefore, new easements are necessary for the Cañada Road and Bunker Hill segments, which require authorizations from CCSF and GGNRA.

1.4 OBJECTIVES IN TAKING ACTION

Objectives for the Project include the following:

- Replace necessary segments of pipeline and standardize pipe diameters
- Increase reliability and integrity of natural gas delivery system

- Allow for the use of automated ILI devices within L-109
- Complete proposed Project replacements with minimal disruption and impact to natural environment
- Site proposed Project segments in a manner that minimizes impact to natural environment

1.5 APPLICABLE LAWS, POLICIES, AND PREVIOUS PLANNING EFFORTS

As noted in Section 1.1 above, PG&E’s proposed project within the Watershed requires federal environmental review and documentation, as provided by NPS concurrence authority granted in both GGNRA easements. Therefore, this EA was prepared pursuant to the NEPA of 1969 (42 U.S.C. 4341 et seq.), as amended in 1975 by P.L. 94-52 and P.L. 94.83. Additional guidance includes NPS Director’s Order 12 (DO 12), which implements Section 102(2) of NEPA, and the regulations established by the CEQ (40 CFR 1500-1508).

The following is a summary of several relevant guidance documents and regulations and a description of their relationship to the proposed Project. Other applicable regulations, plans, and standards that this EA considers in assessing potential environmental impacts are located within the descriptions and analysis of individual environmental resources in Chapter 3.

1.5.1 National Park Service Organic Act

The NPS Organic Act mandates that the NPS manage its units “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner as will leave them unimpaired for the enjoyment of future generations” (16 U.S.C. § 1). Congress has reaffirmed to the NPS that, “The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specially provided by Congress” (16 U.S.C. § 1 a-1).

1.5.2 NPS Management Policies (2006)

NPS Management Policies provide guidance in this EA that the analysis of potential effects of the Proposed Action, as granted by the Scenic and Recreation Easement, evaluates the particular resources and values that would be affected in the Easement and seeks ways to avoid or minimize, to the greatest degree practicable, any adverse resource impacts.

1.5.3 GGNRA Enabling Legislation – 1972

The United States Congress established GGNRA in 1972 to ensure those areas “possessing outstanding natural, historic, scenic, and recreation values, and recreational values, and in or to provide for the maintenance of needed recreational open space necessary to urban environment and planning.” Resources within the GGNRA are to be managed so as to “utilize the resources in a manner which will provide for recreation and education opportunities consistent with sound principles of land use planning and management” (Pub.L. 92-589, § 1, Oct. 27, 1972, 86 Stat. 1299).

1.5.4 GGNRA GMP – 2014

The 2014 GGNRA GMP, the guiding document for the park, and its corresponding EIS were reviewed during the development of this EA. The SFPUC Watershed has been specifically addressed in the updated GMP with NPS management responsibility over the Watershed limited to administration of the easements. The NPS has identified the actions below as those which the agency will encourage or promote:

- Coordination with SFPUC to administer the easements in a manner consistent with easement goals and restrictions
- Preservation while providing improved public access where appropriate
- Preservation of the natural, cultural, scenic, and recreation values of the watershed with the help of SFPUC
- Encourage construction of new multiuse trail connections through Peninsula Watershed lands between Cañada Road and Skyline Boulevard north of Phleger Estate
- In conjunction with the Caltrans and SFPUC, promote preservation of scenic views from I-280 vista points and scenic overlooks
- Coordination with SFPUC to create a watershed visitor center near Pulgas Water Temple on Cañada Road

1.5.5 NPS Director’s Order 12 and Handbook

This EA analyzes the context, duration, and intensity of potential impacts associated with the proposed Project as set forth in the policies and procedures for complying with NEPA as guided by NPS Director’s Order-12 (DO-12) and the 2015 NPS NEPA Handbook.

1.5.6 Peninsula Watershed Management Plan - 2002

All Project segments traverse CCSF lands managed by the SFPUC for the production, collection, and storage or drinking water for the CCSF and other customers. The Peninsula Watershed Management Plan provides a policy framework for the regulation of activities on Watershed lands. The Watershed encompasses approximately 23,000 acres of the San Francisco Peninsula within San Mateo County and includes four reservoirs: Upper Crystal Springs, Lower Crystal Springs, San Andreas Lake, and Pilarcitos.

Policies established by the SFPUC in the Management Plan were identified as having relevance to the Project. These policies are described in Chapter 3 of this EA within relevant resource sections.

1.5.7 Additional Federal Laws, Executive Orders, and Regulations Affecting GGGNRA

- American Indian Religious Freedom Act
- Antiquities Act
- Archaeological and Historical Preservation Act
- Archeological Resources Protection Act
- Clean Air Act
- Clean Water Act
- Compensation and Liability of 1980
- Endangered Species Act
- Federal Noxious Weed Act 1974
- Federal Water Pollution Control Act
- Migratory Bird Treaty Act
- National Environmental Policy Act
- Native American Graves Protection and Repatriation Act 1990
- National Historic Preservation Act
- Noise Control Act of 1972
- Pollution Prevention Act of 1990
- Resource Conservation and Recovery Act of 1976

- Safe Drinking Water Act 1974
- EO 13186—Responsibilities of Federal Agencies To Protect Migratory Birds (January 10, 2001)
- EO 13175—Consultation and Coordination With Indian Tribal Governments (November 6, 2000)
- EO 13112—Invasive Species (February 3, 1999). Amended by EO 13286 (February 28, 2003)
- EO 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). Amended by EO 12948 (January 30, 1995)
- EO 11990—Protection of Wetlands (May 24, 1977), amended by EO 12608 (September 9, 1987) (52 FR 34617 [September 14, 1987])
- EO 11988—Floodplain Management (May 24, 1977), amended by EO 12148 (July 20, 1979) (44 FR 43239 [July 24, 1979])
- EO 11514—Protection and Enhancement of Environmental Quality (March 1970) as amended by EO 11541 (July 1, 1970) (35 FR 10737; July 2, 1970) and EO 11991 (May 24, 1977) (42 FR 26967; May 25, 1977)

1.6 PERMITS, LICENSES, AND ENTITLEMENTS

L-109, which currently exists on CCSF property managed by the SFPUC, was authorized in 1932 with an easement by and between the CCSF and PG&E. The L-109 ROW easement grants PG&E the right to “construct, reconstruct, install, maintain, patrol, repair, renew, operate and use” (PG&E 1932). The L-109 ROW easement predates the GGNRA Scenic and Scenic and Recreation Easements, but do not predate the Watershed.

Both the Scenic Easement and the Scenic and Recreation Easement were authorized January 15, 1969 “by and between the City and County of San Francisco, a municipal corporation, Grantor, and the United States of America, Grantee and with the approval and concurrence of the State of California, acting by and through the Department of Public Works, and the County of San Mateo” (CCSF 1969). Both easements are nearly identical; however, unlike the Scenic and Recreation Easement, the Scenic Easement does not permit controlled recreation within approximately 19,000 acres of the Watershed. The Scenic and Recreation Easement states the following:

- That “the land shall be preserved in its present natural state and shall not be used for any purpose other than for the collection, storage and transmission of water and protection of water quality; outdoor recreation; ecological preservation and other purposes, which shall be compatible with preserving said land as open-space land for public use and enjoyment.”
- That the land is preserved “in its natural condition to the maximum extent possible consistent with operations and activities carried on and to be carried on.”
- That the property be “devoted in order to discourage conversion of such land to urban use, recognizing that such land has substantial public value as open-space land and that the preservation of the land in its present open state constitutes an important physical, social, aesthetic and economic asset.”
- That “no structures shall be erected upon said land except such structures as may be directly related to and compatible with the aforesaid uses. No trailer shall here-after be placed, used or maintained on said land as a substitute for a caretaker’s residential building. The design and location of all buildings, except water utilities buildings and appurtenances, shall be subject to the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.”
- That “no signs, billboards or advertisements, excepting directional signs and identification signs in connection with permitted uses, shall be displayed or placed upon the land.”

- That “except as to encroachments presently permitted and renewals thereof, Grantor shall not permit further encroachments of any kind or nature upon said property by any adjoining property owner...unless authorized by a regional representative of the Department of the Interior.”
- That the “general topography of the landscape shall be maintained in its present condition and no substantial excavation or topographic changes shall be made without the concurrence of a regional-representative of the Department of the Interior.”
- That “there shall be no cutting or permitting of cutting, destroying or removing any timber or brush without the concurrence in writing by a regional representative of the Department of the Interior.”
- That the “perpetual right to use the below-described premises for purposes which they may find necessary or desirable for their water or other utility operations as now or hereafter conducted, including without limiting the generality of the foregoing the right to construct, maintain, repair expand and reconstruct buildings (including caretakers’ cottages), storage facilities, reservoirs, pipe systems, cable systems, flumes, head walls, retention walls, bulkheads, cofferdams, pumphouse, dikes, roadways, public utilities and similar improvements.”

Concurrence/approval from GGNRA for actions on the Watershed which may affect the L-109 easement is required.

1.7 SCOPING

Issues and concerns pertaining to the proposed Project were identified through input from individuals; organizations; local, state, and federal agencies; and NPS public scoping activities. On August 14, 2014 GGNRA initiated a 15-day public scoping period, until August 29, 2014. Comments submitted to the San Francisco Planning Department, pursuant to the California Environmental Quality Act (CEQA) analysis for the Project, have also been considered by the NPS in preparation of this EA. A summary of the scoping process is provided in Chapter 4.

1.8 ISSUES AND IMPACT TOPICS

Issues are related to potential environmental effects of project alternatives and were identified by the Project interdisciplinary team. Once issues were identified, they were used to help formulate the alternatives and mitigation measures. Impact topics based on substantive issues, environmental statutes, regulations, and EOs were selected for detailed analysis. A summary of the impact topics and rationale for their inclusion or dismissal is given below.

1.8.1 Issues and Impact Topics Identified For Further Analysis

Issues and concerns affecting the proposed Project were identified through input from individuals, organizations, federal agencies, and NPS public scoping efforts. The proposed Project was evaluated under GGNRA’s Project Review process which included internal scoping with staff. The NPS also conducted public scoping (see Chapter 4 for a description of the scoping process). The following relevant impact topics are analyzed in the EA.

- Land Use
- Biological Resources
- Cultural Resources
- Visual Resources
- Visitor Use and Experience
- Air Quality
- Water Resources
- Geology, Mineral Resources, and Soils

- Soundscapes
- Transportation and Utilities
- Socioeconomics and Environmental Justice
- Visitor Health and Safety

1.8.2 Issues and Impact Topics Considered But Dismissed From Further Consideration

As required under NPS DO-12 (2001), this analysis must address 12 mandatory topics. Listed below are the topics that must be addressed followed by a discussion on whether they are relevant to the proposed Project.

- Conflict with land use plans, policies, or controls*—Land use is addressed in Chapter 3 Section 3.6.
- Energy requirements and conservation potential*—PG&E plans on sequencing the construction of the replacement segments to ensure that minimal interruptions of utilities occur.
- Natural or depletable resource requirements and conservation potential*—The project would place few additional demands on local or regional water, wastewater, soils disposal, and waste disposal.
- Urban quality, historic, and cultural resources*—There are no federal, state, or local regulations, plans, or standards related to socioeconomics that are directly applicable to the proposed Project. There will be no impact to urban quality because the Project will not:
 - induce substantial population growth in an area;
 - create a significant demand for labor; or
 - displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

Effects on archeological sites, burials, and other cultural resources have been addressed in the Cultural Resources section of Chapter 3, Section 3.7.

- Socially or economically disadvantaged populations*—Socioeconomics and Environmental Justice is discussed in Chapter 3, Section 3.15.
- Wetlands and floodplains*—Wetlands, floodplains, and water resources are discussed in Chapter 3, Section 3.11.
- Prime or unique agricultural lands*—All land in the project area is preserved for water quality and is not zoned for agricultural use.
- Endangered, threatened, or proposed plants and animals*—All special status species plant and animal species (defined as federally and state threatened and endangered, state species of special concern, and state fully protected) with the potential to be affected by the Project and have the potential to occur in the project area have been evaluated for impacts in Chapter 3, Section 3.17 under Biological Resources.
- Important scientific, archaeological, and other cultural resources, including historic properties listed or eligible for the National Register of Historic Places (NRHP)*—Cultural Resources is discussed in Chapter 3, Section 3.7.
- Ecologically critical areas, Wild and Scenic Rivers, or other unique natural resources*—There are no Wild or Scenic Rivers in the Watershed. However, there are SFPUC-identified Potential Crystal Springs Fountain Thistle Mitigation Areas in the Watershed, of which, three are located within or near the Project vicinity. Impacts to biological resources including the Potential Crystal Springs Fountain Thistle Mitigation Areas are addressed in Chapter 3, Section 3.17.
- Public health and safety*—Public health and safety is discussed in Chapter 3 Section 3.16.

- 1) *Sacred sites*—No sacred sites, as defined by EO 13007, have been identified in the Project vicinity. This is addressed in Chapter 3, Section 3.7 under Cultural Resources.

1.9 INCORPORATION BY REFERENCE

“Agencies shall incorporate material into an [EA or EIS] by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment” (40 CFR 1502.21).

Incorporation by reference has been used throughout this EA to aid in the presentation of issues, eliminate repetition, and reduce the size of the document. This EA relies heavily on information in the *PG&E Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project Initial Study/ Mitigated Negative Declaration* (IS/MND). PG&E gave NPS permission to use information from the IS/MND in the development of the EA. The IS/MND is available for public review during normal business hours at the CCSF Planning Department at 1650 Mission Street, Suite 400, San Francisco, CA 94103-2479.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

Under the Proposed Action Alternative, PG&E proposes to replace three Project segments within the NPS Scenic and Recreation Easement of the San Francisco Peninsula Watershed.

PG&E would replace the three pipeline segments by:

- Installing approximately 4.7 miles of new 24 and 30-inch-diameter pipe
- Using a combination of construction methods that, where appropriate, include open trench, HDD, and jack and bore
- Using conventional track-mounted excavators and trenching equipment for open trench construction
- Stringing pipe for extended distances that require trucking lengths of pipe to the site and positioning them along the trench with a crane or side boom
- Filling trench bottoms with fine-grained material, such as native soil, typically to a depth of 12 inches, to provide a bedding for the pipe
- Installing trench breakers approximately every 25 to 100 feet within trenches
- Spanning two drainages
- Horizontal directional drilling underneath one drainage and underneath one biologically sensitive area
- Trenching six drainages and re-grading to pre-construction conditions
- Backfilling excavated subsoil into the trench and re-grading to pre-construction conditions
- Constructing the northernmost portion of the Cañada Road segment within Cañada Road (approximately 1,900 feet)
- Occasionally closing road lanes for pipeline installation and Project site access
- Using existing SFPUC access roads whenever feasible
- Constructing one additional temporary access road (approximately 670 feet long) roughly one mile south of the SR 92 / Cañada Road intersection

Actions associated with each segment of the Project are discussed below.

2.1.1 Cañada Road Segment

- PG&E is requesting acquisition of approximately 6.3 acres of new permanent easement from CCSF for a total pipe replacement length of approximately 2.4 miles
- PG&E is requesting approximately 19.2 acres of TCE from CCSF
- PG&E is requesting a total work area of approximately 31.6 acres from CCSF

2.1.2 Bunker Hill Segment

- PG&E is requesting acquisition of approximately 5.1 acres of new permanent easement from CCSF for a total pipe replacement length of approximately 1.1 miles
- PG&E is requesting approximately 7.1 acres of TCE from CCSF
- PG&E is requesting a total work area of approximately 13.1 acres from CCSF

2.1.3 Crystal Springs Segment

- PG&E is not requesting new permanent easement from CCSF for the replacement of the 1.2 mile Crystal Springs segment (PG&E would utilize approximately 4.2 acres of existing L-109 easement during construction)
- PG&E is requesting approximately 11 acres of TCE from CCSF
- PG&E is requesting a total work area of approximately 15.2 acres from CCSF

2.2 PROJECT ACTIVITIES

2.2.1 Pipeline Replacement Procedure

The gas pipeline would be replaced primarily by direct burial in an open trench. When installing the pipeline using open trench methods, the pipeline would be constructed within the TCE along or adjacent to the existing route.

In addition to the use of open trench, HDD, jack and bore, and aerial span construction techniques, other temporary construction activities would include potholing, benching and leveling, stringing and welding, hydrostatic testing, venting and tie-in, and site restoration. In total, approximately 4.7 miles of existing pipeline would be retired. To minimize disturbance, retired pipe would be cleaned, capped, and left in place; however, the Crystal Springs segment and three above ground spans located on the Cañada Road segment would be removed. On the three spans removed from the Cañada Road segment, the ends of the existing pipe would be cut off below the surface and capped, and the surface would be restored. Two other aerial spans on this segment would be retired in place. Major construction equipment would typically include trackhoes, backhoes, side-booms, an HDD drill rig, water trucks, a bulldozer, a grader, welding rigs, and dump trucks.

As part of the pipeline replacement, 12 electrolysis test stations would be installed at approximately half-mile intervals along the new pipeline segments. The electrolysis test stations would be used to locate and assist in corrosion testing of the underground pipeline. The test stations are composed of metal pipes that measure approximately six inches in diameter and rise approximately four feet from the ground (CCSF 2014). Four electrolysis test stations would be installed on the Cañada Road segment: two on the Bunker Hill segment, and four on the Crystal Springs segment.

Construction of the proposed project is scheduled to occur from April 2016 through July 2017. Construction activities would typically occur between the hours of 7:00 a.m. and 5:30 p.m., Monday through Saturday. It is possible that HDD activities could occur during one night at each HDD location, because some portions of the HDD work must be performed continuously. However, it is not anticipated that this would be required. In the case of an emergency condition (e.g., if the drill becomes stuck or if drilling is progressing slower than expected) it is possible that HDD activities may be prolonged into the evening and night time hours. No work would be performed on Sundays.

Components involved in the pipeline replacement procedure are discussed below.

2.2.2 Site Preparation

Clearing and grading operations involve preparing the 85-foot-wide construction work area, including removing vegetation and debris and preparing access roads. Along the Cañada Road segment, approximately 490 trees and approximately 2,975 units of brush would be removed. The Bunker Hill segment would require the removal of approximately 64 trees and approximately 722 units of brush. The Crystal Springs segment would require the removal of 309 trees and approximately 85 brush units (defined as an area 4 feet by 4 feet by 4 feet) for construction. Up to 59.9 acres of land would be cleared and graded

for site preparation; of the 59.9 acres, 37.3 acres would be within TCEs, 11.2 acres would be within existing permanent easements, and 11.4 acres would be within new permanent easements. Topsoil would typically be stripped and salvaged from the entire construction corridor width, including staging areas. When heavy weed infestation is present in the topsoil, the topsoil may not be reused and would be hauled off-site. Areas disturbed by construction would be restored to native grassland in grassland areas; however, in riparian and brushy areas, trees and brush would not be allowed to revegetate within 5 feet and 10 feet of either side of the pipeline centerline, for a 10 to 20-foot-wide area. This 10 to 20-foot-wide buffer would allow for pipeline inspection and would protect the pipe by creating root-free areas up to 10 feet to either side of the pipeline centerline. A site-specific Vegetation Restoration Plan would be developed in coordination with the SFPUC and the appropriate resource agencies.

Prior to soil disturbance, erosion and sediment control best management practices (BMPs) would be reviewed. Required physical erosion and sediment control devices would be installed and maintained throughout construction to contain excavated material within approved TCEs on an as-needed basis. A project-specific Stormwater Pollution Prevention Plan (SWPPP) or amendment to an existing SWPPP would be prepared as appropriate.

2.2.3 Potholing

The precise location of L-109 and nearby Gas Line 132 (L-132) would be determined by digging small potholes prior to the pipe installation. Data gathered from these holes would be used to determine the appropriate weight capacity that the lines could withstand from vehicles and equipment traveling over the pipes during construction.

2.2.4 Open Cut Trenching

Trench excavation would be accomplished with conventional track-mounted excavators and trenching equipment. Excavated subsoil would be piled separately from the topsoil and used to backfill the trench after pipe installation. Trenches would be excavated to a depth of approximately 6.5 to 8 feet to allow for a minimum of 4 to 5 feet of coverage on top of the pipe. Typical trench width would be 4 to 6 feet. To minimize voids in the soil and to prevent water from being transported down the pipeline trench, altering the native hydrological conditions of the site, trench breakers would be placed every 25 to 100 feet along the bottom of the trench. When not in roadways, work areas would be fenced and trenches left open; bank sloping measures would be installed at the end of each day's trenching activities to allow for wildlife to exit the trench. Trenches would be inspected prior to resuming work each morning to ensure that no wildlife is inside the trench. An approximately 12-inch-deep bed of fine-grained native soil would be laid along the bottom of the trench to form a pipe bed. After laying the pipe on top of this soil, the trenches would be backfilled using select excavated soil that meets PG&E's backfilling requirements; all topsoil would be replaced and the grade would be returned to as close to original condition as feasible. Tracked construction equipment and water would be used to minimize future settling.

2.2.5 Stringing

During the stringing process, individual sections of pipe (joints) would be trucked to the segments and arranged parallel to the centerline of the trench with a crane or side boom in preparation for welding, leaving gaps between joints as needed for access. In locations with uneven terrain, a mechanized pipe-bending machine would bend the pipe to match the natural contour of the land. Stringing would occur within the prepared TCE, adjacent to the open trench. Following assembly of the pipeline segments, they would be welded together into longer spans. Welds would be visually and radiographically inspected by a qualified welding inspector and certified radiographer to verify that they meet federal regulations (49 CFR 192.241), gas industry standards (Section 9 of American Petroleum Institute Standard 1104), and utility standards (D-40, Weld Inspection).

2.2.6 Pipe Installation

In accordance with PG&E standards, pipes would be coated with an abrasion-resistant, fusion-bonded epoxy used to protect pipes, piping connections, and valves from corrosion; the pipes would be tested electronically to confirm proper coating. Any defects would be repaired before lowering the pipe into the trench. An approximately 12-inch-deep bed of fine-grained native soil would be placed at the bottom of the trench to form the pipe bed. Welded pipe segments would be lowered into the trench by side boom tractors and placed on top of the bedding. Before, during, and after installation of the pipeline, inspections would be conducted to ensure that proper trench depth is maintained, pipe lengths are shaped to match trench bends, bedding contains no damaging debris, and the external coating has not been damaged.

2.2.7 Backfilling

Within 72 hours of pipe installation, the backfilling process would begin. Prior to initiating backfilling activities, the trench would be visually inspected for wildlife by a biological monitor, after which excavated subsoil would be placed over the pipe and topsoil spread to return surfaces to original grade or as close as feasible. Specifically, the trench would be backfilled with stockpiled native material to a depth of 12 inches above the pipe. A minimum of 3 feet of stockpiled material would then be used to backfill the remaining void in the trench. The new pipeline would be backfilled to maintain a typical minimum of four to five feet of cover over the top of the pipe. If additional subsoil is required to replace unsuitable soil, other materials would be obtained from PG&E-approved sites. Excess soil would be spread on temporary work areas or hauled off-site. A civil engineer would determine compaction requirements for soil restoration and all disturbed sites would be restored to original grade, with allowance for subsequent subsidence according to soil texture, coarse fragment content, and relative compaction. Backfill would be compacted to protect the stability of the pipe and minimize settling.

2.2.8 Drainage Crossings

The Cañada Road segment would cross a total of six ephemeral drainages; three drainages trenched through, two drainages spanned aerially, and one drainage crossed under using an HDD. Three dry urban drainage swales, which would be trenched, were identified in the Crystal Springs segment area.

2.2.9 Horizontal Directional Drilling

One approximately 2,415-foot-long HDD would be used on the Cañada Road segment; it would cross approximately 50 feet under an ephemeral drainage. One approximately 2,300-foot-long HDD would be used on the Bunker Hill segment.

The two HDDs would require four approximately 200-foot by 300-foot staging areas located at the entry and exit points of the drill. The HDDs would be brought on site with a semi-truck and would require a drilling machine, a small crane, a water truck, and an excavator. Prior to drilling, the laid-out pipe segments would be strung within the temporary work area. After equipment mobilization, an angled drill, entering from the surface, would create the pilot bore. Once the pilot bore is complete the pipe would be pulled through the bore hole.

Drilling fluids resulting from the HDD operation would be appropriately stored and disposed. The site would be restored to pre-construction condition, as feasible, according to a site-specific erosion control and grading plan.

2.2.10 Aerial Spans

To minimize environmental disturbance, two drainages intersecting the Cañada Road segment would be crossed by installing aerial spans. The area on either side of the drainages above the ordinary high water

mark would be cleared of trees within an 85-foot construction width and a site-specific plan would detail drainage bed protection measures. The pre-welded and coated pipe segments would be raised from the northern side of the drainage using a crane operating within a 50-square-foot leveled surface area, lowered onto benching on both sides of the drainage, and welded to the new pipes approaching the drainage. Pipe welds would be inspected and coated in accordance with PG&E standards.

On the existing Cañada Road segment, there are currently five aerial spans, three of which would be removed. At these three locations, the existing pipe would be cut and capped below grade and removed. Work areas would be restored in accordance with the site-specific erosion control and grading plan. The two other locations, which are the northern-most above-ground spans, would be cleaned, capped, and left in place.

2.2.11 Hydrostatic Testing

Hydrostatic testing is the industry standard for testing the maximum operating pressure and integrity of gas pipelines. Prior to being pressurized with gas, the new segments would be filled with locally sourced water and slowly pressurized to protocol. The hydrostatic test would verify that the pipeline is safe to operate at its maximum allowable operating pressure. After the target pressure has been obtained for a specified period of time, the used water would be put in tanks or trucks and hauled off-site for appropriate disposal. Pipe segments would be dried using compressed air or an ILI gauge.

2.2.12 Venting

Venting is a process to release pressurized natural gas from the pipeline by venting it into the atmosphere. Venting would occur prior to tying in the new segments with the existing pipe.

2.2.13 Tie-In

Prior to tie-in, the entire pipeline section would be purged with nitrogen followed by natural gas to test permeability. Following this test, valves would be opened and the pipeline would be pressurized.

2.2.14 Existing Aerial Span Removal

To minimize disturbance, the majority of the retired pipe would be cleaned, filled, capped, and left in place, with the exception of the existing above-ground spans and most of the Crystal Springs underground pipeline segment. Equipment required for removal of existing spans would include two cranes, two welding trucks, and a flatbed trailer. The cranes would provide support to the existing span while the pipe is being cut. The removed span would be cut into smaller pieces for removal from the site on a flatbed trailer. Where required, PG&E would install temporary scaffolding to support the removal process.

2.2.15 Site Restoration

After the new segments have been placed, tested, pressurized, and the existing segments deactivated, all disturbed areas would be graded and restored to pre-construction conditions. In grassland areas, the disturbed areas would be restored to native grassland. To protect pipeline integrity and allow for pipeline inspection, the area within five to ten feet on either side of the centerline of the pipe would be kept clear of trees and brush in riparian and brushy areas.

All construction material and debris would be disposed of at an approved landfill facility. A post-construction erosion control and vegetation restoration plan would be developed to guide restoration activities in environmentally sensitive areas. This plan would provide discussions of soil composition, local native seed collection and distribution, erosion control, and monitoring.

2.2.16 Access

Construction traffic for the Project would be restricted to approved roads.

2.2.16.1 Cañada Road Segment

Primary access to the Cañada Road segment would be from Cañada Road and along existing access routes with one new access point near the northern end of the segment. Crews would access the southern end of the segment at the access gate near the Edgewood Crossover Station located west of the southbound I-280 off-ramp to Edgewood Road. The Cañada Road segment would require construction of a temporary access road. The road would start approximately one mile south of the SR 92 and Cañada Road intersection.

2.2.16.2 Bunker Hill Segment

Crews would access the southern end of the Bunker Hill segment from a gate near Lexington Avenue and Allegheny Way. The northern access point would be from a gate on the north side of Bunker Hill Drive. The Bunker Hill segment would not require new access roads.

2.2.16.3 Crystal Springs Segment

Crews would access the Crystal Springs segment from a gate on the east side of Hayne Road and from a gate at the Caltrans Crystal Springs Roadside Safety Rest Area. No new access roads would be required for the Crystal Springs segment.

2.2.17 Ground Disturbance

Construction of the three segments would cause temporary and permanent ground disturbance; all ground disturbance would be limited to the total authorized work area, which includes the TCE, permanent easement, and public ROWs.

Temporary ground disturbance is defined as disturbance occurring only during construction and in association with certain maintenance activities. Permanent ground disturbance is defined as disturbance occurring over the duration of the Project.

Disturbance calculations for each segment are provided in Table 2-1.

TABLE 2-1 PROJECT SEGMENTS						
Project Segments	Open Trench (acres)	HDD Equipment Areas (acres)	Total Authorized Work Area (acres)	Total Temporary Construction Easement (acres)	Total Permanent Easement Disturbance (acres)	Total New Permanent Easement Disturbance (acres)
Cañada Road	1.6	0.2	31.6	19.2	12.4	6.3
Bunker Hill	0.5	0.2	13.1	7.1	6	5.1
Crystal Springs	0.9	0.0	15.2	11	4.2	0.0
Total Project Disturbance (acres)	3.0	0.4	59.9	37.3	22.6	11.4

2.3 NO ACTION ALTERNATIVE

CEQ regulations require consideration of the No Action Alternative to establish a baseline against which the Proposed Action Alternative and other alternatives can be compared. Under the No Action Alternative, the proposed pipeline replacements would not occur. Implementation of the No Action Alternative would result in no additional ROW acquisition and no new construction activities associated with the pipeline. Current maintenance and line inspection procedures and activities on the existing L-109 pipeline would continue with substantial changes to operations.

The No Action Alternative would have substantial impacts to operations from a customer and maintenance perspective. The No Action Alternative would mean that PG&E could not perform the proposed upgrades to its pipeline. If PG&E cannot upgrade the pipeline, it must operate the pipeline at reduced pressure and this could mean gas service would not be available for all customers at all times. Further, without the upgrades, PG&E would not be able to inspect the pipeline with ILI technologies, such as ILI gauges. Thus, while the No Action Alternative would result in no additional ROW acquisitions, no new construction along the line, and no impacts within the Project area, it would prevent the pipeline from being modernized, prohibiting the ability to provide safe and reliable service to all customers reliant on the pipeline.

2.4 RESOURCE PROTECTION AND MITIGATION

According to the CEQ (Section 1508.20) “mitigation” includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

Impact minimization and mitigation measures considered for the proposed Project are summarized in Appendix D. These mitigation measures include (1) Applicant Proposed Measures (APM); (2) BMPs, which are measures typically used during construction to minimize environmental impacts; and (3) additional mitigation, which includes measures to further reduce potential impacts to a resource from the Proposed Action Alternative. APMs and BMPs are measures considered and implemented by PG&E as part of the construction and operation of the proposed Project; these measures have been considered in the initial assessment of environmental impacts. Additional mitigation measures have been proposed to further reduce the level of impact on a specific resource, usually specific to a geographic area or time.

All mitigation measures (APMs, BMPs, and additional measures) are described in Chapter 3 under each resource’s Environmental Consequences section, and a summary of impact minimization and mitigation measures for the Proposed Action Alternative are listed in Appendix D. All of these mitigation measures would be mandatory if the Proposed Action Alternative is approved by the NPS in the FONSI.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

NEPA requires the analysis of a range of alternatives that can be considered reasonable and feasible, which meet most or all of the Project objectives. Due to the physical requirements of the proposed Project, the constrained geographic setting, and the limitations of the L-109 easement, the development of reasonable and feasible alternatives is heavily restricted and includes only the alternatives which are at or near the existing L-109.

Alternatives considered but eliminated are discussed below for each Project segment.

2.5.1 Cañada Road Segment Alternatives Considered but Eliminated

Figure 2-1 depicts the Cañada Road segment alternatives considered but eliminated.

2.5.1.1 Cañada Road Alternative

This alternative would begin south of the Cañada Road segment's current southern tie-in point and extends in a westerly direction towards Cañada Road. Upon reaching Cañada Road, the pipeline would be installed within a public ROW until reaching the Cañada Road northern tie-in point.

This alternative includes significant disadvantages that preclude further consideration. The location of this alternative would place the pipeline adjacent to Crystal Springs Reservoir for a greater length than the proposed route alignment, increasing disturbance adjacent to the Reservoir. Cañada Road is constrained due to existing in-ground utilities.

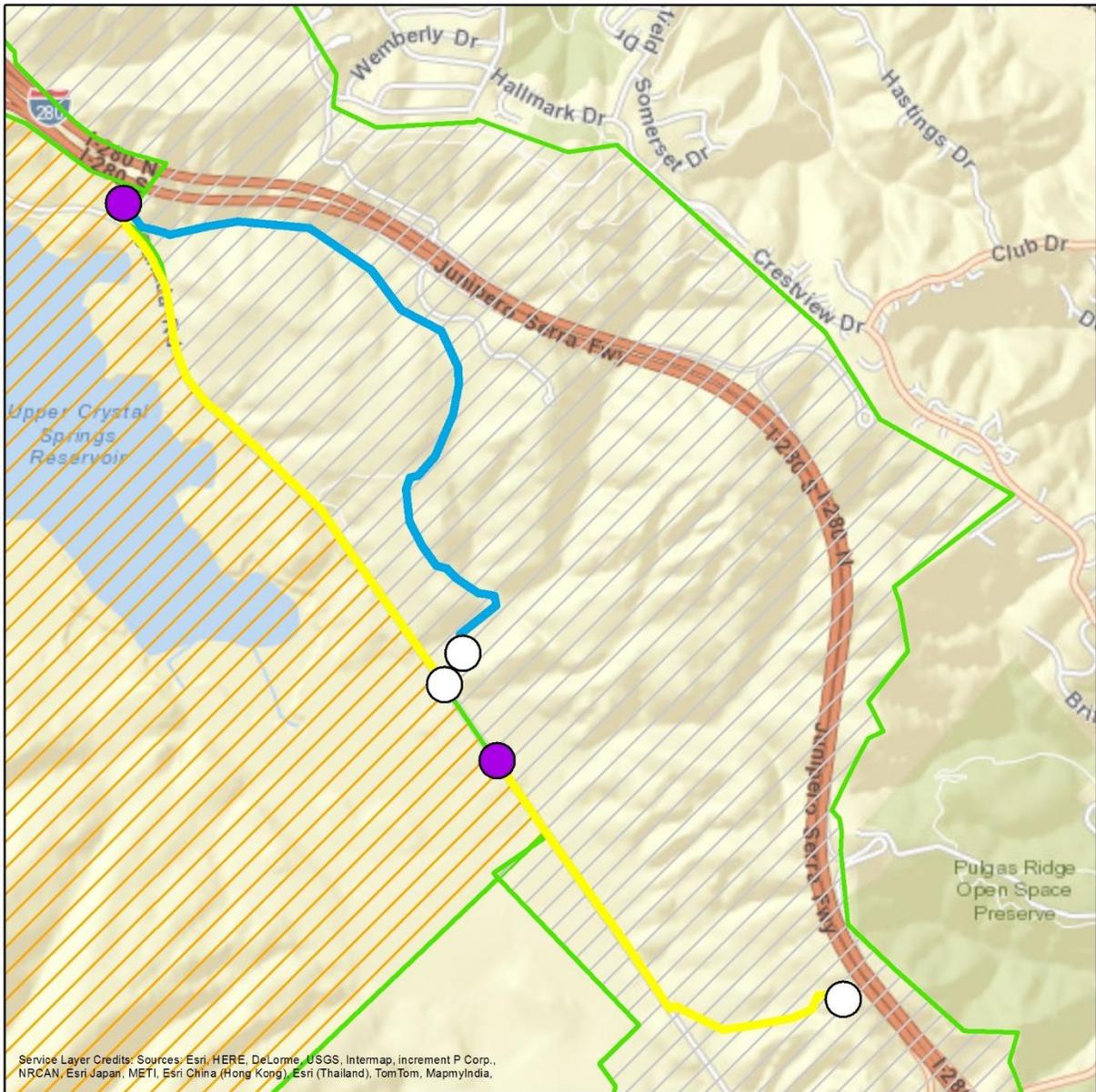
The Cañada Road-Segment Alternative would not provide the same level of operation, safety, and maintenance improvements as the proposed Project alignment and was, therefore, dismissed from further consideration.

2.5.1.2 Cañada Road and West I-280 Alternative

This alternative would start south of the current southern tie-in point and extend in a westerly direction towards Cañada Road. Upon reaching Cañada Road, the pipeline would be installed in a public ROW until reaching a segment of pipe that does not require replacement, which is located adjacent and west of the SFPUC Balancing Reservoir. The alternative's northern replacement segment would follow a dirt access road to unpaved Sheep Camp Trail towards Gate Vista viewpoint access road. Departing from the Sheep Camp Trail, the alternative would parallel a drainage channel along the base of I-280 on the western boundary of the Caltrans ROW. The alternative would remain on the north side of the creek until entering a parallel alignment to the existing pipe and reaching the Cañada Road northern tie-in point.

Along the southern portion of this alternative, disadvantages similar to those in the Cañada Road alternative preclude it from further consideration. Issues include existing in-ground utilities, and a decreased level of operation, safety, and maintenance ability.

The northern section of this alternative cannot be considered reasonable or feasible because of environmental concerns. This alternative would require significant construction related activity inside a drainage and earthwork directly below I-280. This alternative increases the length of disturbance by nearly 3,000 feet, a far greater distance than the Proposed Action Alternative northern sub-segment. For these reasons, this alternative was dismissed from further consideration.



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia.



0 2,000 Feet

Legend

- Cañada Road Alternative
- Cañada Road and West I-280 Alternative
- Start
- End
- GGNRA Scenic Easement
- GGNRA Scenic and Recreation Easement

Cañada Road Segment Alternatives Considered but Eliminated

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 2-1

2.5.2 Bunker Hill Segment Alternatives Considered but Eliminated

Two alternative alignments for the Bunker Hill segment were considered but eliminated from further analysis. Figure 2-2 depicts the Bunker Hill segment alternatives considered but eliminated.

2.5.2.1 Lexington Avenue Alternative

The Lexington Avenue Alternative would begin southeast of the Bunker Hill segment's southern tie-in, which is adjacent to the access road near the intersection of Lexington Avenue and Allegheny Way. The Lexington Avenue Alternative would extend northwest the Lexington Avenue public ROW until the alignment intersects with Bunker Hill Drive. The alignment then extends southwest the public ROW until reaching the gravel access road east of I-280. This alternative would extend along the gravel access road until reaching the northern tie-in point.

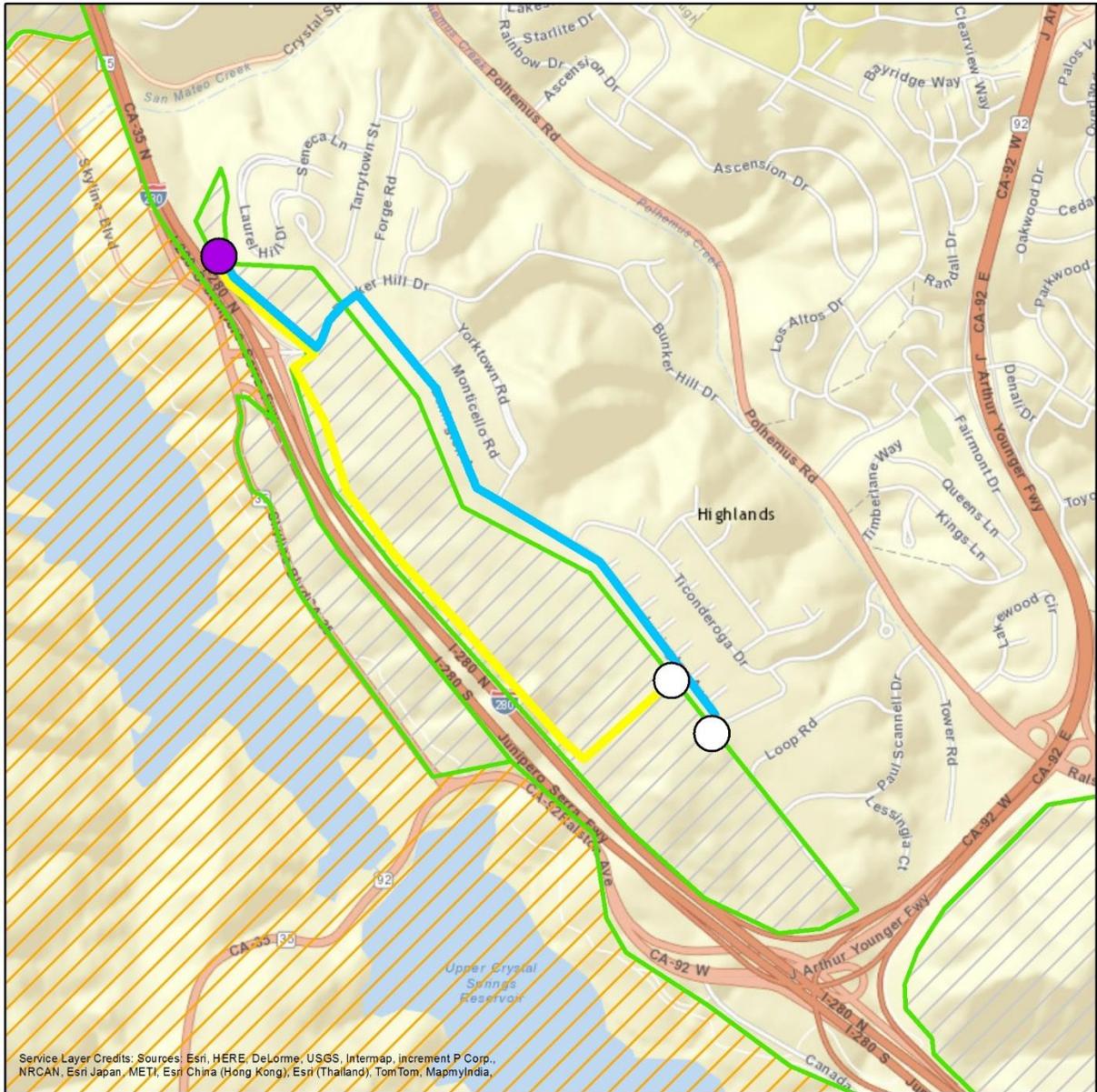
This alternative includes significant disadvantages that preclude further consideration. The location of this alignment would bisect a suburban residential development. Construction would be constrained due to existing in-ground utilities located within the public ROWs.

The Lexington Avenue Alternative would not provide the same level of operation, safety, and maintenance improvements as the proposed Project alignment and was, therefore, dismissed from further consideration.

2.5.2.2 I-280 East Alternative

The I-280 East Alternative would begin southeast of the Bunker Hill segment's southern tie-in which is adjacent to the access road near the intersection of Lexington Avenue and Allegheny Way. The alternative would extend southwest across SFPUC lands towards the I-280 ROW. Adjacent to the I-280 ROW, the alignment extends into the disked section of soil adjacent and parallel to I-280. The alternative alignment remains inside the disked section until Bunker Hill Drive. At Bunker Hill Drive, the alignment crosses underneath the road and extends along the gravel access road past the substation until reaching the northern tie-in point.

The I-280 East Alternative has several disadvantages that preclude it from further analysis. This alternative would require the disjunction of the existing utility corridor on SFPUC lands, resulting in greater environmental disturbance over both the short and long term. Due to the alternative's location inside an area regularly disked for fire management activities, the I-280 East Alternative would not provide the same level of operation, safety, and maintenance improvements as compared to the proposed Project alignment. For these reasons, this alternative was dismissed from further consideration.



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia.



0 2,000 Feet

Legend

- Lexington Avenue Alternative
- I-280 East Alternative
- Start
- End
- GGNRA Scenic Easement
- GGNRA Scenic and Recreation Easement

Bunker Hill Segment Alternatives Considered but Eliminated

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 2-2

2.5.3 Crystal Springs Segment Alternatives Considered but Eliminated

For the Crystal Springs segment, two additional alternative alignments were considered but eliminated from further analysis. Figure 2-3 depicts the Crystal Springs segment alternatives considered but eliminated.

2.5.3.1 I-280 East Alternative

The I-280 East Alternative would begin at the Crystal Springs segment's southern tie-in point which is near a dirt access road, located adjacent to the eastern I-280 ROW. The I-280 East Alternative extends north-northeast along the previously disturbed L-109 ROW to connect into the Crystal Springs Valve Lot. The alternative would make the necessary connection to the valve lot and would then extend west within a previously disturbed corridor before aligning parallel to and outside of, the I-280 ROW. The alternative continues parallel to I-280, extending beyond Hayne Road, and a small non-developed space before extending along the Highway 35 alignment until reaching the Crystal Springs northern tie-in point.

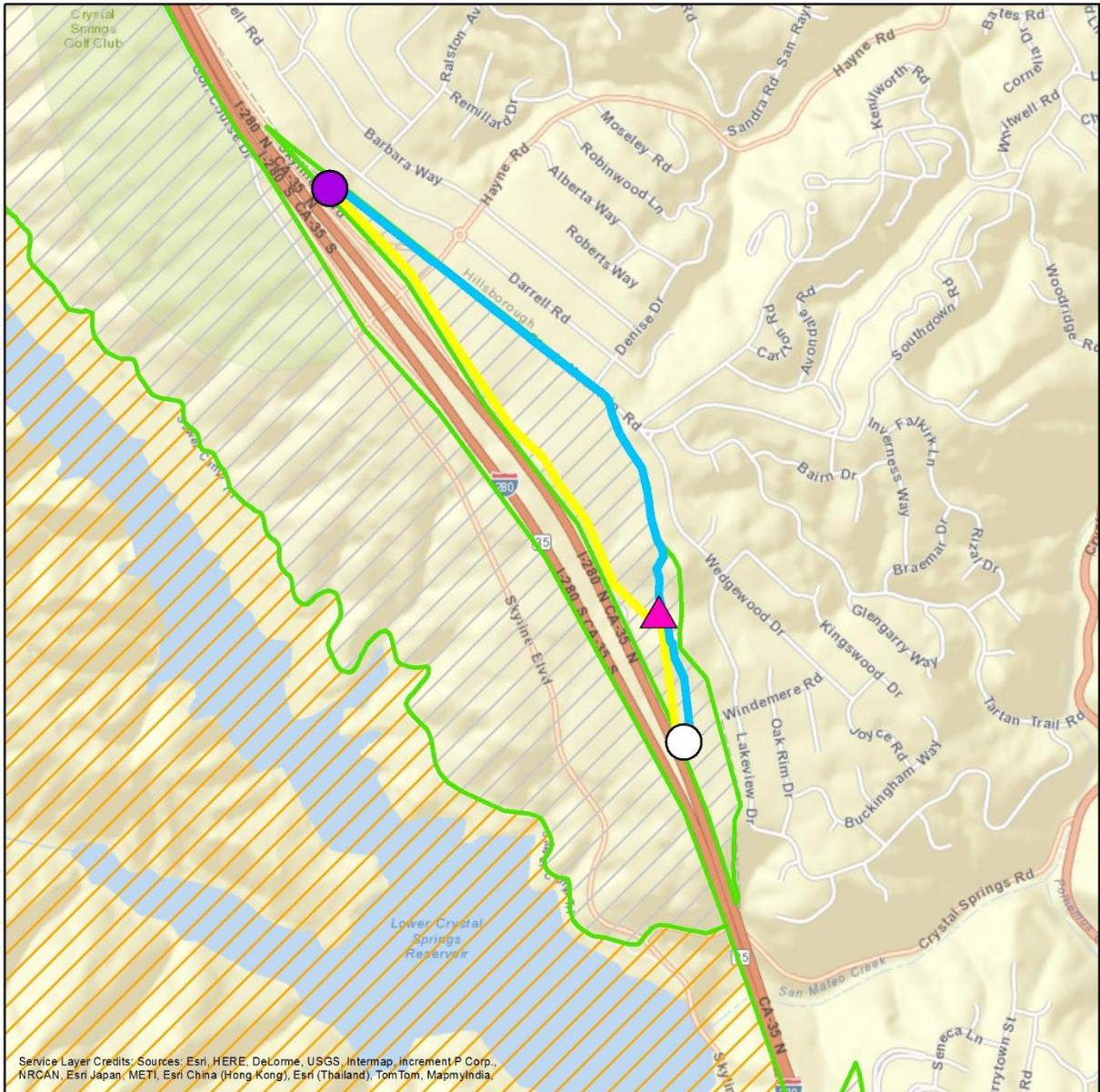
The I-280 East Alternative includes significant disadvantages that preclude it further consideration. The location of this alignment would place the pipeline outside of the existing PG&E utility corridor and directly adjacent to I-280 ROW.

Due to the alternative alignment's location in an area regularly disked for fire management activities, the I-280 East Alternative would not provide the same level of operation, safety, and maintenance improvements as compared to the proposed Project alignment and was, therefore, dismissed from further consideration.

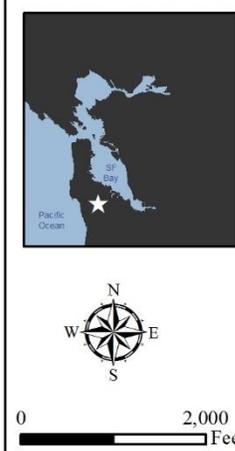
2.5.3.2 Black Mountain Road Alternative

The Black Mountain Road Alternative would begin at the Crystal Springs segment's southern tie-in point which is near a dirt access road, located adjacent to the eastern I-280 ROW. The alignment would extend east to connect with an existing disturbance located directly east of a PG&E electric power line. The alternative would briefly realign in the existing L-109 ROW prior to connecting to the Crystal Springs Valve Lot. The alternative would make the necessary connection to the valve lot and would then follow the boundary of the open space until reaching Black Mountain Road. At Black Mountain Road, the alignment would enter a public ROW for the next several thousand feet. North of the I-280 SR 35 interchange the alternative would extend north along the dirt access road until reaching the Crystal Springs northern tie-in point.

The Black Mountain Road Alternative includes significant disadvantages that preclude further consideration. Notably, this alternative would be located adjacent to an existing PG&E power line. Additionally, construction of this alternative would require temporary disruption to Black Mountain Road—a main arterial road. For these reasons, this alternative alignment was dismissed from further consideration.



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia.



- Legend**
- I-280 East Alternative
 - Black Mountain Road Alternative
 - ▲ Crystal Springs Valve Lot
 - Start
 - End
 - GGNRA Scenic Easement
 - GGNRA Scenic and Recreation Easement

Crystal Springs Segment Alternatives Considered but Eliminated

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 2-3

2.6 PERMIT REQUIREMENTS AND APPROVALS

Permits and approvals required for the proposed Project include:

- U.S. Department of the Interior, Golden Gate National Recreation Area-Scenic Easement and Scenic and Recreation Easement concurrence
- U.S. Army Corps of Engineers Clean Water Act (CWA) Section 404 Nationwide Permit (NWP) 12: Utility Line Activities
- U.S. Fish and Wildlife Service federal Endangered Species Act (ESA) Section 7 Consultation
- California Fish and Game Code Section 1602 Lake or Streambed Alteration Agreement (SAA)
- San Francisco Regional Water Quality Control Board (SFBRWQCB) CWA Section 401 Water Quality Certification
- State Water Resources Control Board CWA Section 402 Permits National Pollutant Discharge Elimination System (NPDES) Program – General Construction Stormwater Permit
- CCSF and SFPUC Environmental Review and Easement Approval

2.7 COMPARISON OF IMPACTS

Table 2-2 summarizes the potential long-term impacts of the Proposed Alternative. Short-term impacts are not included in this table, but are analyzed in the Environmental Consequences section. Impact intensity, context, and duration are also defined in the Environmental Consequences section.

**TABLE 2-2
SUMMARY OF ENVIRONMENTAL IMPACTS**

Impact Topics	Proposed Action Alternative	No Action Alternative
Land Use	There would be minor long-term impacts to land use as a result of implementing the proposed Project. These impacts would not require mitigation.	There would be no short- or long-term impact to land use under the No Action Alternative.
Biological Resources	The Proposed Action would have short-term, local impacts on the vegetation. Impacts to non-special status wildlife species would be somewhat dependent on the mobility of species. With the implementation of mitigation measures, long-term impacts to the habitat, range, or population of the Federally protected California red-legged frog, San Francisco garter snake, Marin western flax, white-rayed pentachaeta, Crystal Springs fountain thistle, mission blue butterfly and bay checkerspot butterfly are not expected (detailed in Section 3.7 of this EA).	The No Action Alternative would avoid approximately 59.9 acres of surface disturbance that would occur under the Proposed Action. The environmental resources within the Total Authorized Work Areas associated with the Proposed Action would not be directly affected nor would indirect effects occur to resources around the project area.
Cultural Resources	Project construction could result in some disturbance and impact to buried archaeological sites, although the location of these sites is not known and the chance of impacting one or more of these sites is minimal. In addition, there is a slight possibility that the Woodside Crystal Springs Road Bridge could be damaged during project construction activities. Mitigation measures (summarized in Section 3.3 of this EA) would be implemented to minimize possible impacts to cultural resources. As a result, the Proposed Action Alternative would be expected to result in minimal impacts to cultural resources.	There would be no impact or adverse effect to cultural resources resulting from the No Action Alternative.
Visual Resources	The Proposed Action Alternative would have short-term, local impacts on the natural appearance of vegetation patterns and edges, interruptions in natural topography, and the presence of intermittent non-natural visual features in the landscape. In the long-term, topography would be restored to pre-construction conditions, native vegetation would be planted, and a soft border zone would be maintained to mimic the clumping pattern of existing vegetation. Long-term impacts to visual resources would be minor.	The No Action Alternative could continue to have periodic minor impacts on existing visual resources during routine maintenance and operation activities of the existing L-109 including clearing non-compliant vegetation within the pipe and border zones of the current ROW. Long-term impacts to visual resources and receptors would be negligible.
Visitor Use and Experience	Impacts from the Proposed Action Alternative on visitor use and experience would be minimal. It is anticipated that all recreational facilities would be available and accessible during the construction period, with the exception of Sheep Camp Trail and Gate Vista Point Trail where temporary closures or deviations may occur.	Implementation of the No Action Alternative would result in no impact to visitor use and experience in the Proposed Project area.

**TABLE 2-2
SUMMARY OF ENVIRONMENTAL IMPACTS**

Impact Topics	Proposed Action Alternative	No Action Alternative
Air Quality	With the exception of NOx emissions, the Proposed Action Alternative’s average daily construction emissions would not exceed the Bay Area Air Quality Management District (BAAQMD) proposed thresholds of significance; impacts are considered to be negligible. Mitigation measures (summarized in Section 3.3 of this EA) are recommended to reduce NOx to below the BAAQMD significance threshold to a less-than-significant level. Each segment of the proposed project would involve clearing, grading, boring, excavation, pipe installation, backfilling, testing, and final grading. During the project’s approximately 15-month-long construction period, construction activities would have the potential to result in emissions of ozone precursors and particulate matter. On the Cañada Road alignment, uncontrolled fugitive dust emissions could be a substantial impact. As a result, dust control measures would be implemented and would minimize impacts from dust.	Air quality impacts associated with the No Action Alternative would primarily be related to emissions and dust from vehicles accessing the pipeline for inspection and maintenance. Emissions and dust from maintenance operations would have a negligible affect to air quality.
Water Resources	All impacts to water resources resulting from the Proposed Action Alternative would be temporary and minor. PG&E would develop and implement a SWPPP, which would include general Project-wide hazardous substance control and emergency response measures.	No impacts to water resources would occur from the maintenance, operation, and inspection practices continued in the No Action Alternative.
Geology, Mineral Resources, Soil	There would be minor short-term impacts to geology and soils as a result of implementing the Proposed Action Alternative. A geotechnical investigation conducted for the Edgewood Landslide area in 2014 indicated that the construction of the proposed Project alignment through the Edgewood Landslide area would not be subject to undue geotechnical hazards. Substantial loss of soil or mineral resources from the project site is not anticipated. All of the soils identified in the project corridor are well-drained, upland soils. Excavated materials are expected to be overwhelmingly soil material, although rock could potentially be encountered, but no major mineral resources have been identified on-site. Materials considered to be unsuitable for backfilling the excavated pipeline trench would be removed from the site	There would be no short- or long-term impacts to geology, mineral resources, or soils under the No Action Alternative.

**TABLE 2-2
SUMMARY OF ENVIRONMENTAL IMPACTS**

Impact Topics	Proposed Action Alternative	No Action Alternative
Soundscapes	Noise related to construction and operation of the pipeline would have local and short-term impacts on GGNRA and sensitive receptors. Noise reduction measures have been recommended to further reduce short-term impacts to a minimal level during construction.	Noise impacts associated with the No Action Alternative are minimal and are related to inspection and maintenance activities. Should unforeseen damage to the pipeline occur due to failure to upgrade the system, significant noise impacts could result from the remediation process.
Transportation and Utilities	There would be no long-term impact to Transportation and Utilities under the Proposed Action Alternative.	There would be no long-term impact to Transportation and Utilities under the No Action Alternative.
Socioeconomics and Environmental Justice	The Proposed Action Alternative would not substantially affect employment and income levels, nor would the proposed project result in direct or indirect impacts to demographic trends in the project area. There would be no impacts to the local housing market or to existing property values.	Implementation of the No Action Alternative would result in no socioeconomic impacts in the project area; there would be no impact on employment and income, no impact on the existing population or demographics of the area, no impact on the housing market, and no environmental justice impacts.
Visitor Health and Safety	All impacts from the Proposed Action Alternative on visitor health and safety would be temporary and minor. Construction equipment and vehicles would have local, short-term, and minor impacts to traffic levels and flow throughout the construction phase of the project. Adequate signage and traffic control practices would reduce any potential increased risk of traffic-related hazards for visitors to the area.	The No Action Alternative would cause no immediate impacts to visitor health and safety. However, under this alternative, there would also be no improvements made to these three segments of L-109 and routine inspections of the existing pipeline would not be possible due to the variations in the pipeline diameter.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

NEPA requires that environmental documents disclose the environmental impacts of a proposed federal action, reasonable alternatives to that action, and any unavoidable adverse effects should the proposed action be implemented. When reviewing and analyzing an action, NEPA requires consideration of context, duration, intensity, indirect impacts, cumulative impacts and measures to mitigate impacts.

Typically, the Affected Environment and the Environmental Consequences sections of environmental assessments are separated into two chapters. This EA discusses the affected environment and identifies impacts of the alternatives in the same chapter, eliminating the need to flip between chapters. Cumulative impacts are discussed at the end of each resource section.

3.2 GENERAL METHODOLOGY

This EA has been prepared pursuant to NEPA requirements (42 U.S.C. 4321 et seq.). All resource areas required for analysis in CEQ regulations and all applicable federal Executive Orders are discussed. Additionally, this document has been prepared pursuant to subsequent federal actions which include the Environmental Quality Improvement Act, as amended (42 U.S.C. 4370 et seq.), § 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

To determine areas of potential concern and to assess impacts, the EA Project team consulted existing environmental documents, conducted sites visits, met with subject matter experts and other consultants, and discussed the proposed Project with NPS resources specialists. Whenever possible, quantitative data was used to determine the intensity of each effect. Regulatory and statutory standards, as well as relevant literature, were used to judge the level of each effect. Methods employed included consultation with subject matter experts and other agencies. NPS planning and NEPA documents were reviewed to help determine impact thresholds for the topics evaluated in this chapter. When quantitative data was unavailable, the impact analyses were conducted using information provided by GGNRA staff, relevant reference, technical literature citations, and best professional judgment.

If the analysis finds that the project would not result in potentially significant direct, indirect, or cumulative impacts, a Finding of No Significant Impact (FONSI) will be prepared and approved by the NPS. If the analysis determines that the project would result in significant impacts to any of the resources analyzed, an EIS will be prepared.

3.2.1 Context, Duration, Intensity, and Type of Impact

This EA assesses both direct impacts (effects caused by an action with immediately apparent consequences) and indirect impacts (effects caused by an action with removed consequences, but still reasonably foreseeable). The analysis of environmental impacts considers the context, duration, intensity, and type of impact, as defined below.

Specific intensity thresholds based on the definitions below were developed for each resource and are defined within each resource's Environmental Consequences Section.

3.2.1.1 Context

The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis:

- *Project impacts* are those that would occur within the proposed Project corridor and existing and proposed PG&E ROW on San Francisco Peninsula Watershed lands.
- *Project vicinity impacts* are those that would occur on surrounding San Francisco Peninsula Watershed lands or in adjacent communities.

3.2.1.2 Duration

The duration of the impact considers whether the impact would occur in the short- or long-term.

- *Short-term* impacts are temporary, transitional, or construction-related impacts associated with project activities.
- *Long-term* impacts are typically effects that last several years or are permanent.

3.2.1.3 Intensity

Intensity is a measure of the severity of an impact. The intensity of the impact considers whether the effect would be negligible, minor, moderate, or major, and are defined as follows:

- *Negligible* impacts are not detectable and have no discernible effect.
- *Minor* impacts are slightly detectable, but not expected to have an overall effect.
- *Moderate* impacts are clearly detectable and could have an appreciable effect.
- *Major* impacts have a substantial, highly noticeable effect.

3.2.1.4 Type

Impacts were evaluated in terms of whether they would be beneficial or adverse.

- *Beneficial impacts* improve resources/conditions.
- *Adverse impacts* deplete or negatively alter resources/conditions.

3.3 MITIGATION MEASURES

According to the Council on Environmental Quality (Sec. 1508.20) "mitigation" includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments
- Mitigation measures are described in Chapter 3 under each resource's Environmental Consequences section, and a summary of impact minimization and mitigation measures for the Proposed Action Alternative are listed in Appendix D. All of these mitigation measures may be implemented if the Proposed Action Alternative is selected and constructed

3.4 CUMULATIVE EFFECTS ANALYSIS METHOD

The Council on Environmental Quality (1978) regulations for implementing NEPA requires assessment of cumulative effects prior to federal actions. A cumulative impact is described in regulations developed by the Council on Environmental Quality, Regulation 1508.7, as follows:

A "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person

undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative effects are considered for the Proposed Action Alternative and the No-Action Alternative. For each alternative, cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions; this analysis was limited to an approximately two-mile radius extending from the each of the three segments. Included projects were identified through discussions with NPS and SFPUC staff, and review of NPS documents, the Peninsula Watershed Management Plan, and the IS/MND prepared for this Project. The Caltrans, San Mateo County, and local municipalities' planning websites were also reviewed for local development projects.

Cumulative effects are evaluated under each environmental resource area addressed in this chapter. Actions identified and analyzed for cumulative effects in conjunction with the proposed Project include:

3.4.1 Past Actions

3.4.1.1 2012 PG&E: Crystal Springs Valve Station Upgrade and easement expansion

This valve station site is located on SFPUC Peninsula Watershed Lands on Buri Buri Ridge east of I-280 and north of SR 92 in San Mateo County. The upgrades provided PG&E with remote monitoring and control, automatic valve shutdown, inline inspection capabilities, and other safety enhancements. The project involved the construction of new above-ground structures and equipment, fencing cathodic protection monitoring facilities, etcetera, and expansion of the existing 6,600-square-foot easement by approximately 18,000 square feet.



Figure 3-1. Crystal Springs valve station as seen from east rest stop fence.

3.4.1.2 2012 PG&E: Edgewood Valve Station Upgrade and PG&E easement expansion

The Edgewood valve station site is located on SFPUC Peninsula Watershed Lands west of I-280 and north of Edgewood Road in San Mateo County. The project involved the replacement of existing valves and installation of new supervisory control and data acquisition (SCADA) equipment, pressure transmitters, over-pressure protection, inline inspection facilities, and fencing. As part of the project, PG&E enlarged the valve station by approximately 2,000 square feet and expanded the easement by approximately 3,000 square feet.

3.4.1.3 2012 PG&E: Half Moon Bay Valve Station Upgrade and PG&E facility expansion

The Half Moon Bay valve station site is located on SFPUC Peninsula Watershed Lands east of I-280 and north of SR 92 in San Mateo County. The project involved the replacement of existing valves and new SCADA equipment to provide remote monitoring and control, automatic valve shutdown, inline inspection capabilities, and other safety enhancements. As part of the project, PG&E enlarged the valve station by approximately 300 square feet.

3.4.1.4 2012 PG&E: L-109 4B Replacement

The L-109 4B segment is located on SFPUC Peninsula Watershed Lands east of I-280 and north of SR 92 in San Mateo County. The project involved the replacement of an approximately 0.39-mile long section of natural gas transmission pipeline within the existing utility corridor. As part of the project, PG&E expanded the existing easement width by approximately 25 feet.

3.4.1.5 2012 PG&E: L-109 4D Replacement

The L-109 4D segment is located on SFPUC Peninsula Watershed Lands west of I-280, adjacent to Golf Course Drive in the Crystal Springs Golf Course in San Mateo County. The project involved the replacement of an approximately 0.67-mile long section of natural gas transmission pipeline within the existing utility corridor. As part of the project, PG&E expanded the existing easement width by approximately 25 feet.

3.4.1.6 2011 PG&E: Larkspur Valve Automation Project

PG&E was granted a minor expansion of the existing utility easement to allow for the construction of shutoff valves, fencing and radio communications associated with underground gas transmission lines 109 and 132 plus new cross-tie piping between the transmission lines. The project site was on SFPUC Peninsula Watershed lands parallel to Interstate Highway 280 and just south of Larkspur Drive adjacent to the city of Millbrae in northern San Mateo County.

3.4.1.7 2013 PG&E: Temporary Staging Area – San Andreas Station

PG&E was granted temporary construction workspace adjacent to existing gas transmission easements in order to construct the necessary safety upgrades to the existing gas transmission Line 132. The project involved retrofitting the existing L-132 at the San Andreas Station to allow for the installation of a 36-inch portable pig receiver and a small elbow replacement. The project site is located on SFPUC Peninsula watershed lands west of Highway 280 adjacent to Skyline Boulevard in San Mateo County.

3.4.1.8 2014 SFPUC: Crystal Springs/San Andreas Water Transmission System Upgrade

The Crystal Springs/San Andreas Transmission System moves water from the Crystal Springs Reservoirs north to San Andreas Lake and the Harry Tracy Water Treatment Plant, and then into water distribution pipelines. This project included construction of a new Crystal Springs Pump Station and upgrades to the water transmission pipeline adjacent to the Sawyer Camp Trail, the outlet structures at Crystal Springs and San Andreas reservoirs, and culverts at the Upper Crystal Springs Dam.

3.4.1.9 2009 SFPUC: Pulgas Balancing Reservoir Structural Rehabilitation and Roof Replacement Project

The SFPUC rebuilt the roof of the existing Pulgas Balancing Reservoir (located near the southern end of Upper Crystal Springs Reservoir on property owned by the SFPUC in unincorporated San Mateo County) to improve seismic and water quality reliability. The project additionally included the construction of shear walls at the corners of the reservoir's foundation, repair of cracks in the reservoir walls and slab and corroded rebar, and replacement of mechanical and architectural structures (i.e. electrical, security and ventilation systems).

3.4.1.10 2011 SFPUC: New Crystal Springs Bypass Tunnel

The SFPUC constructed a new 4,200-foot long tunnel in San Mateo County to house a 96-inch steel drinking water transportation pipe as part of the Crystal Springs Bypass System.

3.4.1.11 2014 PG&E: L-132 Edgewood Preserve - Pipeline Safety Enhancement Plan

PG&E replaced an elbow in Gas Line 132. The replacement involved mowing, digging, and subsequent restoration of two small plots near the western kiosk.

3.4.1.12 2014 PG&E: L-109 Farm Hill Segment Replacement

PG&E replaced an existing segment of L-109, known as the Farm Hill segment.

3.4.2 Present Actions

3.4.2.1 Kingridge Sewer Line Improvements - Mitigation Site Project (2011-Summer 2015)

The project involves the replacement of the sanitary sewer line serving Kingridge Drive between Fernwood Street and 42nd Avenue in the City of San Mateo to improve sewer system function and reduce effects on aquatic habitat. The project consists of installing a riparian mitigation site within Laurelwood Park, adjacent to Laurel Creek, with temporary fence installation, site preparation, irrigation system retrofit, revegetation, split rail fence and mulch buffer installation, and long-term maintenance.

3.4.2.2 SFPUC Ongoing Maintenance

The SFPUC manages the San Francisco Peninsula Watershed lands. As the manager, it is responsible for upgrading and maintain the watershed facilities in accordance with its management plan. Typical maintenance activities include: road maintenance, mowing, road grading, slide repair and slope maintenance, controlled burning, hazardous material management, and dilapidated facility removal.

3.4.3 Reasonably Foreseeable Actions

3.4.3.1 PG&E: L-109 San Mateo Creek Pipeline Replacement Project (2016)

In response to PG&E Pipeline Safety Enhancement Plan, a section of Gas Line 109 has been identified for replacement. The existing pipeline crosses land owned by the CCSF and managed by the SFPUC. The San Mateo Creek segment is located east of Lower Crystal Springs Reservoir.

3.4.3.2 Crystal Springs Dam Bridge Replacement Project (Spring 2015 - 2017)

San Mateo County proposes to demolish and remove the existing Crystal Springs Dam Bridge atop the Lower Crystal Springs Dam and replace it with a seismically and structurally sound bridge. The new bridge would provide two vehicle travel lanes and a multipurpose paved trail for bicyclists and pedestrians. The Crystal Springs Dam Bridge Replacement Project would be located in an unincorporated area of San Mateo County east of the Crystal Springs Reservoir.

3.4.3.3 Crystal Springs Uplands School Belmont Middle School Project (ISMND in progress)

Crystal Springs Upland School is proposing to build a new independent middle school on Davis Drive in Belmont. The school is seeking a Development Agreement, General Plan Amendment, Zone Change, Design Review, Grading Plan Review and Lot Merger to replace commercial, office, and warehouse buildings with private school buildings.

3.4.3.4 Highlands Park Lower Athletic Field Project – Conversion to a Synthetic Surface

This project would convert 3.44 acres of the lower athletic field in Highlands Park from natural turf to synthetic turf. The project would involve irrigation removal, quick coupler valve installation, drainage modifications, additional fencing, and adjustments to access points that would prevent unauthorized vehicle from accessing the field.

3.4.3.5 Caltrans: Route 92 Uphill Slow Vehicle Lane and Safety Improvements

Caltrans is proposing to provide an uphill slow vehicle lane along SR 92 for 2.1 miles between Pilarcitos Creek and Crystal Springs Reservoir, a median barrier, a grade separation structure, and upgrades to the existing facility.

3.4.3.6 2009 San Mateo County and City of San Carlos: Winding Way Tax Exchange Agreement for Annexation

This agreement annexed 3.41 acres of unincorporated San Mateo County land located on Winding Way to the City of San Carlos for development of single-family residences. Work schedule is currently unknown.

3.6 LAND USE

3.6.1 Affected Environment

During the land use analysis, jurisdictional agencies' general and management plans were reviewed for lands within or near the boundaries of the Scenic Easement and the Scenic and Recreation Easement. Additionally, a site survey was conducted along most of the Project segment alignments.

3.6.1.1 Applicable Regulations, Plans, and Standards

The following are federal, regional, and local recreation regulations, plans, and standards that are applicable to land jurisdiction, existing land uses and planned land uses potentially affected by the proposed Project:

Department of the Interior, Grant of Scenic and Recreation Easement, San Francisco Peninsula Watershed Lands – grant managed by the GGNRA that provides compatible and limited recreational use and preservation of natural values

Golden Gate National Recreation Area, Muir Woods National Monument – Final General Management Plan/Environmental Impact Statement – framework that directs and sustains detailed implementation planning and guides management decisions over the next 20 years.

SFPUC Watershed Policy – FEIR Peninsula Watershed Monument Plan – guiding principles for land use and management of the Watershed and corresponding land uses

San Francisco General Plan – framework for development in San Francisco, which guides land use decisions (the Project is not subject to the San Francisco General Plan, although the SFPUC is guided by the San Francisco City Charter)

San Mateo County General Plan – guides decision-making for unincorporated areas of San Mateo County (decisions made by San Mateo County while reviewing projects in the Watershed are non-binding on CCSF)

3.6.1.2 Characterization

Land Jurisdiction

The Cañada Road, Bunker Hill, and Crystal Springs Project segments are all located on Watershed land in San Mateo County, California which is owned and managed by SFPUC for water supply protection. GGNRA, which was established “...to preserve for public use and enjoyment certain areas...possessing outstanding natural, historic, scenic, and recreational values” (U.S.C. 1972), administers two easements encompassing the entire 23,000-acre Watershed. The first easement – a Scenic Easement – applies to approximately 19,000 acres in areas generally west of the Crystal Springs and San Andreas reservoirs. The second easement – a Scenic and Recreation Easement – encompasses approximately 4,000 acres of the Watershed in areas east of the Crystal Springs and San Andreas reservoirs. According to the Peninsula Watershed Management Plan, “Terms of the Scenic Easement are fairly restrictive with regards to access, whereas limited recreation activities that are compatible with water supply protection may be permitted on the Scenic and Recreation” (SFPUC 2001). The three Project segments are located almost entirely within the Scenic and Recreation Easement.

The surrounding lands and uses in and around the Project area have been effectively conserved by federal, state, and local agencies. As a result, the Watershed has a patchwork of governmental/quasi-governmental stakeholders that in addition to CCSF, SFPUC, and GGRNA affect land use and land management. These stakeholders include:

- San Mateo County
- California Department of Fish and Wildlife (CDFW) – State Fish and Game Refuge
- United Nations Educational, Scientific and Cultural Organization (UNESCO) – Golden Gate Biosphere Reserve

Existing Land Use

Watershed lands are actively and passively managed for water supply protection and storage, open space preservation, and controlled and compatible recreation opportunity creation and allowance.

Congress has mandated, through 16 USC §460bb (p) the GGNRA administer the easements in accordance with the terms and provisions of each easement. Provisions of the Scenic and Recreation Easement require that the property is preserved “in its natural condition to the maximum extent possible.” These provisions are outlined and addressed in detail in Chapter 1. Additionally, the easement stipulates that the land be used for “storage and transmission of water and protection of water quality; outdoor recreation; ecological preservation and other purposes, which shall be compatible with preserving said lands as open-space land for public use and enjoyment” (CCSF 1969). As the easement holder, NPS-GGNRA has a responsibility to ensure the terms of the easement are maintained and actions remain congruent with land use patterns.

As previously acknowledged, the Project segments are all located within the 23,000-acre Peninsula Watershed where the primary land use is for the preservation of open space for purposes of water quality, scenic quality, and limited public recreation. The “Watershed encompasses reservoirs that store water from the Sierra Nevada mountains and local runoff and includes water transmission facilities that are part of a system that delivers water to about 2.4 million customers in the Bay Area” (CCSF 2001). The four major reservoirs within the Watershed are: Pilarcitos Reservoir (completed in 1864), San Andreas Dam Reservoir (completed in 1870), Upper Crystal Springs Reservoir (completed in 1877), and Lower Crystal Springs

Reservoir (completed in 1890). The Pulgas Balancing Reservoir is located between the Cañada Road south and north replacement sections.

The Watershed is one of thirteen protected areas in the San Francisco Bay area that form the UNESCO Golden Gate Biosphere Reserve (GGBR). Partners and stakeholders generally use GGBR lands for research, education and outreach, and as an additional layer of governance ensuring the preservation of compatible recreational uses and open space.

Lands within the Watershed are additionally protected by the CDFW as the San Francisco State Fish and Game Refuge (Refuge). The Refuge was established and is managed by the CDFW as a reserve prohibiting the taking of birds, mammals, fish or amphibians. State Fish and Game Refuges, historically established by the CDFW on lands owned by another party, prohibit the hunting of animals supporting protection and repopulation of deer and other heavily-hunted game species that migrate outside refuge boundaries.

As previously stated, PG&E's pipeline replacement project is not subject to the San Francisco General Plan. However, the Project would require new easements through the SFPUC watershed. Authorization of new easements would require approval from the SFPUC and the San Francisco Board of Supervisors.

Although San Mateo County does not have jurisdiction over the Watershed, "The Peninsula Watershed is designated as "Open Space" by the County of San Mateo and is within the County's unincorporated rural area. The Project would be reviewed by the Board of Supervisors for consistency with the General Plan in approving or disapproving of the easements. The majority of the Watershed is located within the Mid-Coast Region (County General Plan region), while the southern end is within the South Coast/Skyline Region.

Further discussion of the existing land uses as they pertain to the Project will be broken into the three segments of the Project.

Cañada Road Segment

The Cañada Road Segment, composed of two sub-segments—Cañada Road southern sub-segment and Cañada Road northern sub-segment—is located entirely within the Scenic and Recreation Easement with the exception of northern-most portion, which is located inside or directly adjacent to paved Cañada Road within the Scenic Easement.

Lands due west of the segment—with the exception of the Pulgas Water Temple and the Filoli Estate—are generally managed by the SFPUC for preservation of the Watershed and open space. The Pulgas Water Temple was constructed to mark the completion of the Hetch Hetchy Water System in 1934. The 670-acre Filoli Estate is composed of 16 acres of formal gardens adjacent to a historic country house and a 654-acre estate. Existing manmade boundaries near the Cañada Road segment include I-280 east of the segment, Cañada Road west of the segment, Edgewood Road south of the segment and SR 92 north of the segment. Cañada Road and Edgewood Road are County Scenic Corridors, and the section of I-280 near the project site is designated as a State Scenic Highway. Upper Crystal Springs Reservoir (south of State Highway 35), is located west of Cañada Road and the segment in a rift valley created by the San Andreas Fault. The majority of water within Upper Crystal Springs Reservoir (connected via tunnels to Lower Crystal Springs Reservoir) is piped in via aqueducts from the Hetch Hetchy Reservoir located in Yosemite National Park. Runoff from surrounding lands and surface water from creeks and streams accounts for approximately 15 percent of water collected in the reservoir.

Lands east of the Cañada Road segment – up to the western boundary of I-280 – are managed by the SFPUC as part of the Scenic and Recreation Easement for the preservation of the Watershed and open space, up to the residential neighborhood generally delineated by Crestview Drive.

Publically accessible recreation trails are located in the area, with Sheep Camp Trail intersecting the proposed alignment of the Cañada Road segment. The Pulgas Water Temple is located west of Cañada Road and parallel to the start of the northern replacement section. Recreational facilities and opportunities are discussed in greater detail in Section 3.9.

The lands surrounding the Cañada Road segment are managed predominantly for preservation of the Watershed. As such, the land was preserved first and foremost with utilitarian intentions. Near L-109, PG&E has electric power facilities, which travel generally parallel to L-109 and L-132. The lands surrounding the Cañada Road segment are intersected with several access roads, which are in current use by the agencies for utility access and land use management. Further discussion of transportation and utilities and is found in Section 3.14.

Bunker Hill Segment

Located approximately 1.2 miles northwest of the Cañada Road segment along the Pulgas Ridge, the Bunker Hill segment is located almost entirely within Watershed lands that are encumbered by the Scenic and Recreation Easement. The segment alignment extends outside SFPUC lands and crosses Black Mountain Road perpendicularly before reentering SFPUC lands.

Pulgas Ridge, on which the segment is located, is preserved open space within the Watershed. The southern and western boundaries of the ridge are defined by I-280. The north end of the ridge is bisected by Black Mountain Road. On the eastern side, the unincorporated community, San Mateo Highlands, abuts the Watershed with residential homes directly adjacent to the Bunker Hill segment (approximately 100 to 400 feet from Bunker Hill segment). San Mateo Highlands, developed by architect Joseph Eichler in the 1950s, consists largely of single story small lot residences. Fire prevention and industrial-scale mowing occurs on the outer edges of the open space. In addition to L-109 and L-132, PG&E has several electric power facilities located on the ridge that travel parallel to the gas transmission lines. Further discussion of transportation and utilities and are discussed in Section 3.14.

Crystal Springs Segment

The Crystal Springs segment, the northernmost of the three segments, is located 0.9 mile northwest of the Bunker Hill segment almost entirely inside SFPUC lands, which are covered by the GGNRA-administered Scenic and Recreation Easement. The segment leaves SFPUC lands briefly while crossing under Hayne Road. The land is primarily managed as open space and is preserved for the protection of the Watershed. PG&E operates a utility corridor in the Crystal Springs segment area that houses PG&E natural gas and electric power facilities.

Pulgas Ridge, on which the Crystal Springs Segment is located, is bound on the south and west sides by I-280. The segment is located east of the I-280 Crystal Springs Safety Roadside Rest Area. The unincorporated neighborhood of Highlands marks the boundary of the open space on the north and east. Fire prevention and industrial-scale mowing occurs on the outer edges of the open space, to which there is no regular public access.

Planned Land Use

GGNRA management responsibility of the Watershed is limited to the administration of the easements. As a result, the watershed was not included in management zoning for the recreation area within the FGMP/FEIS. However, GGNRA stated in the GMP that specific actions would be actively encouraged. Chapter 1 of this EA details the provisions of the Scenic and the Scenic and Recreation Easements which GGNRA is required to uphold.

Within the Scenic and Recreation Easement, GGNRA indicated that the agency will “continue to cooperate with SFPUC for preservation of natural, cultural, scenic, and recreational features of the watershed, including new trail connections” and intends to “collaborate with San Francisco Public Utilities Commission on a watershed visitor education center” (NPS 2014).

As stated in the SFPUC *FEIR Peninsula Watershed Monument Plan* the primary goal of watershed management is to “maintain and improve source water quality to protect public health and safety” (CCSF 2001). Within the Plan, secondary goals of the Watershed including the following:

- Maximize water supply
- Preserve and enhance the ecological and cultural resources of the watershed
- Protect the watersheds, adjacent urban areas, and the public from fire and other safety hazards
- Continue existing compatible uses and provide opportunities for potential compatible uses on watershed lands, including educational, recreational, and scientific uses
- Provide a fiscal framework that balances financial resources, revenue-generating activities, and overall benefits, and an administrative framework that allows implementation of the watershed management plan
- Enhance public awareness of water quality, water supply, conservation, and watershed protection issues

Serving as a framework, the SFPUC FEIR identifies compatible and incompatible land uses, defines project review process, and indicates activities requiring permits. Future SFPUC management of land use within the Project area is expected to remain largely unchanged.

PG&E has multiple electric and natural gas facilities within or near the project area in the Watershed. The facilities are generally, but not exclusively located within the broader I 280 corridor. PG&E is expected to continue regular operations and maintenance activities including vegetation management, facility upgrades, utility fortification efforts, repairs, and replacement activities.

Lands within the Watershed are additionally protected by the CDFW as the San Francisco State Fish and Game Refuge. The Refuge is currently under review by CDFW and the State of California for possible elimination as instructed by California SB 1166 (2008).

The Watershed is one of thirteen protected areas in the San Francisco Bay area that form the UNESCO GGBR. “The biosphere reserve is organized under an association with three councils, which are responsible for management, science and education projects” (UNESCO 2002). Additional cooperation with stakeholders and partners for research, education and outreach, and land management has been facilitated as a result of the formation of the GGBR and activities, although unidentified, are expected to continue.

3.6.2 Environmental Consequences

3.2.2.1 Impact Analysis

The assessment of potential impacts on land jurisdiction and land use focused on existing, planned, and future land uses within the Project area. Impacts were assessed based on whether implementation of the Project would result in substantial changes to land use, be incompatible with uses on adjacent properties, or would result in any of the following:

- Physical division of an established residential or mixed-use community
- Conflict with applicable land use plans, policies, goals, or regulations of an agency with jurisdiction over the project (including recreational land management)

- Conversion of prime or unique farmlands to non-agricultural uses
- Substantial and sustained degradation of vehicular circulation in the project area
- Conflicts with existing utility ROWs
- Nuisance impacts attributed to incompatible land uses
- Land uses unable be restored to pre-construction use activities (for areas disturbed and not containing permanent structures)

3.6.2.2 Environmental Impacts

Proposed Action Alternative

Under the proposed Project, PG&E would replace the three proposed Project segments if GGNRA concurs with SFPUC's decision to expand and authorize new easement for the proposed Project. Authorization of the new easements would occur as follows:

Cañada Road Segment

- PG&E acquisition of approximately 6.3 acres of new permanent easement from SFPUC for a total pipe replacement length of approximately 2.4 miles.
- PG&E acquisition of approximately 19.2 acres of Temporary Construction Easement from SFPUC for a total work area (which includes new L-109 easement and use of existing L-109 and L-132 easements) of 31.6 acres.

Bunker Hill Segment

- PG&E acquisition of approximately 5.1 acres of new permanent easement from SFPUC for a total pipe replacement length of approximately 1.1 miles.
- PG&E acquisition of approximately 7.1 acres of Temporary Construction Easement from SFPUC for a total work area (which includes new L-109 easement and use of existing L-109 and L-132 easements) of 13.1 acres.

Crystal Springs Segment

- PG&E is not requesting new permanent easement from SFPUC for the Crystal Springs replacement segment.
- PG&E acquisition of approximately 11 acres of Temporary Construction Easement from SFPUC for a total work area (which includes use of existing L-109 and L-132 easements) of 15.2 acres.

Due to the purpose and location of the line and the customers it serves, there is no practicable alternative that would relocate the segments outside their current corridors. The proposed Project and authorization would not conflict with an existing utility ROW.

As part of the proposed Project, the three segments would be constructed within the existing corridor and would represent a continuation of an existing use and an improvement of authorized facilities within the corridor. Because the proposed Project involves replacing existing underground infrastructure, the general character and land use would be restored and maintained upon completion of the proposed Project. Authorization of the new easement and subsequent construction, operation, and long-term maintenance of the proposed Project would not result in changes to the existing landowners, would not result in the division of an established residential or mixed-use community, and would not conflict with or impede the implementation of any land use plans near the proposed Project. The proposed Project would not impact prime or unique farmland.

Temporary construction easements (TCEs) associated with the proposed Project would encumber approximately 37.3 acres of land within GGNRA's Scenic and Scenic and Recreation easements for a period of approximately 15 months. The temporary land use change would result in minor, short-duration impacts to land use. After the three segments have been constructed, all land temporarily encumbered by the TCEs would be restored to preconstruction conditions and would therefore not represent a permanent land use impact. To construct, operate, and maintain the three segments, the proposed Project would permanently encumber approximately 11.4 acres of land within GGNRA's Scenic and Scenic and Recreation easements.

Although the proposed Project would permanently encumber approximately 11.4 acres of land within the Scenic and Recreation easements, this expansion would have minor impacts to the total 23,000-acre Peninsula Watershed and 4,000 acres of the GGNRA Scenic and Recreation easement. In most cases, the proposed Pipeline Replacement Project involves replacing the existing pipeline segments within the existing utility corridor, with the exception of approximately 0.3 mile of the northern section of the Cañada Road segment. This 0.3-mile section would require new alignment outside of the existing corridor and would not create a conflict with the long-term management of the Scenic and Scenic and Recreation easements.

Minor impacts to land use resulting from the permanent land use conversion would not conflict with the primary goal of SFPUC's management, which is to "maintain and improve source water quality to protect public health and safety" (CCSF 2001). The proposed Project would not result in changes to either San Mateo or San Francisco County General Plans and the proposed easement expansion would not conflict with any general plan objectives or policies that direct land use for adjacent properties. Authorization of the proposed Project and easement expansion would have no effect to management by CDFW or GGBR. Furthermore, because there would be only minor temporary and permanent changes in land use, there would be no nuisance impacts attributed to incompatible land uses.

No Action Alternative

Implementation of the No Action Alternative would result in no additional easement expansion and no impacts to the proposed Project area. No new construction activities would take place, and maintenance and operations would continue. The No Action Alternative would continue to have periodic impacts on existing land uses during routine maintenance and operation activities.

Cumulative Effects

Minor, negative cumulative effects to land use from the Project and past, present, and reasonably foreseeable future actions are anticipated. There would be minor negative cumulative effects to land use because the proposed Project would encumber approximately 11.4 acres within the 23,000-acre Scenic and Scenic and Recreation Easements. Recent PG&E projects have resulted in an approximate utility easement expansion of 5.6 acres within the 23,000-acre Scenic and Scenic and Recreation Easements. These recent easement expansions, combined with the new easement requested for the proposed Project, represent a conversion of 0.01 percent of the 23,000-acre Scenic and Scenic and Recreation Easements. Therefore, the proposed Project would have minor negative cumulative effects when combined with recent PG&E projects within the conservation easements.

Impacts resulting from future upgrades to PG&E facilities within the GGNRA Scenic and Scenic and Recreation Easements could have minor negative cumulative effects when combined with the proposed Project. It is reasonable to expect minor easement expansions with subsequent upgrades and/or replacements of existing infrastructure by PG&E. Therefore, the cumulative effects of possible future PG&E easement expansion, in combination with the proposed Project, would result in negligible future land use changes.

The Project, in conjunction with past, present, and reasonably foreseeable future actions would not significantly change the use, management, or perception of the land and would result in negligible cumulative effects for the reasons discussed above.

3.7 BIOLOGICAL RESOURCES

3.7.1 Affected Environment

This section will describe the affected biological environment including:

- Habitat types
- Common vegetation communities and wildlife
- Federal status species

Prior to discussing the affected environment, a summary of the regulatory environment is presented.

3.7.1.1 Applicable Regulations, Plans and Standards

The following is a summary of biological resource laws and regulations applicable to the proposed Project.

NPS Management Policies (2006)

NPS Management Policies require a high level of protection for animal species listed as threatened or endangered by the Federal Endangered Species Act (ESA) to ensure that actions within the Scenic and Recreation Easement do not adversely affect endangered, threatened, candidate, or sensitive species and their critical habitats.

Endangered Species Act

The ESA (PL 93-205, 87 Stat. 884, 16 USC §1531 et seq.) protects threatened and endangered species and their habitats, as listed by the U.S. Fish and Wildlife Service (USFWS), from unauthorized take including harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collection. The ESA directs federal agencies to ensure that their actions do not jeopardize the continued existence of listed species. Section 7 of the ESA defines federal agency responsibilities for consultation with the USFWS, and requires an assessment of threatened or endangered species that are likely to be affected by a proposed action. A Section 7 consultation would result in a letter of concurrence or a biological opinion from the USFWS that addresses the anticipated effects of the proposed Project on the listed species and may authorize a limited level of incidental take, if necessary.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940— amended several times since— prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. It provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." In addition to immediate impacts, this definition also covers impacts that result from human alterations to a previously-used nest site during a time when eagles are not present, if upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with normal breeding, feeding, or sheltering habits, or causes injury, death, or nest abandonment.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (U.S.C 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) implements international treaties between the United States and other nations devised to protect migratory birds, their

eggs, nests, and any of their parts from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless authorized in the regulations or by a permit. USFWS law enforcement officials carry out enforcement of the MBTA.

EO 13112: Invasive Species

This Executive Order prevents the introduction of invasive species and directs federal agencies not to authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species. Measures to prevent the introduction and spread of invasive species are detailed in this EA.

San Mateo County Tree Ordinances

Section 12000 of the San Mateo County Zoning Ordinance regulates the removal of significant trees, defined as trees with a circumference of 38 inches or more as measured at 4.5 feet above the ground or immediately below the lowest branch, whichever is lower. This provision of the San Mateo Zoning Ordinance applies to tree removal in the Watershed.

The Zoning Ordinance defines a scenic corridor as “those portions of land shown on the Map of Scenic Corridors abutting either side of select rural travel routes” (Section 4.44[b]). While PG&E is not subject to local ordinances, PG&E has agreed to mitigate the removal of significant trees consistent with the San Mateo County Zoning Ordinance.

3.7.1.2 Characterization

Affected Areas, Vegetation, and Waters of the United States

The Watershed has remained relatively undisturbed by the surrounding urban development; it serves as an important biological preserve for the region, as recognized by its inclusion in the Central California Coast Biosphere Reserve (U.S. Department of State 1995). In general, the proposed Project would be constructed through undeveloped, remnant habitat patches with varying degrees of encroachment from urbanization.

The proposed Project area is composed of three distinct segments: Cañada Road, Bunker Hill, and Crystal Springs. These segments are all discussed below separately due to their differences in species, habitat composition, and impacts.

Cañada Road Segment

The Cañada Road segment’s southernmost point originates at an elevation of about 600 feet above sea level. The Cañada Road alignment follows a north-northwest course running parallel to a high-voltage electric transmission line across undeveloped land before descending to an elevation of approximately 350 feet above sea level near the Pulgas Balancing Reservoir. Northwest of the Pulgas Balancing Reservoir, the alignment crosses a small, ephemeral drainage and then ascends a gentle hill which rises to approximately 540 feet above sea level. This segment passes through mostly undeveloped land with the exception of a road crossing at Sheep Camp Trail. The Cañada Road segment supports a variety of vegetation types (Figure 3-2, Table 3-1). Rocky, south-facing slopes at the upper elevations support California sage (*Artemisia californica*) scrub; this natural community is uncommon in the rest of the segment. Deeper soils on the slopes support a mosaic of coyote brush (*Baccharis pilularis*) scrub and needlegrass (*Stipa* spp.) grassland. In most places, the grassland is dominated by foothill needlegrass (*Stipa lepida*), purple needlegrass (*Stipa pulchra*), or a mixture of both. Purple needlegrass tends to be more common in open grasslands on soils derived from sedimentary and serpentine rock, while foothill needlegrass tends to be dominant along woodland edges, openings, and on the edges of the scrub/chaparral. Both coyote brush scrub and needlegrass grassland are abundant in the segment area. The north-facing slopes and drainages support coast live oak (*Quercus agrifolia*) woodland, which is also abundant here (OEA 2013a).

**TABLE 3-1
VEGETATION COMMUNITIES WITHIN THE AUTHORIZED WORK AREA**

Vegetation Community	Acres
<i>Cañada Road Segment</i>	
California Annual Grassland	9.43
Chamise	0.46
Coast Live Oak	7.49
Coyote Brush	12.83
Disturbed	0.73
Eucalyptus	0.35
Monterey Cypress or Monterey Pine Stands	0.19
<i>TOTAL</i>	<i>31.48</i>
<i>Bunker Hill Segment</i>	
California Annual Grassland	10.11
Coyote Brush	1.13
Built-up Urban	0.99
<i>TOTAL</i>	<i>12.23</i>
<i>Crystal Springs Segment</i>	
Built-up Urban	4.19
California Annual Grassland	10.97
Coyote Brush	0.35
Eucalyptus	0.59
<i>TOTAL</i>	<i>16.10</i>
TOTAL	59.81

The Cañada Road segment crosses approximately six unnamed ephemeral watercourses, all of which drain into Upper Crystal Springs Reservoir.

Bunker Hill Segment

Located on Pulgas Ridge, the Bunker Hill segment follows a course roughly parallel to I-280 following a north-northwest course. It runs parallel to a high voltage electric transmission line and the Highlands Fire Trail in a narrow strip of remnant habitat wedged between I-280 and dense residential development. Near the northern end of the alignment, the segment bisects Bunker Hill Road.

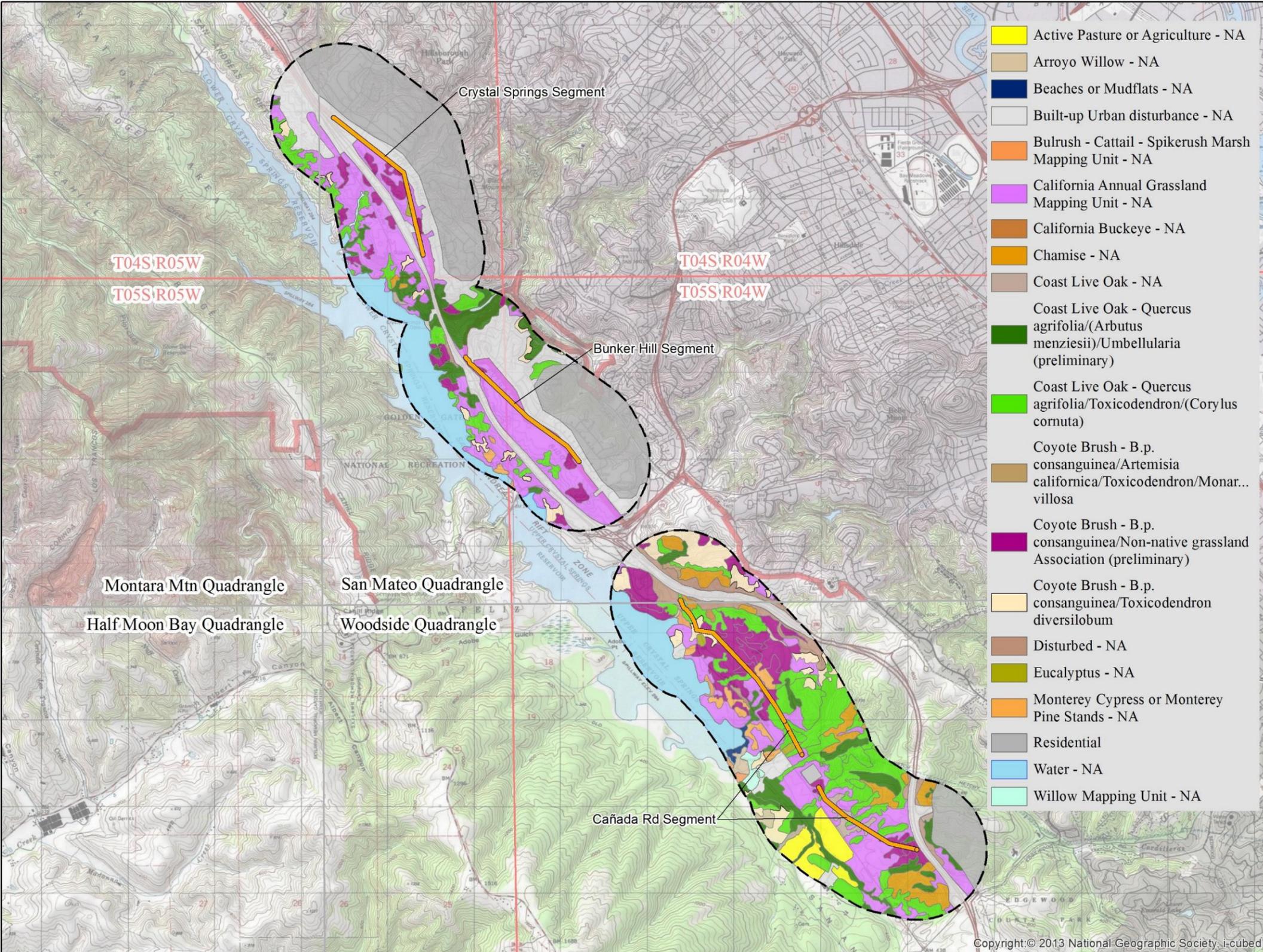
The Bunker Hill segment supports several vegetation types. Most of Pulgas Ridge supports serpentine bunchgrass—a diverse grassland type dominated by purple needlegrass (*Stipa pulchra*)—with varying proportions of foothill needlegrass (*Stipa lepida*), big squirreltail (*Elymus multisetus*), June grass (*Koeleria macrantha*), blue wild-rye (*Elymus glaucus* ssp. *glaucus*), and a variety of annuals and perennials such as tidy-tips (*Layia platyglossa*), mariposa lilies (*Calochortus* spp.), goldfields (*Lasthenia californica*), brodiaeas (*Brodiaea* spp., *Dichelostemma pulchella*, and *Triteleia* spp.), and larkspur (*Delphinium hesperium*). Grasslands north of Bunker Hill Drive, though mapped as serpentine bunchgrass, are somewhat

less diverse with deeper soils, more bunchgrasses, and fewer wildflowers. Areas of Pulgas Ridge with deeper soils support patches of coyote brush scrub. Small patches of coast live oak woodland occur to the south of Bunker Hill Drive and at the northern terminus of the segment.

Non-native woodland is present to the north and south of Bunker Hill Drive, where some large Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) stands are conspicuous. Non-native areas include the disked firebreaks and residences. Disked firebreaks may support non-native species whose life cycle is adapted to the annual cycle of mowing and disking. The non-native areas also include paved or graveled roads, such as Bunker Hill Drive, the graveled area at the Half Moon Bay Valve Station, and the service road (OEA 2014). These vegetation communities are depicted in the Vegetation Communities Map (Figure 3-2) and acreages of these communities within the segment are summarized in Table 3-1.

The Bunker Hill segment does not cross any watercourses or drainages, although a potential seep area with moist surface soils was investigated near the access road for this Project segment.

September 1, 2013 Draft Constraints Study (GNCA) Vegetation Map 11X17.Limit



- Active Pasture or Agriculture - NA
- Arroyo Willow - NA
- Beaches or Mudflats - NA
- Built-up Urban disturbance - NA
- Bulrush - Cattail - Spikerush Marsh Mapping Unit - NA
- California Annual Grassland Mapping Unit - NA
- California Buckeye - NA
- Chamise - NA
- Coast Live Oak - NA
- Coast Live Oak - Quercus agrifolia/(Arbutus menziesii)/Umbellularia (preliminary)
- Coast Live Oak - Quercus agrifolia/Toxicodendron/(Corylus cornuta)
- Coyote Brush - B.p. consanguinea/Artemisia californica/Toxicodendron/Monar... villosa
- Coyote Brush - B.p. consanguinea/Non-native grassland Association (preliminary)
- Coyote Brush - B.p. consanguinea/Toxicodendron diversilobum
- Disturbed - NA
- Eucalyptus - NA
- Monterey Cypress or Monterey Pine Stands - NA
- Residential
- Water - NA
- Willow Mapping Unit - NA

Vegetation Communities

San Francisco Peninsula
Watershed Gas Line 109
Replacement Project

Legend

- Project Segment
- Half-Mile Buffer



0 4,000 Feet



Figure 3-2

Copyright © 2013 National Geographic Society, i-cubed

Crystal Springs Segment

The Crystal Springs segment is located on Buri Buri Ridge on the east side of I-280; it roughly parallels the freeway northward from approximately 0.3 mile north of Crystal Springs Road to 0.25 mile north of Hayne Road. The pipeline begins at an elevation of about 525 feet, south of Windemere Road in Hillsborough, and ascends to an elevation of about 700 feet at its northwestern terminus. A small, separate work area near the northwestern terminus on the west side of I-280, between the freeway and Golf Course Road, would be within an undeveloped area. Two areas identified as part of the work area at the southeastern end of the pipeline in the vicinity of the Crystal Springs Valve Station are located in previously disturbed areas. It parallels a high-voltage electric transmission line passing through a narrow strip of land that is mostly undeveloped but bordered by I-280 and dense residential development.

The Crystal Springs segment supports several vegetation types. A substantial portion of the segment was mapped as non-native grassland, although large areas within this mapped vegetation type are actually unvegetated (OEA 2013b). These unvegetated areas include the service road, disked firebreak immediately adjacent to residences, as well as the graveled Crystal Springs Valve Station. The firebreak is mowed and then disked. The service road edges are also mowed annually, but some still support a high proportion of native species. The northwestern portion of the segment, north of Hayne Road, has been substantially altered as a result of residential development, the construction of I-280, and the associated re-routing of Skyline Boulevard. This area is a mosaic of non-native woodland, shrubland, and grassland (OEA 2013b). Other vegetation types present include serpentine grassland, coast live oak (*Quercus agrifolia*) woodlands that have wide spacing between the trees and a shrubby understory consisting of poison oak (*Toxicodendron diversilobum*), toyon (*Heteromeles arbutifolia*), coyote brush, and coffeeberry (*Frangula [=Rhamnus] californica* var. *californica*).

The Crystal Springs segment crosses three unnamed ephemeral watercourses, all of which drain into Lower Crystal Springs Reservoir.

Wildlife

The Cañada Road, Bunker Hill, and Crystal Springs segments pass through remnant patches of habitat that support many amphibians, invertebrates, reptiles, birds, and mammals, compared to most areas along the San Francisco Peninsula that have been developed. Common birds, as well as some special status birds, use resources found within these segments. The proximity of the proposed Project area to the San Francisco Bay and Pacific Ocean have shaped this region as a migratory pathway for raptors, waterfowl, and songbirds.

There is potentially suitable foraging, dispersal, and aestivation habitat for common and special status amphibians and reptiles through some areas within the proposed Project area. For example, the Cañada Road segment comes within 300 feet of Upper Crystal Springs Reservoir and provides habitat for amphibians, which may disperse through uplands in the proposed Project area. Many common and some special status invertebrates occur near the Project. There are serpentine soils present along the majority of the Bunker Hill segment that provide potential habitat to a number of special status invertebrates and plant species. Common wildlife occurring throughout the Project includes deer, coyote, bats, rodents, and numerous bird species. Also, a few special status species occur in woodlands in the Project area.

Based on consultations with regional biologists, literature reviews, and California Natural Diversity Database (CNDDB) searches, federally threatened and endangered species with the potential to be affected by the proposed Project were identified (see tables in Appendix C; Figure 3-3).

Field surveys were conducted in May 2013 along the Cañada Road (SBI 2013a), Bunker Hill (SBI 2014), and Crystal Springs (SBI 2013b) segments. Invertebrate surveys were conducted in the spring of 2013, with

a follow-up visit to the Crystal Springs segment in August 2013 (ECS 2013a; ECS 2013b; ECS 2014). Focused federal status plant surveys were conducted in the spring and summer of 2013, and the spring of 2014 (OEA 2013a; OEA 2013b; and OEA 2014). In the spring of 2015, new temporary work areas were identified and special status wildlife, invertebrate, and plant surveys were conducted in these areas (CH2M HILL 2015; ECS 2015).

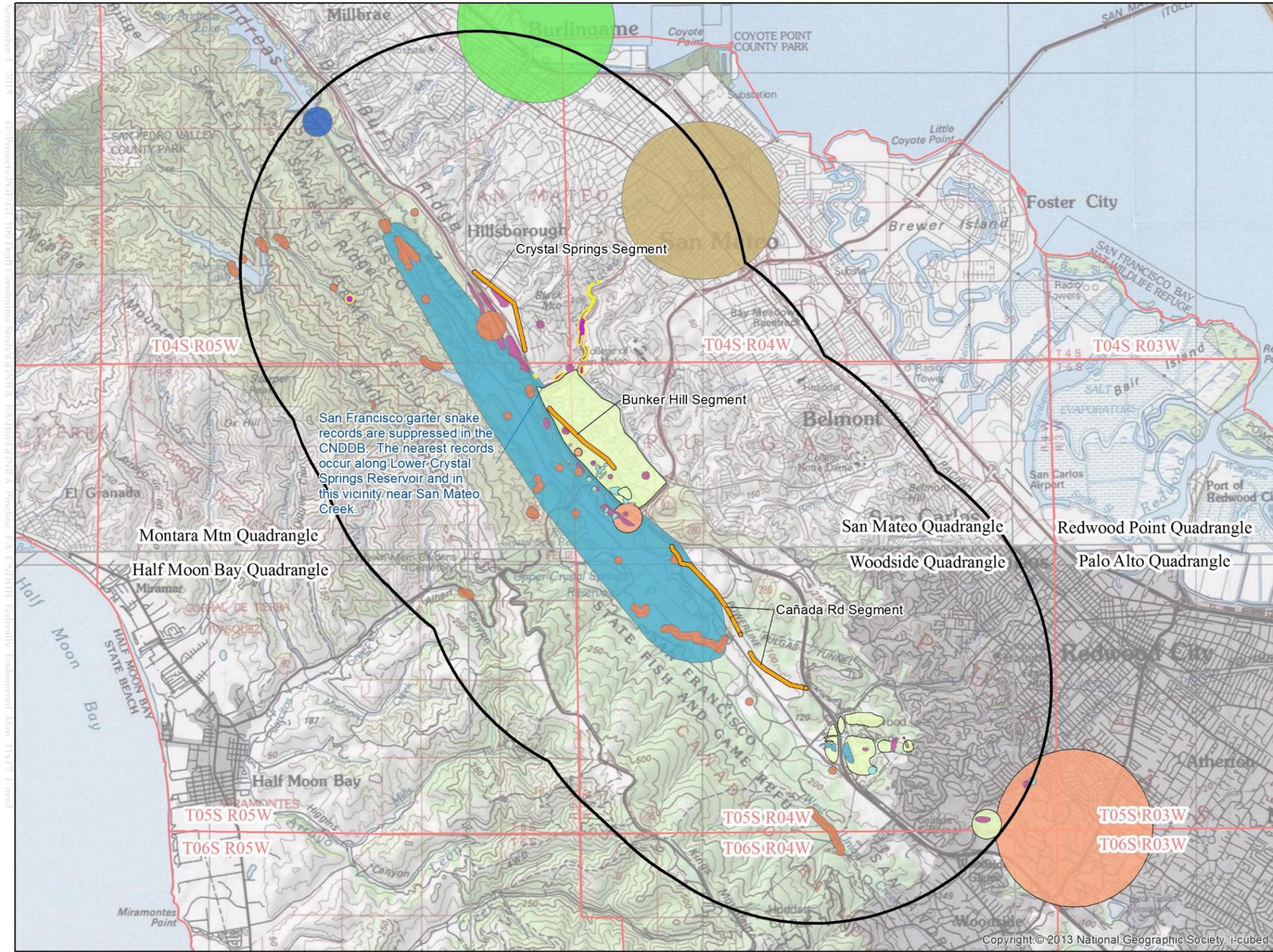
A background literature review was conducted, including a CNDDDB search for recorded occurrences of federally-listed plants and wildlife occurring within three miles of the segments.

The federal status species known to occur within three miles of the Bunker Hill, Cañada Road, and Crystal Springs segments are listed in Appendix C and shown on Figure 3-3.

The only federally protected wildlife species with potential to occur within the proposed Project area are the California red-legged frog (CRLF) (*Rana draytonii*) and SFGS (*Thamnophis sirtalis tetrataenia*); these species are only likely to occur in the Cañada Road segment. Federally-designated critical habitat for CRLF occurs in the Cañada Road segment.

The only federally protected plant species with potential to occur within the proposed Project area are the Marin western flax (*Hesperolinon congestum*) and white-rayed pentachaeta (*Pentachaeta bellidiflora*). There is suitable habitat for these two species in the Bunker Hill and Cañada Road segments. Marin western flax was observed in the Crystal Springs and Bunker Hill segments during rare plants surveys conducted in 2013 (Crystal Springs) and 2014 (Bunker Hill). White-rayed pentachaeta was not observed in any segment during the 2013 and 2014 rare plant surveys (Appendix C).

Federally-designated critical habitat for BCB (*Euphydryas editha bayensis*) occurs in the Bunker Hill segment vicinity; however, no life stages of the BCB were observed during any of the 16 surveys conducted by project biologists from March through May 2014 (Arnold 2014). Suitable habitat is also present along the Crystal Springs segment; no occurrences have been recorded along this segment.



**California Natural Diversity Database
Federal Sensitive Species
Occurrence Records**

San Francisco Peninsula
Watershed Gas Line 109
Replacement Project

Legend

- Project Segment
- 3-Mile Buffer
- CNDDDB Results**
- Bay checkerspot butterfly
- California clapper rail
- California red-legged frog
- Crystal Springs fountain thistle
- Marin western flax
- Mission blue butterfly
- Myrtle's silverspot butterfly
- San Francisco garter snake (see note on map)
- San Mateo thorn-mint
- San Mateo woolly sunflower
- White-rayed pentachaeta



0 8,000 Feet



Figure 3-3

California Red-legged Frog; Federally Threatened

Cañada Road Segment – The Cañada Road segment is located within critical habitat for CRLF. CRLF are most likely to occur in upland portions of the segment during precipitation events and under wet conditions, such as when heavy fog is present. There are five known occurrences of CRLF located within one mile of the segment. Near the southern end of the segment, CRLF breeding has been observed in a pond located near the I-280 overpass at Cañada Road, approximately one mile south of the proposed Project access road leading to Edgewood Valve Station. CRLF are also known to breed in at least one pond on Filoli Estate, located less than 0.5 mile south of the segment on the opposite side of Cañada Road. Other ponds on Filoli Estate may also be occupied by CRLF; however, these locations are not identified in the CNDDDB as containing CRLF. Farther north, near the southern portion of Upper Crystal Springs Reservoir, CRLF have been recorded at Laguna Creek and Pulgas Water Temple. These occurrences are located a few hundred feet southwest of the segment on the opposite (western) side of Cañada Road.

Near the northern end of the segment, CRLF have been observed in and around a marsh at the edge of Upper Crystal Springs Reservoir. These records include egg masses, metamorphs, and an adult found dead along Cañada Road directly adjacent to the segment. No significant dispersal barriers are present between these CRLF occurrences and the segment.

No suitable CRLF breeding habitat occurs within the segment work area; however, habitat suitable for CRLF dispersal and foraging is present. CRLF may use the six ephemeral streams that cross the alignment perpendicularly, and also may occur within the segment as they make overland movement between these streams and breeding sites on the west side of Cañada Road. Such movements are most likely to occur in the portion of the segment near Pulgas Water Temple and at the northern end of the segment where a drainage that crosses the area connects with emergent marsh habitat on the west side of Cañada Road (SBI 2013a).

Bunker Hill Segment – The Bunker Hill segment lies outside designated critical habitat for CRLF. The nearest critical habitat is located 0.25 mile west of the segment on the west side of I-280. CRLF is not expected to occur in the Bunker Hill segment due to the presence of I-280 between the SFPUC reservoirs and Pulgas Ridge, and the lack of nearby suitable breeding habitat east of the freeway. On the east side of I-280, records of CRLF are limited to the area near San Mateo Creek that is located approximately 1,400 feet north of the segment. These occurrences are within the dispersal distance of the species, but the absence of other aquatic habitats within or near the area greatly reduces the likelihood for CRLF to be encountered in the segment work area.

San Francisco Garter Snake; Federally Endangered

Cañada Road Segment – More than 30 observations of SFGS have been recorded within one mile of the segment. These include records of individuals observed near a pond at the southern end of the segment, individuals associated with marshes along the western shoreline of Upper Crystal Springs Reservoir, and several observations distributed along Cañada Road. Several SFGS records on Cañada Road are located within a few feet of the edge of the segment near its northern end.

Several emergent marsh habitats known to support SFGS are present on the west side of Cañada Road, and a seasonal pond on the east side of Cañada Road, just north of the segment, may also provide foraging habitat for this species. SFGS that forage in these areas may use uplands within some portions of the segment for basking, mating, and retreat habitat. Observations of SFGS along the edges of Cañada Road recorded in spring of 2005 suggest that overland movements by SFGS occur between marsh habitats on the west side of Cañada Road and the uplands located on the road's east side.

Due to the proximity of occupied marsh habitats on the west side of Cañada Road and the lack of significant dispersal barriers between the alignment and these habitats, there is potential for SFGS throughout the segment work area. Like CRLF, SFGS tend to occur most frequently in areas near suitable aquatic habitat; however, SFGS use upland habitats more extensively than CRLF and may occupy underground retreats and vegetative cover within upland areas for prolonged periods. In general, SFGS are most likely to be encountered in portions of the segment work area nearest to Cañada Road, including along the unpaved access roads that connect with the alignment. Several SFGS observations were made near the northern end of the segment, increasing likelihood of SFGS present in this area.

Bunker Hill Segment – As is the case with CRLF, SFGS is commonly found on the west side of I-280 along the margins of Upper and Lower Crystal Springs Reservoirs; the freeway also poses a barrier to movement between the segment on Pulgas Ridge and suitable habitat along the reservoirs. North of the segment, SFGS is known to occur in San Mateo Creek downstream of Lower Crystal Springs Dam and may also occur in adjacent areas.

The only possible area from which SFGS could move into the Bunker Hill segment work area would be from San Mateo Creek; however, the likelihood of this occurring is extremely low (SBI 2014). The dispersal ability of the SFGS has not been fully investigated; however, Halstead et al. (2011) observed SFGS at a distance of 700 feet from aquatic habitat. Other subspecies of *T. sirtalis* are known to move distances of up to ten miles between foraging sites and hibernacula (Gregory and Stewart 1975); however, no data is available to indicate whether SFGS make similar long-distance movements. SFGS dispersing from San Mateo Creek would be required to move at least 1,400 feet through oak woodland habitat in order to reach the northern end of the segment. It is expected that such movements, if they do occur, would happen very infrequently.

Bay Checkerspot Butterfly; Federally Threatened

Cañada Road Segment – The Cañada Road segment lies within designated critical habitat for the BCB. No CNDDDB records have been found for BCB in the Cañada Road segment work area; however, BCB is known to occur outside the proposed Project work area within one mile of the L-109 segment at Edgewood County Park, south of the intersection of Edgewood Road and I-280 (CNDDDB 2013), where there has been an ongoing reintroduction effort. BCB is not expected to occur in the segment work area due to the distance of recorded species and the lack of serpentine grassland habitat and suitable larval and adult food plants required for the species (ECS 2013a).

Bunker Hill Segment – The majority of the Bunker Hill segment is located on Pulgas Ridge, which has been designated as critical habitat for BCB (USFWS 2008). This critical habitat unit was occupied at the time of listing, but the BCB population has since been extirpated in this unit (USFWS 2007). Presence/absence surveys, performed in 2014, verified this species was not present during the 2014 flight season (ECS 2014).

Mission Blue Butterfly; Federally Endangered

Cañada Road Segment – This species is known to occur within one mile of the segment to the northwest near the I-280 and SR 92 interchange (CNDDDB 2013); however, MBB is not expected to occur in the segment due to the lack of suitable larval food plants required for the species. Adults could fly through the segment work area, but this is not expected (ECS 2013a).

Crystal Springs Segment – Western lupine (*Lupinus formosus*), a larval food plant for MBB, grows immediately south of the sniff hole work area between Golf Course Drive and I-280 both on Watershed lands and Caltrans ROW. The MBB has not been observed in the segment analysis area; however, unidentified eggs were observed on the Western lupine (ECS 2013b).

Plants

Marin Western Flax; Federally Threatened

Bunker Hill Segment – Marin western flax ranges from San Mateo County northward to Marin County, with most extant populations located in San Mateo County. In the vicinity of the segment, there are CNDDDB occurrence records for several separate populations on the southern portion of Pulgas Ridge and on a serpentine outcrop on Crystal Springs Road near Polhemus Road. SFPUC reports this species occurring in a broad swath along the northern portion of Pulgas Ridge, overlapping with the survey area south of Bunker Hill Drive (OEA 2014).

Marin western flax was mapped in numerous locations in and near the segment on Pulgas Ridge. The largest colony was located in deep, black clay soils just south of Bunker Hill Drive. This colony is also on file with SFPUC. At least one other large colony, was observed in similar habitat about 0.1 mile west of the segment (SFPUC 2013). Smaller colonies were observed in the segment in pockets of soil, often in slight depressions, on the rocky ridge. A large number of smaller plants were found along the hard-packed edges of the Highlands Fire Trail service road.

Crystal Springs Segment – During the 2013 surveys on Buri Buri Ridge, Marin western flax was mapped in ten locations. The largest colonies, which also contained the largest individuals, were located in relatively moist clay soils in somewhat low-lying, concave topographic situations. Smaller colonies, often consisting of smaller-statured plants, were also observed in small pockets of clay soils among rocks in more exposed or arid sites. Several small colonies were also observed growing in the needle litter below Monterey pine trees.

Of the seven colonies of Marin western flax that were observed in and/or near the segment, three were in a relatively level, rocky area with pockets of clay soil in the northwestern half of the segment. These colonies are within, or are slight extensions of, the known population reported by SFPUC. One of these was in a small depression in an open area within the segment, while two were just outside the segment, somewhat in the shelter of pine and oak trees. All three of these colonies were small, consisting of 10 to 20 individuals.

Three more colonies were located on the southeast-facing slope to the northwest of the Crystal Springs valve station. A very small colony consisting of three plants was located just west of the pipeline marker at the top of the slope. A larger colony consisting of 52 plants was located in a concave area of deep soil, about 50 meters northwest of the valve station itself. Another small colony of 11 plants was located just inside the gate from the Crystal Springs rest area, just north of the access way in deeply cracked clay soil.

Marin Western Flax was not located within the boundaries of the additional work areas during the spring 2015 botanical surveys.

White-rayed Pentachaeta; Federally Endangered

Cañada Road Segment – This plant has been identified within an area bounded by I-280, Edgewood Drive and Cañada Drive (CNDDDB 2013), approximately 0.5 mile south of the segment. Other historical locations are from the Edgewood Park and the Crystal Springs area. Serpentine barrens habitat is absent from the segment and this species was not observed during focused rare plant surveys (OEA 2013a).

Bunker Hill Segment – White-rayed Pentachaeta is historically known to occur from SCR to MRN; the only known remaining locality is just south of the segment, in an area bounded by I-280, Edgewood Drive and Cañada Drive. Other historical locations are from the Edgewood Park/Crystal Springs area. There is low potential for this species to occur, as potentially suitable habitat is present on site, but the species was not found in the segment during focused rare plant surveys (OEA 2013a).

SFPUC-identified Potential Crystal Springs Fountain Thistle Mitigation Areas

The SFPUC has identified certain areas near the segment for potential Crystal Springs fountain thistle mitigation in relation to SFPUC projects (SFPUC 2013). The SFPUC is initiating an effort to create and enhance populations of federally-endangered Crystal Springs fountain thistle (*Cirsium fontinale* var. *fontinale*) on Watershed lands. This species is known only to occur in seeps and springs on serpentine substrate. Tufted hairgrass is also associated with this habitat and requires extended periods of subsoil moisture to persist. Several areas supporting tufted hairgrass near the segment are being investigated by the SFPUC to determine whether the hydrology would be suitable to support Crystal Springs fountain thistle. Such areas are typically low-lying depressions or are along small watercourses. The proposed Project was designed to avoid SFPUC-identified potential Crystal Springs fountain thistle mitigation areas, thereby eliminating the potential for direct impact.

Cañada Road Segment – There are no SFPUC identified potential Crystal Springs fountain thistle mitigation areas located near the Cañada Road segment.

Bunker Hill Segment – The SFPUC has identified certain areas on the western, lower-elevation edge of Pulgas Ridge as potential Crystal Springs fountain thistle mitigation sites for SFPUC projects (SFPUC 2013). Of the 8 identified potential mitigation areas, 1 area is within 125 feet of the segment and west of the Highlands Fire Trail. None of these eight areas are found within the proposed Project footprint. During the spring 2015 surveys, a small population of Crystal Springs fountain thistle was observed approximately 250 feet southwest from the edge of the proposed work area (

Crystal Springs Segment – The SFPUC has identified certain areas on Buri Buri Ridge and elsewhere as potential Crystal Springs fountain thistle mitigation sites for SFPUC projects (SFPUC 2013). Of the six identified potential mitigation areas on Buri Buri Ridge, three are located near the segment. One is located next to the proposed laydown area south of the Windemere Gate. Another is located an oak-brush-grassland just south of the point where the alignment begins to parallel Black Mountain Road. A third is located just south of Hayne Road. The proposed Project has been designed to avoid SFPUC-identified potential Crystal Springs fountain thistle mitigation areas.

3.7.2 Environmental Consequences

3.7.2.1 Impact Analysis

This subsection presents an analysis of the proposed Project's impact to the biological resources. The biological resources addressed in this subsection are vegetation, wildlife, and sensitive species. Factors considered in determining whether the proposed Project would have biological resource impacts include the extent or degree to which its implementation would result in:

- A noticeable effect to viability of a population or individuals of a plant or wildlife species or resource or designated critical habitat. Impacts on a special-status species, critical habitat, or the natural processes sustaining them would be detectable, both in and out of the park.
- Substantial modification to habitat used by federal status species for resting, nesting, feeding, or escape cover
- Local loss of wildlife habitat (as compared to total available resources within the area)
- Adverse and substantial effects to important riparian areas, wetlands, or other wildlife habitats identified in local or regional plans, policies, regulations, or by the CDFW or USFWS
- Loss of any wildlife population that would jeopardize the continued existence of that population
- Loss of any species population that would result in the species being listed or proposed for listing as federal endangered or threatened
- Reduction in the range of occurrence of any wildlife species

- Interference with nesting or breeding periods of federally protected species
- Reducing the range of occurrence of any migratory bird species
- Introduction or increase in the spread of noxious weeds
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

3.7.2.2 Environmental Impacts

Proposed Action Alternative

Vegetation

The Proposed Action Alternative would have short-term, local impacts on vegetation. Prior to construction, vegetation would be removed and the ROW leveled to facilitate construction activities and to provide a safe work area. Preparation of the proposed construction work area includes removing vegetation and debris, grading and improving access roads, and leveling work areas within permanent and temporary easements. Pre-construction preparation typically includes stripping and salvaging topsoil from the entire construction corridor width as well as the staging areas. In topsoil areas with heavy weed infestations, the topsoil would be removed from the site with careful attention to prevent seed dispersal; topsoil would not be reused.

Permanent and temporary easements for the proposed Project total approximately 59.9 acres of land; of the 59.9 acres, 11.2 acres would occur within existing permanent easements, 11.4 acres would be new permanent easement, and 37.3 acres would be within TCEs.

Native tree removal would be limited to the extent practicable. Per the PG&E Gas Transmission Vegetation Management Assessment (PG&E 2012), vegetation along the ROW would be managed in two distinct zones: the pipe zone (five feet on either side of the pipe) and the border zone (five additional feet on either side of the pipe zone). The width of the pipe zone is defined as five feet on either side of the pipeline as measured from the outside edge of the pipe (or approximately ten feet total width, depending on the width of the pipe). Within the pipe zone, low-growing vegetation—typically grasses, forbs and low-growing brush species (fewer than 12 inches)—would be promoted. Shrub or brush growth shall not impede safe and reliable access to the pipeline. All trees (hardwood or conifer), brush, and shrubs greater than one inch in diameter and/or one foot in height shall be removed from within the pipe zone. The border zone, located outside the pipe zone, is a transition zone extending towards the edges of the pipeline ROW and would be managed for taller vegetation. Within the border zone, all trees (hardwood or conifer) greater than eight inches in diameter would be removed.

Native trees and shrub cover would be allowed to re-establish in the remaining temporarily disturbed areas. Non-native trees such as Monterey pine and eucalyptus would not be replaced. Tree trimming may also be required along access roads for safe vehicular transport. Restoration of oak trees would focus on replanting within the disturbed ROW, excepting the pipe and border zones, and planting as appropriate along the retired pipeline. Disturbed grassland areas would be restored to native grassland.

Pursuant to PG&E guidelines described in Gas Transmission Vegetation Management Assessment (July 2012), more restrictive measures may be implemented in environmentally sensitive areas by establishing a trail zone to facilitate leak survey personnel on foot in lieu of a wider pipe zone. Clearing of vegetation within the trail zone would provide a walking trail for access of leak survey personnel; trail zone shall not exceed a width of four feet (two feet on each side of the center of the pipe). A border zone of five feet shall extend beyond each side of the trail zone (PG&E 2012).

In the case of above ground segments, an additional zone—called a hazard zone—would extend outside of the border zone to prevent damage to pipelines from falling trees and branches. Within the hazard zone (of

variable width), all trees and branches deemed potentially hazardous would be removed. The approximate number of trees to be removed or trimmed, and vegetative brush units planned for removal pre-construction is detailed in Table 3-2.

TABLE 3-2 VEGETATION PLANNED FOR REMOVAL	
Vegetation	Trees/Trim/Brush Units*
<i>Cañada Road Segment</i>	
Trees	490
Trim	49+
Brush Units*	2975
<i>Bunker Hill Segment</i>	
Trees	26
Trim	13
Brush Units*	102
<i>Crystal Springs Segment</i>	
Trees	309
Trim	4
Brush Units*	80-85
* Brush Unit = 4 feet by 4 feet by 4 feet	
Sources: Manischalchi 2014a, 2014b; Hunzeker 2014	

Wildlife

Impacts to non-special status wildlife species would be somewhat dependent on the mobility of the affected species. Bird species and mobile mammals, such as coyote (*Canis latrans*) and fox (*Vulpes* spp.), would tend to move away from the construction zone to exploit the approximately 5,500 acres of similar habitat in the area. This would result in increased forage and hunting pressure in those areas temporarily occupied by animals displaced by construction and could affect breeding success during the breeding season. Less mobile animals such as salamanders (*Ambystoma* spp.) and gophers (*Thomomys* spp.) within or adjacent to the pipeline ROW could suffer more severe impacts such as injury or death. The narrow, linear nature of the disturbance would result in short-term (1 to 2 years) forage loss within approximately 59.9 acres, which is minimal (0.01 percent) compared to the availability of similar habitat in the area.

California Red-legged Frog; Federally Threatened

Some work activities have the potential to directly and indirectly harm CRLF in the Cañada Road segment. Although not expected, construction activities may result in a “take” of one or more individuals and may require additional conservation measures. These measures would be developed in collaboration with the USFWS during a Section 7 consultation process. The proposed work in riparian areas is minimal relative to the entire riparian area, so any temporary reduction in species habitat would likely be negligible. With the implementation of mitigation measures, there is not likely to be a long-term impact to the habitat, range, or population of this species.

Impacts to CRLF critical habitat within the Cañada Road segment area would be temporary and limited in scope. The Cañada Road segment area contains no still or slow-moving bodies of water, so there is no aquatic breeding habitat within the segment; there would be no impact to this habitat type or its primary

constituent elements (PCE). The creeks in the work area are suitable aquatic non-breeding habitat, as they provide shelter, foraging, predator avoidance, and aquatic dispersal areas for juvenile and adult CRLF. Work activities would cause limited and temporary impacts due to noise and physical disturbance. The ROW also passes through upland areas, which provide suitable upland habitat for shelter, foraging, predator avoidance, and dispersal. As with the aquatic non-breeding habitat, impacts to upland and dispersal habitat in the critical habitat area would be limited in scope and would be temporary, due to the duration of work and the large extent of suitable unaffected upland habitat surrounding the work area. The ROW comprises a very small portion (approximately 57.5 acres) of the total upland area present (approximately 5,500 acres) that is suitable for CRLF. Work activities may temporarily block dispersal routes through these areas, although this is not likely to have a substantial impact on the population given the short duration of work activities. Dispersal routes would not be permanently impacted because the work activities would not introduce new barriers such as roads or walls.

San Francisco Garter Snake; Federally Endangered

Some work activities have the potential to directly take SFGS. Direct impacts to this species would mostly be limited to crushing beneath equipment and vehicles. The potential for a take of this species would likely require additional conservation measures developed in collaboration with the USFWS during a Section 7 consultation process. The implementation of mitigation measures would reduce the likelihood that SFGS is directly impacted by construction activities. Also, due to the mobility of the species, individuals would likely move away from the construction zone into water if disturbed. Although primarily active during the day, they may forage on warm evenings. This foraging is restricted to aquatic habitats; SFGS is not likely to enter the work area at night. This species is also not likely to enter the construction zone during work activities, as it is extremely elusive with humans. It would likely exploit similar habitat adjacent to work areas. This would result in increased forage and hunting pressure in those areas temporarily occupied by animals displaced by construction. However, the proposed work area in riparian areas is minimal relative to the entire riparian area, so any temporary reduction in species habitat would likely be negligible. With the implementation of mitigation measures, there would not likely be a long-term impact to the habitat, range, or population of this species.

Bay Checkerspot Butterfly; Federally Threatened

Even though this species is considered extirpated and has not been detected during recent flight surveys of the Bunker Hill area, there is potential for it to recolonize the area due to suitable habitat in close proximity to an existing population and within the butterfly's historic range. In the event that this species does end up recolonizing the work area prior to work, direct impacts to this species could result from crushing under foot, equipment, and vehicles. Indirect effects on this species would have the potential to be significant. This species relies on a series of host plants to complete its life cycle, some of which have been found in the Bunker Hill segment. Work activities have a moderate potential to temporarily impact habitat this species by removing live host plants, as well as the more permanent effect of introducing noxious weeds that may outcompete the host plants. With the implementation of mitigation measures, there would not likely be a long-term impact to the habitat, range, or population of this species.

The Cañada Road and Bunker Hill segments also pass through critical habitat for BCB. There would be no potential to impact the critical habitat in the Cañada Road segment as it does not possess the appropriate Primary Constituent Elements (PCEs), described in the paragraph below, to support BCB. Work activities would temporarily impact critical habitat in the Bunker Hill segment because this segment possesses many of the PCEs (e.g., patches of Dwarf Plantain [*Plantago erecta*] and nearby serpentine grasslands). Work activities may impact habitat for this species by destroying live host plants as well as temporarily displacing host plant seeds stored in the soil. With the implementation of mitigation measures including a limited operating period and exclusion fencing to protect host plants, there would not likely be a long-term impact to the critical habitat of this species.

The Federal Register (2001) outlines PCEs for BCB as: (1) the presence of annual or perennial grasslands with little to no overstory that provide north-to-south and east-to-west slopes with a tilt of more than seven degrees for larval host plant survival during periods of atypical weather (for example, drought), (2) the presence of the primary larval host plant, dwarf plantain (*Plantago erecta*), and at least one of the secondary host plants, purple owl's-clover (*Castilleja densiflora*) or exerted paintbrush (*Castilleja exserta*), are required for reproduction, feeding, and larval development, (3) the presence of adult nectar sources for feeding. Common nectar sources include desert parsley (*Lomatium spp.*), California goldfields (*Lasthenia californica*), tidy-tips (*Layia platyglossa*), sea muilla (*Muilla maritima*), scytheleaf onion (*Allium falcifolium*), false babystars (*Linanthus androsaceus*), and intermediate fiddleneck (*Amsinckia intermedia*), (4) soils derived from serpentinite ultramafic rock (Montara, Climara, Henneke, Hentine, and Obispo soil series) or similar soils (Inks, Candlestick, Los Gatos, Fagan, and Barnabe soil series) that provide areas with fewer aggressive, nonnative plant species for larval host plant and adult nectar plant survival and reproduction, and (5) the presence of stable holes and cracks in the soil, and surface rock outcrops that provide shelter for the larval stage of the BCB during summer diapause (Federal Register 2001).

Mission Blue Butterfly; Federally Endangered

Mission blue butterflies use three host plants: silver bush lupine (*Lupinus albifrons* var. *collinus*); summer lupine (*L. formosus* var. *formosus*); and less frequently, varied lupine (*L. variicolor*). The species uses a variety of nectar plant species found in grassland and coastal scrub communities. Although the species is known to occur within a mile of the proposed Project area, MBB is not expected to occur on site due to the lack of suitable larval food plants required for the species within the proposed Project area, although there is a marginal chance for adult flights through the proposed Project area. While host plants are present outside of the work area, the proposed Project would not be expected to affect this species.

Plants

Marin Western Flax; Federally Threatened

Work activities have the potential to directly or indirectly impact this species. Direct impacts to this plant species may include crushing under foot, equipment, and vehicles. Indirect impacts to this species could occur with the introduction of invasive weeds. With the implementation of mitigation measures, including avoidance of this species, there would likely not be a long-term impact to the habitat, range, or population of this species.

White-rayed Pentachaeta; Federally Endangered

Work activities have the potential to directly and indirectly impact this species. Direct impacts to this species could include potential crushing under foot, equipment, and vehicles. Indirect impacts to this species could occur with the introduction of invasive weeds. With the implementation of mitigation measures, there would not likely be a long-term impact to the habitat, range, or population of this species.

SFPUC-identified Potential Crystal Springs Fountain Thistle Mitigation Areas

Work activities have the potential to permanently alter the habitat for this species. Although this species was not found in the work areas during the focused sensitive plant surveys, suitable habitat does occur in the segment; individual plants may occur in the work area on the Bunker Hill and Crystal Springs segments at the time of construction however pre-construction surveys would be required for this plant prior to the start of work. Direct impacts to this species include crushing under foot, equipment, and vehicles. With the implementation of mitigation measures, there would not likely be a long-term impact to the habitat, range, or population of this species.

Mitigation Measures

BR-1: CRLF, Cañada Road Segment

- *Prior to the start of any ground disturbing activities within the Cañada Road segment in habitat for CRLF, vegetation will be hand cleared to a height that allows for visual inspection of the ground. Ground-level vegetation including downed logs and duff that may provide cover for CRLF s and SFGS will be removed using hand tools (including weed eaters and chain saws) under the supervision of a qualified biologist. No vegetation cut in habitat will be stored on site; it will be off-hauled daily. Following vegetation removal, rodent burrows and other potential subterranean retreats within the proposed Project excavation area, and areas where work could result in the crushing of burrows in project impact areas identified to be potential habitat for CRLF and SFGS will be inspected for the presence of CRLF and SFGS. After inspection, a qualified biologist will excavate burrows and other potential subterranean retreats in these identified areas by hand unless otherwise directed by the USFWS.*
- *Wildlife species fencing may be appropriate for particular areas of species habitat within the Cañada Road segment.*
- *Each morning prior to the start of work, a biologist will inspect the planned work areas for that day to ensure that no listed species are present in the segment work area.*
- *If ground disturbing activities occur during the wet season (October 15 to April 15), it will be monitored on-site by a qualified biologist who will have the authority to halt work when it is safe to do so in coordination with the construction manager if a CRLF is in harm's way. The frog will be allowed to move out of the way on its own volition or as otherwise approved by USFWS*
- *The actions above may be refined slightly as part of a Section 7 consultation with USFWS.*

BR-2: SFGS Cañada Road Segment

- *Prior to the start of any ground disturbing activities within the Cañada Road segment in habitat for SFGS, ground-level vegetation including downed logs and duff that may provide cover for CRLF s and SFGS will be removed using hand tools (including weed eaters and chain saws) under the supervision of a qualified biologist. No cut vegetation will be stored on site; it will be off-hauled daily. Following vegetation removal, rodent burrows and other potential subterranean retreats within the proposed Project excavation area, access roads, and areas where work will impact areas identified to be potential habitat for CRLF and SFGS will be inspected for the presence of CRLF s and SFGSs. After inspection, a qualified biologist will excavate burrows and other potential subterranean retreats in these identified areas by hand unless otherwise directed by the USFWS.*
- *Each morning prior to the start of work, a biologist will inspect the work area to ensure that no listed species are present in the segment work area.*
- *Only biologists approved by the USFWS shall participate in the capture, handling, or relocation of listed species.*
- *A qualified biologist will be present on days when ground disturbing work or vehicle access is occurring in habitat in this segment unless otherwise instructed by the resource agency with jurisdiction over the species. The biologist will have the authority to halt work when it is safe to do so in coordination with the construction manager if an SFGS is in harm's way. The snake will be allowed to move out of the way on its own volition unless otherwise approved by USFWS.*
- *Temporary wildlife exclusion fencing shall be installed within San Francisco garter snake habitat—as determined by the PG&E biologist—along the edge of the Cañada Road segment construction work areas and access roads.*

- *Before moving vehicles and equipment operators at the Cañada Road segment shall check beneath these vehicles/equipment and notify the biological monitor if any reptile or amphibian is observed.*

BR-3: Marin Western Flax, Bunker Hill and Cañada Road Segments

- *A qualified biologist shall flag the Marin Western Flax populations with highly-visible flagging prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities. On the Bunker Hill Segment a population will be avoided through use of HDD boring underneath the population. On Crystal Springs, the populations will either be avoided through fencing, bored under, or otherwise as approved by the resource agencies. Marin western flax will be avoided to the greatest extent practicable.*
- *Before vehicles are brought onto work sites, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving in areas with sensitive plants.*
- *Proposed Project activities will minimize foot traffic and disturbance to the amount required to perform work safely.*

BR-4: White-rayed Pentachaeta, Bunker Hill and Cañada Road Segments

- *A qualified biologist shall flag work areas and access routes with highly-visible flagging prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities.*
- *Before vehicles are brought onto access roads, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving through the sensitive plant areas.*
- *Prior to workers walking to work sites, all workers shall be required to inspect boots, tools, and clothing and will be required to remove weeds, seeds, and soil.*
- *Proposed Project activities will minimize foot traffic and disturbance to the extent practicable.*

BR-5: Crystal Springs Fountain Thistle, Crystal Springs Segment

- *A qualified biologist shall place signage near the fountain thistle populations. High-visible flagging or exclusion fencing may be applicable. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities. Work areas and access routes will be designed to avoid Crystal Springs fountain thistle to the greatest extent practicable.*
- *Crystal Springs fountain thistle mitigation areas will either be fenced off as avoidance areas or training and signage will be placed to ensure no impacts to these areas at the direction of the PG&E biologist.*
- *Proposed Project activities will minimize foot traffic and disturbance to the amount required to perform work safely.*
- *Before vehicles are brought onto work areas, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc.*
- *Proposed Project activities will minimize foot traffic and disturbance to the extent practicable.*

BR-6: MBB, Crystal Springs Segment

- *A qualified biologist shall flag work areas with highly-visible flagging or exclusion fencing prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging and work activities. Work areas and access routes will be designed to avoid MBB host plants shall to the maximum extent practicable*
- *If a qualified biologist observes emergent or flighted MBBs within the work area, the project's PG&E Biologist will be notified.*
- *Before vehicles are brought onto access roads in MBB suitable habitat, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving through MBB suitable habitat.*
- *Prior to walking to work sites in MBB suitable habitat, all workers shall be required to inspect boots, tools, and clothing and will be required to remove weeds, seeds, and soil.*
- *Topsoil shall be segregated during excavation and placed back on the surface upon completion of work to maintain the seed-bank of dormant host plant species seeds in the soil unless the area contains a high proportion of non-native species in which case the topsoil will be placed in the trench to prevent the spread of weeds.*

BR-7: Training for All Segments

- *Before work commences, environmental awareness training shall be conducted, and the PG&E tailboards shall include information related to CRLF, SFGS, BCB, MBB, Marin Western flax, Crystal Springs fountain thistle, riparian resources, and protected birds pursuant to the MBTA.*

BR-8: General for All Segments

- *Vehicles and equipment shall use pavement, existing roads, and previously disturbed areas to the extent practicable or as submitted as part of the proposed Project area.*
- *Where safe to do so vehicles should not exceed 15 miles per hour on un-surfaced roads such as ROW access roads.*
- *PG&E will comply with the SWPPP obtained for the proposed Project regarding restoration and erosion control.*
- *The disturbance or removal of vegetation within the work area shall not exceed the minimum necessary to complete operations safely.*
- *All food scraps, wrappers, and other containers and garbage from the work area must be disposed of in closed trash containers. If full, the containers shall be removed from the site.*
- *Smoking is prohibited on SFPUC lands.*
- *Erosion-control materials that do not pose an entrapment hazard to reptiles and amphibians shall be used. Plastic monofilament netting (e.g., matting, fiber rolls, wattles, silt fence backing) shall not be used.*

BR-9: Riparian Areas for All Segments

- *Foot access only in riparian zone unless otherwise allowed through applicable CDFW permits.*
- *No work will be conducted within the wetted active channel otherwise agreed to by the resource agency with jurisdiction over the area.*

- *Trees will be felled away from the bed, bank, and channel.*
- *Rope and lower large limbs to avoid limbs and personnel from entering the bed, bank, and channel to the extent possible.*
- *Cleared or pruned vegetation and woody debris (including chips) shall be disposed of in a manner to ensure that it does not enter surface water or a watercourse. Diverting water, discharging chips to the streambed, or removing or excavating soil are prohibited without a specific permit.*
- *Vehicles, tools and heavy equipment must be refueled at least 100 feet away from riparian areas. The fueling operator must stay with the fueling operation at all times. Do not top off tanks. Vehicles and heavy equipment will be checked daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life.*

BR-10: Measures for Federal Status Species Applicable to All Segments

- *No plastic monofilament will be used for erosion control (e.g. matting, fiber rolls, wattles, silt fence backing, etc.). Appropriate materials include burlap, coconut fiber, or as identified in the general and site-specific SWPPP.*
- *All excavated, steep-walled holes or trenches more than two feet deep will be covered at the end of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earthen fill or wooden planks at no more than a 3:1 slope.*
- *If feasible, open ended pipes left on site overnight are to be capped at the ends to prevent wildlife from entering them. These materials will be checked prior to moving.*
- *If a federal status species is observed in the work area, work shall stop immediately and the biological monitor shall be mobilized to the location. No federal status wildlife or plant species shall be touched, picked up, harassed, and/or removed from the site by anyone unless otherwise authorized by the applicable resource agencies.*
- *If a federal status wildlife species is killed or injured as a result of proposed Project activities, the incident must be reported immediately to a supervisor and the PG&E representative for appropriate management and PG&E will report the incident to the appropriate resource agencies responsible for the species.*

BR-11: Nesting Birds for All Segments

- *If work is scheduled to occur during the avian nesting season (February 15- September 1), nest detection surveys will be conducted no more than 15 days prior to initial work activities at designated construction areas to determine nesting status in the area. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 30 days during this time. Nest surveys will follow standard biological survey methods, and survey efforts will be tailored by Project location, with visits planned at appropriate timeframes/intervals to detect nesting activity. In addition, biologists monitoring construction will conduct nest surveys and/or nest monitoring in areas adjacent to ongoing construction as directed to do so by the PG&E biologist. If nests are found, the Project biologist will establish an appropriate buffer to be in compliance with the Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. PG&E will apply standardized species-specific no activity buffers developed as part of PG&E's avian management program. Active nests will be monitored and exclusion buffer sizes adjusted if the monitoring biologist determines this is necessary based on disturbance behavior exhibited by nesting birds in proximity to proposed Project construction. To prevent encroachment, the established buffer(s) will be clearly marked for avoidance. The established buffer(s) will remain in effect until the young have fledged or the nest is no longer active (containing eggs or young) as confirmed by the biologist*

BR-12: Pre-construction Tree Surveys and Tree Removal

- *A qualified arborist would conduct a preconstruction tree survey of the oak woodland areas, recording diameter at breast height (DBH) information and identifying each tree to species. Any tree removal, pruning, or work within the drip line of trees, other than in paved areas, must be reviewed and approved by a PG&E-approved arborist or their designee. A PG&E-approved arborist will be required to conduct all tree trimming and removal.*
- *Tree removal is to be conducted outside of the bird nesting season to the extent possible. If this is not feasible, a qualified biologist will perform a preconstruction survey for active nests prior to tree removal. If an active nest of a special-status or Migratory Bird Treaty Act (MBTA) protected species is observed in the tree, the tree would not be removed until the bird has finished nesting.*
- *Additional measures (such as root pruning, monitoring, stump grinding) may be required by the arborist. Tree removal and pruning will follow Sudden Oak Death (SOD) sanitation measures including disinfecting of tools and equipment and worker education.*

BR-13: Mission Blue Butterfly, Crystal Springs Segment

- *Not more than two weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, a qualified biologist shall survey grassland habitat in the project area for Mission blue butterfly and its larval host plant. Host plants identified within the project boundaries shall be fenced or flagged and avoided during construction.*
- *Temporary fencing shall be installed around the workspace perimeter, and for 100 feet along Golf Course Drive on each side of the workspace, to prevent equipment parking off the road. The fencing shall remain in place until the completion of construction adjacent to the lupine patches.*
- *All workers shall receive educational awareness training about Mission blue butterfly, its food plants, and its habitat.*

BR-14: Invasive Species Control

- *An Invasive Weed Control Plan would be prepared that would include measures to reduce the potential introduction or spread of noxious weeds. Coordination with GGNRA and SFPUC and applicable resource agencies regarding invasive plant species would be conducted prior to construction. All equipment arriving onsite must be clean and free of soils and plant material. BMPs would include tire wash requirements for equipment arriving onsite that has been driven off-road prior to arriving on the project site. Equipment arriving on-site will be inspected by the biological monitor for mud or soil that could harbor invasive weed seed.*

No Action Alternative

Under the No Action Alternative, the proposed pipeline replacements would not occur. Implementation of the No Action Alternative would result in no additional ROW acquisition and no impacts in the proposed Project area. No new construction activities would take place along the line, and maintenance and line inspection activities would continue on the existing L-109. The No Action Alternative could continue to have periodic impacts on biological resources during routine maintenance and operation activities of the existing L-109.

Cumulative Effects

The proposed Project could have a significant cumulative impact if a change in the environment resulted from the incremental impact of the proposed Project when added to other closely-related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time.

The cumulative effects analysis area for biological resources encompassed a 0.5-mile buffer around the proposed Project alignment. Impacts from the recently installed SFPUC's Crystal Springs Valve Station Upgrade, Half Moon Bay Valve Station Upgrade, and the Edgewood Valve Station Upgrade overlap with the proposed Project alignment. These projects had minimal effects on the local biological resources and qualified for CEQA Class 1 categorical exemptions.

Other projects, as designed, also had or would have minimal impacts to biological resources. The proposed Project in combination with other past, present, and future actions would result in negligible cumulative effects. Resource protection measures have been designed for the proposed Project so as to reduce potential for cumulative effects.

3.8 CULTURAL RESOURCES

Cultural resources include archaeological sites, historic structures, sacred sites, and traditional cultural properties (TCPs) that are important to a community's practices and beliefs and are necessary to maintain a community's cultural identity.

This section provides contextual background information on cultural resources identified in the Project Study Area, including the prehistoric, ethnographic, and historic settings. This section also summarizes the results of cultural surveys in the vicinity of the Study Area, analyzes the proposed Project's potential impacts on cultural resources, and identifies mitigation measures to address adverse impacts.

Patrick GIS Group, Inc. (Patrick GIS) was contracted by Far Western Anthropological Research Group, Inc (Far Western) on behalf of CH2M HILL to conduct a series of cultural resources studies along PG&E's entire Gas Line 109. The areas of potential effect for cultural resource surveys were defined by PG&E based on their construction plans. The Study Area for this EA only covers a portion of that work and was reported on in four separate cultural resources inventory reports:

- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project, San Mateo County, California (Pacheco Patrick 2013a).
- Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project - Archaeological Survey Report Addendum (Pacheco Patrick 2014).
- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project, San Mateo County, California (Pacheco Patrick 2013b).
- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project, San Mateo County, California (Pacheco Patrick 2013c).

3.8.1 Affected Environment

3.8.1.1 Applicable Regulations, Plans, and Standards

Federal

A variety of federal statutes specifically address cultural resources. These statutes generally become applicable to specific projects if the project involves: 1) a federal agency license, permit, approval, or funding; and/or if it 2) crosses federal lands. Because a federal permit is required for this action, several of these statutes are applicable. However, because no federal (public) lands are involved, other federal statutes, such as the Archaeological Resources Protection Act of 1979, are not applicable.

National Historic Preservation Act of 1966

This legislation created the framework for managing historic resources in the United States by establishing requirements to ensure responsible stewardship of prehistoric and historic resources for future generations.

The Act (16 USC 470) established the Advisory Council on Historic Preservation (ACHP), the NRHP, the list of National Historic Landmarks, and state and Tribal historic preservation offices. Section 106 of the Act requires that all federal agencies take into account the effects of their actions on historic properties and provide the ACHP with an opportunity to comment on those actions. Mitigation is almost exclusively limited to sites determined eligible for, or listed on the NRHP. The term “historic properties” refers to cultural resources that contribute significantly to history and meet the specific criteria outlined in 35 CFR Part 60.4 for listing on the NRHP. These must typically be 50 years old or more, possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- a) be significant to American history at the local, state, or federal levels and must be associated with events that have made a significant contribution to the broad patterns of history; or
- b) be associated with the lives of persons significant to the American collective past; or
- c) embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction; or
- d) have yielded, or may be likely to yield, information important to prehistory of history.

GGNRA has documented its commitment to carry out its responsibilities under Section 106 of the NHPA in the Programmatic Agreement (PA) that exists between the Golden Gate National Recreation Area, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer regarding Various Operation and Maintenance Activities in Golden Gate National Recreation Area (2014), hereafter referred to as PA.

The Native American Graves Protection and Repatriation Act, Pub. L. 101-601, 25 U.S.C. 3001 et seq., 104 Stat. 3048

This legislation requires federal agencies and institutions that receive federal funding to return Native American “cultural items” to lineal descendants and culturally affiliated Indian Tribes. These may include human remains, funerary objects, sacred objects, and objects of cultural patrimony. A program of federal grants assists in the repatriation process and the Secretary of the Interior may assess civil penalties on agencies and institutions that fail to comply.

Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

This Executive Order provides for regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies with Tribal implications.

State

California Health and Safety Code (Section 7050.5)

The California Health and Safety Code (Section 7050.5) covers any human remains recognized in any location other than in a dedicated cemetery. Under this circumstance, no further disturbance is to occur in the immediate vicinity until the coroner of that county has determined the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions. If the remains are determined or suspected to be those of Native Americans, the NAHC shall be contacted within 24 hours.

California Public Resources Code (Section 5097.98)

The California Public Resources Code (Section 5097.98) stipulates that whenever the NAHC is notified of the discovery of Native American human remains, it shall immediately notify those persons most likely to be descended from the deceased. The descendants have 24 hours from the time of notification to inspect the site of discovery and make recommendations to the owner for treating or disposing of the remains.

Local

Although the San Mateo County General Plan (1986) addresses cultural resources, the CPUC has exclusive jurisdiction over the project and is not subject to local discretionary cultural resource regulations.

3.8.1.2 Characterization

Resource Identification Methods

The data collection methodology, derived from the four cultural resources inventories (Pacheco Patrick 2013a, 2013b, 2013c, 2014), included:

- Record searches conducted at the Northwest Information Center of the California Historic Resource Information System (CHRIS): Records collected consisted of relevant historic maps, prior inventory reports, and previously recorded cultural resources. Records from within the project area and within a 0.25-mile radius were collected. This was designated the Study Area for cultural resources.
- Consultation with the Native American Heritage Commission: The NAHC was contacted for information on the presence of sacred lands in the vicinity of the project area and a contact list of local Tribal representatives or most likely descendants.
- Geoarchaeological Information: Far Western conducted a geoarchaeological analysis of the Project area to identify buried site sensitivity factors and assess the potential for buried sites.
- Intensive pedestrian surveys: Surveys were conducted in order to verify the location of any previously identified cultural resources within the area of potential effect.

Research and Survey Results

As a result of the record searches conducted at CHRIS, 31 prior surveys were identified, including 5 that intersect with the project area of potential effect. In addition, six previously recorded sites were identified within the Study Area. Four of these, three historic structures and one prehistoric habitation site, are well outside of the area of potential effect. The remaining two sites—the deeply buried Hetch Hechy Aqueduct and P-41-002111, the Woodside-Crystal Springs Road Bridge—were determined to be either within or directly adjacent to the area of potential effect. Both are along the Cañada Road segment. Historic maps indicate that several roads previously crossed the proposed pipeline alignment.

The NAHC confirmed that there were no records of Native American traditional cultural resources near the project area and provided Native American points of contact for ten individuals and organizations that may have additional knowledge of any culturally sensitive resources. Two of those contacted recommended that construction be monitored by both a qualified archaeologist and a Native American. Another contact shared concerns regarding burials at Crystal Springs Reservoir, Stanford Golf Course, and Lawler Ranch Road.

The geoarchaeological (buried site sensitivity) analysis determined the Project area contains few areas of young Holocene-age landforms or areas adjacent to present or former water courses. As a result, of the 150 acres within the area of potential effect, 83.7 percent was determined to have a *Very Low* potential for buried resources. Of the remaining 16.3 percent, 4.3 percent had a *Low*, 11.4 percent had a *Moderate*, and only 0.6 percent had a *High* potential for buried resources; no areas of *Very High* potential were identified. The small area of *High* potential is located adjacent to an unnamed wash approximately 650 feet southeast of the Balance Reservoir within the Cañada Road Pipeline Replacement Project.

The intensive pedestrian surveys were carried out on May 20-21, June 6, July 6, and August 14, 2013 and June 2, 2014. Patrick GIS Group's personnel were M. Patrick, D. Garvey, R. Johnson, and I. Patrick. 20-meter transects were used to cover this area and, despite some prior survey, no areas were excluded from the current effort except for some extremely steep hillsides where surveying would have been unsafe. These

intensive pedestrian surveys did not result in any new archaeological site identification. The roads shown on historic maps were found to have been highly altered, and it was determined that the Hetch Hetchy Aqueduct would be avoided by construction activities. The site form for the previously recorded site P-41-002111, the Woodside Crystal Springs Road Bridge was updated, along with a small probable section of the historic Crystal Springs Road. This site was determined to be avoided by proposed construction.

PG&E's Gas Line 109 was not recorded or evaluated for NRHP eligibility as it is exempt under the Advisory Council on Historic Preservation's *Exemption Regarding Historic Preservation Review Process for Projects Involving Historic Natural Gas Pipelines* (Federal Register 67[66]). Summarized language from that document states:

The exemption releases all Federal agencies from the Section 106 requirement of having to consider the effects of their undertaking on historic natural gas pipelines. Historic natural gas pipelines are defined as those natural gas pipelines that meet the criteria for listing on the National Register of Historic Places.

Prehistoric Overview

Some evidence exists that the earliest occupation of California occurred during the late Pleistocene and early Holocene, including a fluted projectile point found near Nipomo (Mills et al. 2005). Paleoindian use was probably episodic with occupations centered on the Great Basin's pluvial lakes or the San Joaquin Valley, both far east of the study area. Occupation of the project area probably followed the rapid rise in sea level that occurred between 12,000 and 10,000 B.C. This was followed by the sedimentation of the bay margins, resulting in tidal flats and marshes by 8000 B.C. (Bickel 1978). Early Holocene (7000–5000 B.C.) sites in the region attest to fishing, intensive shellfish collecting, hunting, and plant collecting by nomadic or semisedentary groups.

After about 6500 B.C. there was an apparently rapid diffusion of Millingstone traits from the east with a shift in emphasis to hard seed processing. It is possible this trend was triggered by the onset of the Altithermal and resulting biotic changes. However, this later trend continued to incorporate a broad-spectrum diet, including hunting, fishing, and exploitation of coastal resources. The origins of several later regional cultures can be seen in these early manifestations (Fredrickson 1974; Erlandson 1997). After 3000 B.C. these coastal cultures began to become more diverse with economic specialization becoming increasingly visible. This interval is typically divided into three subperiods (Lower, Middle, and Upper Archaic) based on changes in sociopolitical complexity, trade networks, population, and the introduction of new artifact types.

During the Emergent or Late Period (ca. A.D. 1000 to the historic period), there was an increase in social complexity leading to a settlement pattern that included large central villages along with smaller hamlets and specialized activity sites. New technology included the bow and arrow, small corner notched points, and a variety of beads, charms, and ornaments. Occupation sites became more common and varied throughout the North Coast ranges. Most of the larger Bay shell mound sites appear to date to the Middle Archaic Period, and several were occupied into the early Emergent Period. These population concentrations tended to be on the Bay margins, but some villages were also located on the Pacific Coast and on inland drainages supporting anadromous fish. None of these landforms occur within the project area, although this terrain was almost certainly used for sporadic foraging and hunting activities.

Historic Overview

The history of the Project area has been previously summarized by Wood (1883), Merritt (1928), and Postel (2007). The Project area is located within the ethnographic and early historic territory of Native American groups, referred to as the *Costanoan* (coast people) by the Spanish, but whose descendants refer to as

Ohlone. At least eight separate Penutian languages were used by these groups. Within the Project area *Ramaytush* and, possibly, *Tamyen* were spoken. The basic political unit of the Ohlone and most native California groups was the ‘Tribelet,’ a politically autonomous group of approximately 200 to 400 individuals using one or more permanent villages surrounded by a number of temporary camps. The Project area lies between the territories of the *šatunumno* (San Egidio) and *kotxen* (La Purísima) along the Pacific Coast, and the more densely populated *lamsin* (Las Pulgas), located to the east along the southwest margin of San Francisco Bay (Kroeber 1925; Levy 1978; Bean 1994; Milliken 1995).

The Ohlone followed a seasonal round of subsistence activities, congregating around stored resources in the winter and early spring and dispersing by family group across their territory, including into the Project area, during the remainder of the seasons. The most important food resource was acorns, especially those from the tanbark oak, valley oak, and California black oak (Kroeber 1925; Levy 1978). Animal food resources were mostly dominated by bay species, especially shellfish, such as mussels, abalone, clams, oysters, and scallops. Terrestrial species included deer, tule elk, pronghorn, rabbits, quail, and grasshoppers (Kroeber 1925; Levy 1978). There appears to have been a drastic decrease in Native populations between the 1770s and early 1800s. The Ohlone aboriginal lifeway apparently disappeared by about 1810 due to introduced diseases, a declining birth rate, and the impact of the mission system (Milliken 1995).

It is generally accepted that in 1542 Juan Rodriguez Cabrillo became the first European to visit Alta California. However, the Spanish government generally had little regard for California, except as a possible port of call for its Manila galleons. It was not until 1769 that the ‘sacred expedition’ entered Alta California, establishing a mission at San Diego. Over the next 53 years, 21 missions were established in California, including those nearest to the Project area: Mission San Francisco de Asís (Mission Dolores) in 1776, Mission Santa Clara de Asís in 1777, and Mission San José in 1797. These *reducción* missions were the institution used by the Spanish to establish control over Indian territories and peoples. Local groups were gathered together in a single location under the absolute control of the Franciscans and soldiers. Secondary goals were economic support for military establishments, assimilation into Hispanic society, and conversion to Spanish Catholicism. The effect the mission system had on native cultures was both rapid and devastating (Castillo 1978) and, by 1810, all Ohlone were living on mission lands (Millikan 1955).

After 1823, California became part of the Mexican Republic and the economic focus shifted from the missions to the ranchos of wealthy Mexicans. The project area was within the Rancho de Las Pulgas (Ranch of the Fleas), provisionally granted to José Darío Argüello in 1795. The grant of the rancho to his widowed daughter-in-law, Maria Soledad Ortega de Argüello and heirs was confirmed in 1835. The Rancho Cañada de Raymundo was adjacent and on the west side of the San Andreas Fault. The rancho economy, based on the export of hides and tallow from cattle herds, generated huge amounts of money for their landowners. A hacienda-peon society was transplanted from Mexico and the plight of the remaining natives continued to worsen (Castillo 1978). In 1846, John C. Fremont took possession of much of the region for the United States. The lifestyle of most Mexican Californios prevailed until the 1860s when severe drought destroyed their cattle herds.

Several communities were established on the peninsula to provide goods to Gold Rush-era San Francisco. These included lumber camps at Redwood City and Woodside and dairy farms around San Mateo. Major transportation routes included the old El Camino De Real that ran between the missions San Francisco de Asís and Santa Clara de Asís on the east side of the county and the San Mateo, Pescadero, and Santa Cruz Stage Line route. This road ran along the current Crystal Springs Road at the north end of the Project area. The San Francisco and San Jose Railroad was constructed in 1864. This railroad provided access to San Francisco and many of its wealthier residents built summer homes on the peninsula. After the 1906 earthquake, many residents of San Francisco relocated there permanently (Postel 2007). One significant residential development is “The Highlands,” built between 1956 and 1964 adjacent to the Bunker Hill segment. This contains the largest contiguous development of Mid-Century Modern Style Eichler homes

in existence (Adamson and Arbutich 2002). PG&E's Gas Line 109 was constructed in 1936 and was one of the first lines providing natural gas to the San Francisco Bay area.

A major development near to the Project area was the control of nearby water sources for use by San Francisco. The Spring Valley Water Company was founded in 1860 and, between 1873 and 1877, had built an earthen dam on Laguna Creek to form the Upper Crystal Springs Reservoir. In 1890, the company constructed a concrete gravity arch dam on San Mateo Creek to form the Lower Crystal Springs Reservoir. After the state passed the Municipal Water District Act of 1911 and the Municipal Utility District Act of 1921, the City and County of San Francisco were able to create the San Francisco Water Department, which purchased the Spring Valley Water Company in 1930. In 1934, these reservoirs became part of the Hetch Hetchy system, which transported water from the western Sierras.

3.8.2 Environmental Consequences

3.8.2.1 Impact Analysis

Project implementation affects a cultural property if it alters any characteristic that qualifies it for NRHP inclusion. Factors considered in determining whether the Project would have adverse cultural resource impacts include the extent or degree to which its implementation would result in:

- 1) Damage to, or loss of, a site of archaeological, Tribal, or historical value that is listed, or eligible for listing, in the NRHP
- 2) Loss or degradation of a traditional cultural property or sacred site, or if the property or site is made inaccessible for future use
- 3) Disturbance to any human remains, including those interred outside formal cemeteries
- 4) Isolation of cultural resources from the context considered significant
- 5) An effect to project elements that would be out of character with the property or site and its setting

3.8.2.2 Environmental Impacts

Proposed Action Alternative

Under the Proposed Action, approximately 4.7 miles of gas pipeline would be replaced. As a result, approximately 59.9 acres of ground disturbance would occur. Of this total, approximately 3.0 acres would consist of pipeline trenching, horizontal direct drilling, or jack and bore with a vertical area of potential effect of between 6 and 8 feet deep. The remaining 56.9 acres would consist of surface disturbance within the permanent easement and temporary work areas.

Research and survey conducted for this project identified six previously recorded sites within or immediately adjacent to the proposed pipeline replacement segments. Of these six sites, three historic structures and one prehistoric habitation site are well outside of the area of potential effect and would not be impacted by project implementation. The remaining two sites were determined to be either within or directly adjacent to the area of potential effect. These are the Hetch Hechy Aqueduct and P-41-002111, the Woodside-Crystal Springs Road Bridge, both of which are along the Cañada Road segment.

Project construction could result in some disturbance and impact to buried archaeological sites, although the location of these sites is not known and the chance of impacting one or more of these sites is minimal. In addition, there is a slight possibility that P-41-002111, the Woodside Crystal Springs Road Bridge, could be damaged during Project construction activities. Although in the Project vicinity, the Woodside Crystal Springs Road Bridge (P-41-002111) would not be affected by the proposed Project because the aerial span in this area would be left in place. The following mitigation measures would be implemented to minimize possible impacts to cultural resources from Project construction and operation. As a result, implementation

of the Proposed Action is expected to result in minimal impacts to cultural resources and “No Effects to Historic Properties” would result from indirect, visual intrusions.

Mitigation Measures

CR-1: Ground Disturbing Activities

- *If the applicant revises the location of ground-disturbing activities that affect areas beyond those surveyed for this EA, those areas will be subjected to a cultural resources inventory to ensure that any newly identified sites are not subject to ground-disturbing activities.*

CR-2: Unanticipated Discoveries

- *The applicant shall inform and train all construction personnel on identification of cultural resources and the procedures to follow in the event of an unanticipated discovery.*

CR-3: Potentially Significant Prehistoric or Historic Resources

- *The applicant will minimize or avoid impacts to any potentially significant prehistoric and historic resources that might be discovered during construction by implementing standard protocols that include ceasing all work within 50 feet of the discovery, protecting the discovery from further impacts, and immediately contacting a PG&E Cultural Resources Specialist. This requirement is described in Section II of the PA.*

CR-4: Human Remains

- *If human remains are discovered, work in the immediate vicinity will stop immediately and a PG&E Cultural Resources Specialist and GGNRA Heritage Specialist will be contacted. The location of the discovery will be secured to prevent further impacts and the location will be kept confidential. The Cultural Resources Specialist will evaluate the discovery and will contact the San Mateo County Coroner upon verifying that the remains are human. If the coroner determines the remains are Native American, the NAHC shall be contacted and the remains will be left in situ and protected until a decision is made on their final disposition. This requirement is codified in 36 CFR 800.13 (Post Review Discoveries).*

No Action Alternative

Under the No Action Alternative, the pipeline replacement activities would not occur. No historic properties or historic resources would be disturbed, as there would be no construction or upgrades to the existing pipeline. Therefore, there would be no impact or adverse effect to cultural resources resulting from the No Action Alternative.

Cumulative Effects

Other projects and plans may impact cultural resources in the Project vicinity, but because no impacts to cultural resources are anticipated as a result of this Project, no significant cumulative cultural resource impacts are expected from the incremental impacts of this action when added to other past, present, and reasonably foreseeable future actions.

3.9 VISUAL RESOURCES

This section includes an inventory of applicable regulations, plans, and standards; landscape character; visual resources; visual receptors groups; and key observation points (KOP). This inventory accounts for synonyms of visual resources including scenic resources and aesthetics/esthetics.

3.9.1 Affected Environment

3.9.1.1 Applicable Regulations, Plans, and Standards

The following federal, regional, and local regulations, plans, and standards have been identified as having management objectives applicable to visual resources.

- Department of the Interior, Grant of Scenic Easement, San Francisco Peninsula Watershed Lands
- Department of the Interior, Grant of Scenic and Recreation Easement, San Francisco Peninsula Watershed Lands
- Department of the Interior Solicitor’s Memorandum (DOI 1975) to the Regional Director, Pacific Southwest Region Bureau of Recreation (BOR) regarding the rights and responsibilities of the BOR as grantee of the (1) Scenic Easement (1969) and (2) the Scenic and Recreation Easement (1969)
- EIR Peninsula Watershed Management Plan (SFPUC 2001), GGNRA, Muir Woods National Monument – Final General Management Plan/Environmental Impact Statement (NPS 2014)
- San Mateo County General Plan (County of San Mateo Parks Department 1986)
- Department of the Interior, NPS Management Policies (NPS 2006)

A review of these applicable regulations, plans, and standards indicate that all activities within the pipeline replacement rights-of-way (ROWS) are subject to the (1) Scenic Easement and the (2) Scenic and Recreation Easement granted by the CCSF (1969) to the Department of Interior and subsequently transferred to the GGNRA. The other documents either refer directly to, reword, or fit within the management objectives of the easements.

Visual resource management objectives, outlined in the easements, state that the land is to be preserved in its natural state under the restrictions and covenants of each easement as summarized in Table 3-3 below:

TABLE 3-3 SUMMARY OF PERTINENT EASEMENT RESTRICTIONS AND COVENANTS	
Scenic Easement	Scenic and Recreation Easement
Land preserved in natural state and not used except for water related purposes.	Land preserved in natural state and not used except for water related purposes and outdoor recreation – compatible with open space for public use and enjoyment.
No structures except as related to water related purposes.	No structures except as related to water related purposes and outdoor recreation.
No new “encroachments” except with GGNRA approval.	No new “encroachments” except with GGNRA approval.
No substantial excavation or topographical changes without GGNRA approval, with the exception of certain highways.	No substantial excavation or topographical changes without GGNRA approval, with the exception of certain highways.
No cutting of trees, etc., except as otherwise provided without GGNRA approval	No cutting of trees, etc., except as otherwise provided without GGNRA approval
No right of public to enter for any purpose.	Public shall have right, subject to City rules, to enter for recreation purposes.

3.9.1.2 Characterization

Cañada Road Segment

This segment generally traverses southwest facing rolling hills covered in grass, chaparral, and oak; it is surrounded by roads, overlooking reservoirs in the valley below, and skirted by residential uses along the ridge to the east (see Figure 1-2). A diverse assortment of vegetation creates a variety of textures, colors, and forms including solid stands of trees, areas of shrubs, and grass-covered clearings with some isolated trees and/or shrubs. Generally, the landscape appears to be natural with the exceptions of I-280; other paved roads; an electric transmission line; existing pipeline signage and facilities; and watershed roads, fences, and facilities (Figure 3-4).



Figure 3-4. Cañada Road segment, facing north. (Image does not contain entire segment, only representative of visual landscape present within this segment.)

Bunker Hill and Crystal Springs Segments

These segments generally traverse the upper portion of grass-covered ridges with occasional evergreens and are bordered by residential uses to the east (refer to Figures 1-3 and 1-4). The vegetation creates a variety of forms and textures including solid stands of trees, areas of shrubs, and grass-covered clearings with some isolated trees and/or shrubs. Generally, the landscape appears natural with the exceptions of the I-280; other paved roads; an electric transmission line; existing pipeline signage and facilities; watershed roads, fences, and facilities; and tilled areas (Figures 3-5 and 3-6).



Figure 3-5. Bunker Hill segment, facing south. (Image does not contain entire segment, only representative of visual landscape present within this segment.)



Figure 3-6. Crystal Springs segment, facing west. (Image does not contain entire segment, only representative of visual landscape present within this segment.)

3.9.1.3 Visual Resources

Visual resources for this project include all visible elements in the natural and/or built environment within the pipeline ROW and easement boundaries. All elements are inventoried regardless of individual and/or collective notability, importance, and/or appeal. Within this landscape, the visual elements listed in Table 3-4 were identified in the field within the three 85-foot-wide pipeline construction ROWs. Each element was then categorized as contributing, neutral, or detracting from the GGNRA easement management objective of preservation of the land in its natural state.

TABLE 3-4 VISUAL RESOURCES			
Element	Cañada Road	Bunker Hill	Crystal Springs
Mixed oak, chaparral, and grass vegetation community	Contributes	Not Present	Not Present
Riparian corridors	Contributes	Not Present	Not Present
Fallen moss covered trees	Contributes	Not Present	Not Present
Rolling hills	Contributes	Contributes	Contributes
Grassy clearings	Contributes	Contributes	Contributes
Pines with mixed grass shrub understory	Not Present	Contributes	Contributes
Large individual cypress	Not Present	Contributes	Contributes

**TABLE 3-4
VISUAL RESOURCES**

Element	Cañada Road	Bunker Hill	Crystal Springs
Small to medium sized exposed rocks	Neutral	Neutral	Neutral
Dirt trails	Neutral	Neutral	Neutral
Dirt roads (no cut/fill)	Neutral	Neutral	Neutral
Mowed woody vegetation	Neutral	Not Present	Not Present
Tilled grass	Not Present	Neutral	Neutral
Weathered wood on top of pipeline wash crossings	Neutral	Not Present	Not Present
Residential landscapes	Not Present	Neutral	Not Present
Gravel roads	Detracts	Detracts	Not Present
Paved roads	Detracts	Detracts	Detracts
Existing exposed pipeline wash crossings	Detracts	Not Present	Not Present
Pipeline signs	Detracts	Detracts	Detracts
Fences	Detracts	Detracts	Detracts
Above-ground pipeline facilities	Detracts	Detracts	Detracts
Power transmission structures/lines	Detracts	Detracts	Detracts

Of these identified elements, planning documents noted only the natural landscape, including the natural topography and vegetation, as having significance within the boundaries of the pipeline ROWs. No contributing individual representative elements were identified in planning documents or in the field, such as a particular tree, landmark, or rock.

3.9.1.4 Visual Receptors

Visual receptors are those people that view the area within the pipeline ROW boundaries and/or any element within the pipeline ROW from any location within or without the ROW. Through a review of applicable regulations, plans, and standards; a viewshed analysis; and a field visit, receptors have been identified, grouped, generally quantified, and assigned view duration and distance. Quantities are approximate based on available data or inference, duration is based on relative approximation/field observation, and distance is measured to nearest visible point and farthest visible point and placed within a relative set of ranges. Table 3-5 lists identified visual receptors and associated data. Many potentially sensitive view locations were identified, such as I-280 or the Pulgas Water Temple, but only locations from which the pipeline ROW would likely be visible are included in the table.

**TABLE 3-5
VISUAL RECEPTORS**

Receptor Group	Quantity	Duration	Distance	Segment*
Cañada Road traffic	100 to 1,000/day	less than 1 minute	0 to 0.25 mile	CR
Cañada Road pedestrians and cyclists	fewer than 100/day	less than 1 hour	0 to 0.25 mile	CR
Crystal Springs Regional Trail pedestrians and cyclists	fewer than 100/day	less than 1 hour	0 to 0.25 mile	CR

**TABLE 3-5
VISUAL RECEPTORS**

Receptor Group	Quantity	Duration	Distance	Segment*
Filoli Botanical Garden visitors	fewer than 100/day	less than 1 hour	0.25 to 0.5 mile	CR
Sheep Camp Trail users	fewer than 100/day	less than 1 hour	0 to 0.25 mile	CR
Gate Vista Point visitors	100 to 1,000/day	less than 1 hour	0.5 to 1 mile	CR
Lexington Avenue residence owners	100 to 1,000/day	greater than 1 hour	0 to 0.25 mile	BH
Bunker Hill Drive traffic	100 to 1,000/day	less than 1 minute	0 to 0.25 mile	BH
Bunker Hill Drive pedestrians and cyclists	fewer than 100/day	less than 1 hour	0 to 0.25 mile	BH
Hayne Road traffic	100 to 1,000/day	less than 1 min	0 to 0.25 mile	CS
Hayne Road pedestrians and cyclists	fewer than 100/day	less than 1 hour	0 to 0.25 mile	CS
Black Mountain Road traffic	100 to 1,000/day	less than 1 min	0 to 0.25 mile	CS
Black Mountain Road pedestrians and cyclists	100/day	less than 1 hour	0 to 0.25 mile	CS
Black Mountain Road residence owners	fewer than 100/day	greater than 1 hour	0 to 0.25 mile	CS
Wedgewood Drive residence owners	fewer than 100/day	greater than 1 hour	0 to 0.25 mile	CS
Lakeview Drive Residence owners	fewer than 100/day	greater than 1 hour	0 to 0.25 mile	CS
Satellite imagery and other aerial viewers	100 to 1,000/day	various	various	CR, BH, CS

* CR=Cañada Road; BH=Bunker Hill; CS=Crystal Springs

3.9.1.5 Key Observation Points

KOPs are representative view locations from which visual impact analysis can be carried out. KOPs are chosen to analyze impacts to visual elements within the landscape and/or impacts to visual receptors. Based on the inventory of visual elements and visual receptors, the following representative KOPs were selected.

KOP 1. Within the ROW (Cañada Road Segment) – this KOP directly represents the typical existing landscape within the ROW. The intent of this viewpoint is to illustrate visual elements that contribute to the GGNRA easement management objective, such as natural vegetation patterns and smooth rolling topography. Like much of the pipeline ROW, this location is restricted, not open to recreational use, and not visible except within the restricted area or aerially; however, it could become open to trails or other recreational opportunities in the future.

KOP 2. Bunker Hill Drive – this KOP directly represents typical views from Bunker Hill Drive, and indirectly represents views of the pipeline ROW for Hayne Road traffic, pedestrians, and cyclists. Views are typically perpendicular to the pipeline ROW, include 100 to 1,000 views per day, short-to-moderate in duration, and close to the viewer.

KOP 3. Black Mountain Road – this KOP directly represents typical views from residences along Black Mountain Road, and indirectly represents views from residences along Wedgewood Drive, Lexington

Avenue, and Lakeview Drive. Views are typically perpendicular to the pipeline ROW, fewer than 100 views per day for a given location, moderate-to-long in duration, and close to the viewer.

3.9.1.6 Summary

The overarching regulation is designed to preserve the natural landscape outlined in the GGNRA easement (CCSF 1969). The landscape traversed by the Project is largely natural in appearance with a few obvious deviations. There are a variety of visual elements within the pipeline ROW, although, none that individually merit attention. Views of the pipeline ROW are generally limited with the exception of views from residences along the Bunker Hill and Crystal Springs segments and the Sheep Camp Trail ROW intersection. Three KOP locations have been selected to represent typical visual elements in the landscape and typical views of the pipeline ROW.

3.9.2 Environmental Consequences

3.9.2.1 Impact Analysis

Much of the Project area is a valued, precious natural setting and a repository for major watershed infrastructure along the San Francisco peninsula. The applicable regulations and management framework are designed to balance these different needs. CCSF has committed to preserving the watershed's natural state as an aesthetic asset to the extent possible. Factors considered in determining whether the Project would have adverse impacts to both visual resources and visual receptors in the Scenic Easement and the Scenic and Recreation Easement include the extent or degree to which its implementation would result in:

- The introduction of additional signage, facilities, and/or features to the physical environment that are perceptibly uncharacteristic of the region or locale
- An action perceptibly changing existing features of the physical environment, including topography and/or vegetation patterns such that they no longer appear to be characteristic of the region or locale.

3.9.2.2 Environmental Impacts

Proposed Action Alternative

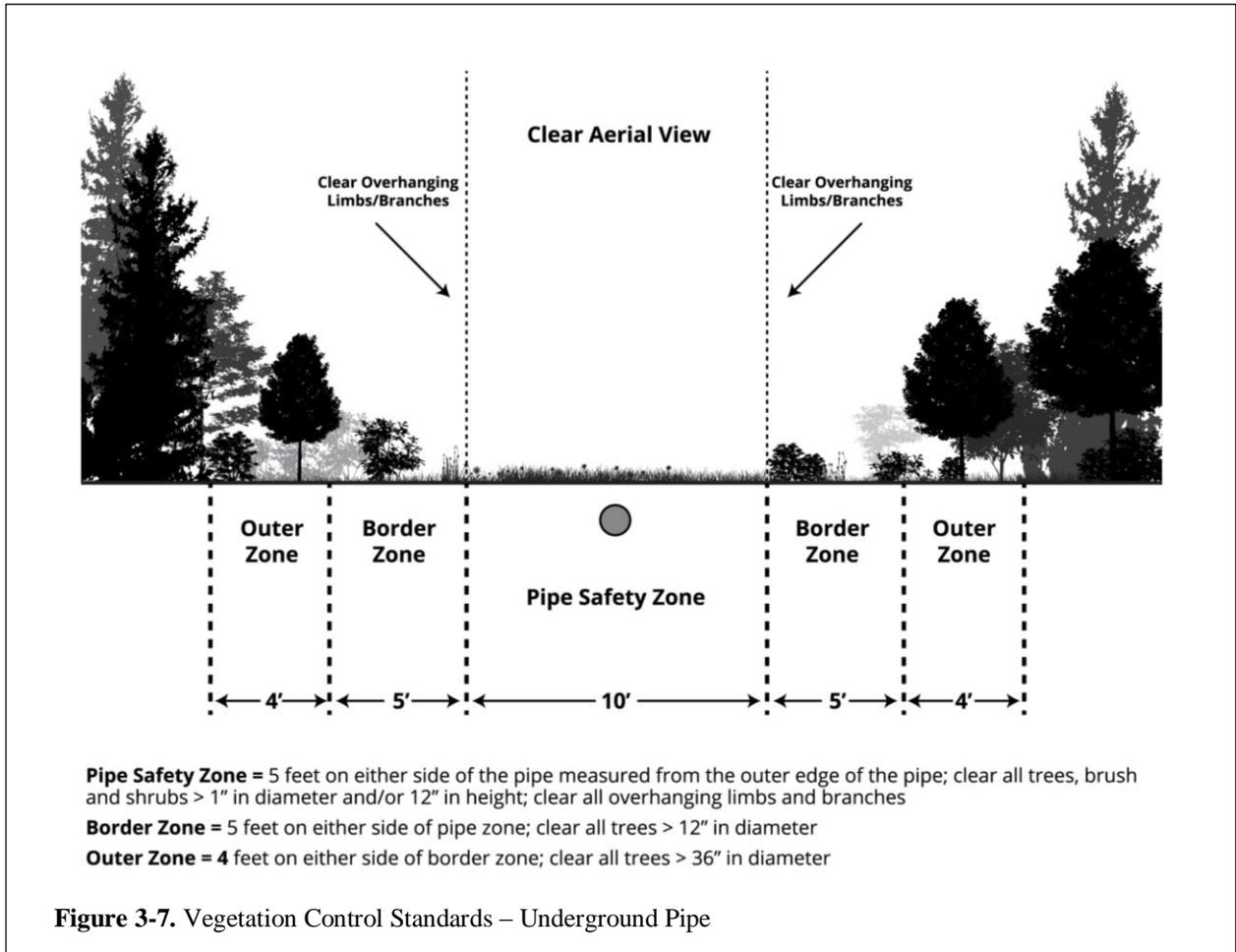
Under the Proposed Action, the GGNRA would authorize PG&E to replace the three Project segments by providing concurrence for CCSF easement authorization as previously described (see section 2.1).

3.9.2.3 General Analysis

In the short-term, preparation of construction work areas would include vegetation and debris removal, grading and improving access roads, leveling work areas within permanent and temporary easements, and the use of equipment and material yards.

In the long-term, topography would be restored and blended with the surroundings, and, pursuant to the PG&E Gas Transmission Vegetation Management Assessment (PG&E 2012), vegetation along the ROW would be managed in two distinct zones: the ten-foot pipe zone (five feet on either side of the pipe) and the two five-foot border zones (five additional feet on either side of the pipe zone) (Figures 3-7 and 3-8). The width of the pipe zone is defined as five feet on either side of the pipeline as measured from the outside edge of the pipe (or approximately ten feet total width plus the width of the pipe (refer to sections 1.1.2.1, 1.1.2.2, and 1.1.2.3 for pipe size descriptions). Within the pipe zone, low-growing vegetation would be promoted, typically grasses, forbs, and low-growing brush species (less than one foot in height). Shrub or brush growth cannot impede safe and reliable access to the pipeline. All trees (hardwood or conifer), brush, and shrubs that are greater than one inch in diameter and/or one foot in height would be removed from within the pipe zone. Shrubs and low-growing vegetation would be promoted in the buffer zone. Native seed would be planted and native trees and shrub cover would be allowed to re-establish in the remaining

temporarily disturbed areas. It is anticipated that revegetation of these areas would be monitored until 60 percent relative desirable cover is achieved. Tree trimming may also be required along access roads for safe vehicular transport. Some focus would be placed on replanting oak trees in temporary disturbance areas where they were removed. Pipeline location signs would be placed along the pipeline and, for the most part, replace existing L-109 signs. Table 3-6 details anticipated impacts to specific visual resources identified as contributing, neutral, or detracting from the appearance of a natural landscape.



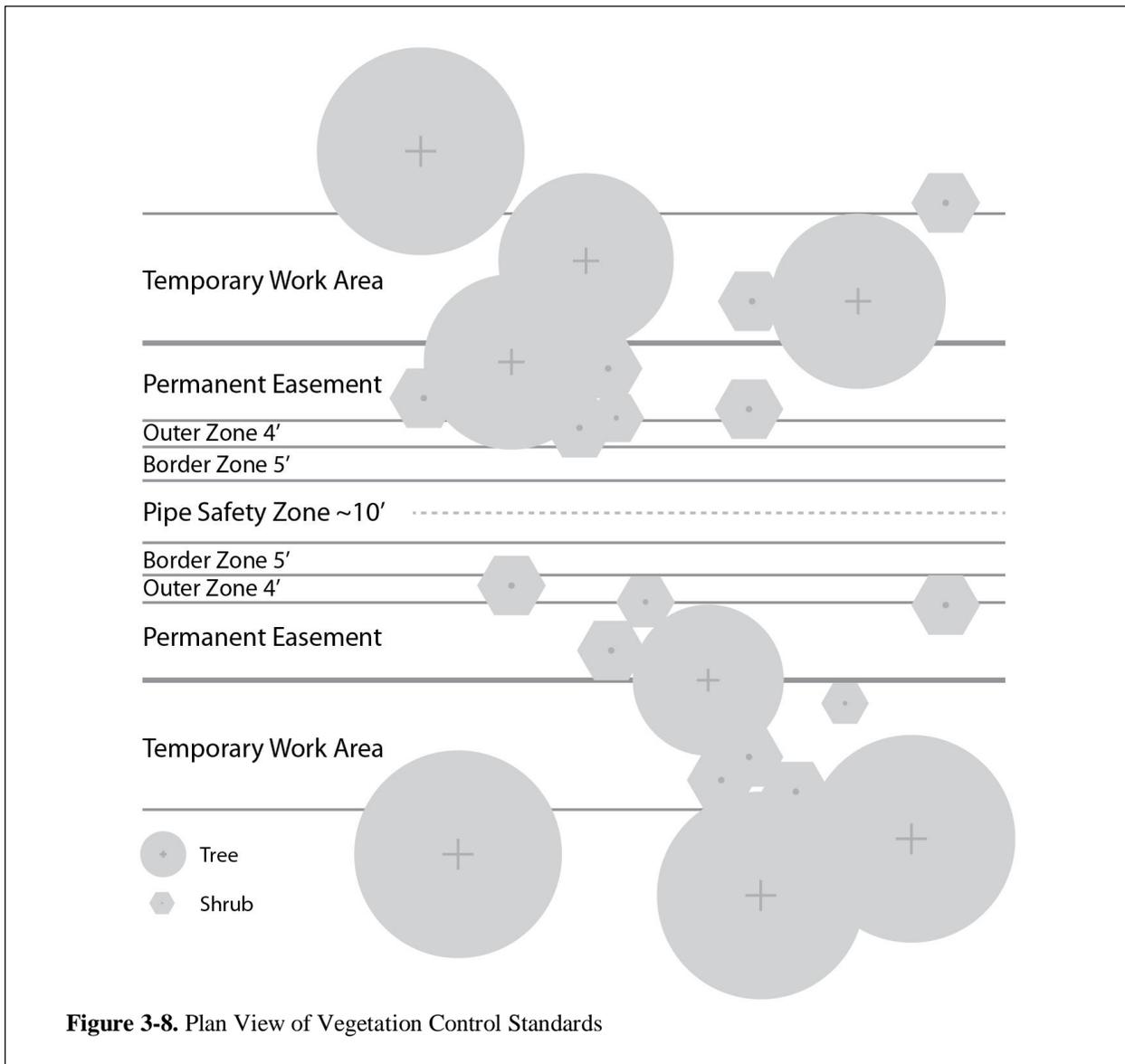


TABLE 3-6 VISUAL RESOURCES		
Element	Change	Impact
Mixed oak, chaparral, and grass vegetation community	Slight modifications to the acreage of each species/type of vegetation (see Section 3.17)	Negligible Effect
Riparian corridors	Removal of large oak trees within the pipe and border zones	Negligible Effect
Fallen moss covered trees	Removal of large debris within work areas	Negligible Effect
Rolling hills	No change	No Effect
Grassy clearings	Expansion of some grassy areas to include pipe and border zones	No Effect

**TABLE 3-6
VISUAL RESOURCES**

Element	Change	Impact
Monterey pines with mixed grass shrub understory	Removal of large Monterey pines (considered non-native)	Negligible Effect
Large individual Monterey cypress	Removal of large Monterey cypress (considered non-native)	Negligible Effect
Small to medium sized exposed rocks	Some movement, addition, or removal of rocks	No Effect
Dirt trails	Some change in locations of trails that follow the pipeline	No Effect
Dirt roads (no cut/fill)	Some improvement	No Effect
Mowed woody vegetation	Removal and replacement with zone appropriate vegetation	No Effect
Tilled grass (fire break)	Temporary condition	No Effect
Weathered wood on top of aerial pipeline wash crossings	Removal	No Effect
Residential landscapes	Some removal where landscapes extend beyond property lines	No Effect
Gravel roads	No change	No Effect
Paved roads	No change	No Effect
Existing exposed pipeline wash crossings	Addition of new pipe and removal of old pipe	Negligible Effect
Pipeline signs	Slight adjustments to current sign locations and the addition of nine signs where alignment would parallel Cañada Road	Negligible Effect
Fences	No change	No Effect
Above-ground pipeline facilities	Addition of electrolysis test stations and computer automated test stations	Negligible Effect
Power structures/lines	No change	No Effect

Generally, visual changes to topography and vegetation patterns would be made to appear natural. New signage would replace most existing signage. Additional project facilities would largely be screened by vegetation and topography. It is anticipated that impacts to visual resources would be temporary and minimal where best management practices are implemented.

3.9.3 Mitigation Measure

VR-1: Best management practices

- *Limited clearing of vegetation in temporary work areas, particularly large oak trees*
- *Brush hogging/mowing of vegetation in temporary work areas*
- *Overland travel where possible rather than grading of temporary access routes*
- *Irregular graded edges rather than straight lines*
- *Organically shaped work spaces rather than straight lines and sharp corners*

Table 3-7 illustrates the anticipated general visual changes visual receptors would experience and the anticipated significance of the impact.

**TABLE 3-7
VISUAL RECEPTORS**

Receptor Group	Change	Impact
Cañada Road traffic	Short visibility of minor changes in vegetation, short visibility of nine additional signs where alignment will parallel road	Less than significant
Cañada Road pedestrians and cyclists	Minor changes in vegetation, visibility of nine additional signs where alignment will parallel road	Less than significant
Crystal Springs Regional Trail pedestrians and cyclists	Minor changes in vegetation, visibility of nine additional signs where alignment will parallel road	Less than significant
Lexington Avenue residence owners	Removal of large trees, watershed more visible in the background	Less than significant
Bunker Hill Drive traffic	Removal of large trees, watershed more visible in the background, more visibility of power line structure	Negligible Effect
Bunker Hill Drive pedestrians and cyclists	Removal of large trees, watershed more visible in the background, more visibility of power line structure	Negligible Effect
Hayne Road traffic	Removal of large trees, watershed more visible in the background	Negligible Effect
Hayne Road pedestrians and cyclists	Removal of large trees, watershed more visible in the background	Negligible Effect
Black Mountain Road traffic	Removal of large trees, watershed more visible in the background, more visibility of power line structures	Negligible Effect
Black Mountain Road pedestrians and cyclists	Removal of large trees, watershed more visible in the background, more visibility of power line structures	Negligible Effect
Black Mountain Road residence owners	Removal of large trees, watershed more visible in the background, more visibility of power line structures	Negligible Effect
Wedgewood Drive residence owners	Removal of large trees, watershed more visible in the background	Negligible Effect
Lakeview Drive residence owners	Removal of large trees, watershed more visible in the background	Negligible Effect
Filoli Botanical Garden visitors	Minor, distant changes in vegetation only visible from parking lot	Negligible Effect
Sheep Camp Trail users	Minor changes in vegetation	Negligible Effect
Gate Vista Point visitors	Minor, distant changes in vegetation	Negligible Effect
Satellite imagery and other aerial viewers	Minor changes in vegetation patterns	Negligible Effect

Generally, visibility of proposed pipeline replacement areas is limited to the watershed-residential interface along the Bunker Hill and Crystal Springs segments. The most notable changes in these locations would be the removal of large non-native Monterey pines and cypress. Removal of this vegetation would, in some locations, expose currently screened power line structures. However, background views of the watershed would also be exposed, attracting and focus attention away from structures, adding visual diversity, and minimizing overall visual impacts. It is anticipated that impacts to visual receptors would be temporary and less than significant where best management practices are implemented.

KOP 1

This point represents views of the long-term simulated condition of the ROW (see existing condition photo on simulation page Appendix A page 1). Trees and large shrubs on the left of the photograph as well as trees across the full width of the ROW in the drainage near the middle of the photograph would be removed and a permanent ten-foot-wide area will be maintained free of vegetation taller than one foot. The

topography would be restored and pipeline location signs would be replaced near current locations. The edges of the vegetation are soft, appear in clumps along the disturbed portion of the ROW, and appear natural. It is anticipated that long-term visual impacts at this and similar locations would be minimal.

KOP 2

This point represents views of the long-term simulated condition of the ROW (see existing condition photo on simulation page Appendix A page 2). Trees on the left of the photograph would be removed and a permanent ten-foot-wide area would be maintained free of vegetation taller than one foot. The topography would be restored and pipeline location signs would be replaced near current locations. Most of the vegetation in this area is grass, so removal of trees in favor of grass would appear natural. Removing the trees would open a visual corridor that would expose a power line structure in the foreground and the watershed in the background. Although the natural landscape would be obscured in the foreground, it would remain visible through the lattice power line structure in the background. Additionally, the removal of non-native vegetation in favor of native vegetation would improve the overall natural setting. It is anticipated that long-term visual impacts at this and similar locations would be minimal.

KOP 3

This point represents views of the long-term simulated condition of the ROW (see existing condition photo on simulation page Appendix A page 3). Trees would be removed and a permanent ten-foot-wide area would be maintained free of vegetation taller than one foot. The topography would be restored and pipeline location signs would be replaced near current locations. Many areas to the north and south of this location currently have only grass with intermittent trees, and the area along the fence is periodically tilled to provide a firebreak. These conditions indicate that Project modifications to vegetation would match existing patterns and existing topography would be restored. Removing the trees would expose a power line structure in the foreground and the watershed in the background. Although the natural landscape would be obscured in the foreground, it would remain visible through the lattice power line structure in the background. In addition, the removal of non-native vegetation in favor of native vegetation would improve the overall natural setting. It is anticipated that long-term visual impacts at this and similar locations would be minimal.

Impact Summary

Generally, the Project would have short-term, local impacts on the natural appearance of vegetation patterns and edges, interruptions in natural topography, and the presence of intermittent non-natural visual features in the landscape. In the long-term, topography would be restored to pre-construction conditions, native vegetation would be planted, and a soft border zone would be maintained to mimic the clumping pattern of existing vegetation. It is anticipated that long-term impacts to visual resources and receptors would be minimal.

No Action Alternative

Implementation of the No Action Alternative would result in no additional ROW acquisition. No new construction activities would take place along the line, and maintenance and line inspection activities would continue on the existing L-109. The No Action Alternative could continue to have periodic minor impacts on existing visual resources during routine maintenance and operation activities of the existing L-109, including clearing non-compliant vegetation within the pipe and border zones of the current ROW. It is anticipated that long-term impacts to visual resources and receptors would be minimal.

Cumulative Effects

Cumulative effects are impacts from multiple individual projects that, when combined, may result in a substantial impact to a given resource. This review of past projects does not include those in place prior to or included in the establishment of the scenic and recreation easement, nor do they account for all past,

present, or future minor watershed management and transportation projects and maintenance activities. Additionally, only projects within, or close to, the scenic and recreation easement area and near the proposed Project area are discussed. The projects depicted in Table 3-8, including the Pipeline Replacement Project, potentially had, have, and/or may have impacts on visual resources and/or the experience of visual receptors. Environmental documents, where available, were reviewed to inform general explanations of visual change and visibility.

**TABLE 3-8
VISUAL RESOURCES CUMULATIVE EFFECTS SUMMARY**

Project	Construction	Distance From Proposed Action	Additional Natural Landscape Permanently Affected	Permanent Visual Change	Visibility
Lower Crystal Springs Dam Improvements Project	2011–2012		0 acre	Within existing footprint, negligible visual changes in the appearance of the dam	Visibility generally limited to users of the road across the dam, minor distant visibility from other locations
SFPUC Crystal Springs/ San Andreas Water Transmission System Upgrade	2010–2014	0.35 mile south of the Crystal Springs segment	0 acre	Within existing footprint, minor visual changes to two upgraded structures	Minor visibility
Pulgas Balancing Reservoir Structural Rehabilitation and Roof Replacement Project	2009		<1 acre	Some vegetation removal and minor visual changes to the structure	Minor visibility from Cañada Road
Larkspur Valve Automation Project	2011	~4 miles northwest of Bunker Hill segment	0.064 acre	Installation of a 7-foot high chain link fence around three areas, gravel added to three project areas, installation of a 25-foot high monopole with solar panels and a radio antenna, minor tree trimming	The area is near the Sawyer Camp trail and I280, however, the area is surrounded by large trees and on a little rise above both the trail and road way which prevent views.
L-132 San Andreas Station valve upgrade and L-109 elbow replacement	2013	~5.3 miles northwest of Bunker Hill segment	0	Minor changes to the facilities	San Andreas Trail and Skyline Blvd pass right next to the San Andreas Station
L-132 Edgewood Preserve - Pipeline Safety Enhancement Plan - Elbow Replacement	2013	Just south of Edgewood Road and I-280 intersection	0 acre	Within existing footprint, area reclaimed	Visible to users of the Edgewood Park, visibility temporary
SFPUC Edgewood Valve Station Upgrade	2014		0.07 acre	Upgraded valves, fencing, retaining walls, and a slightly larger footprint	Short, limited visibility from I-280, mostly screened by vegetation and topography

**TABLE 3-8
VISUAL RESOURCES CUMULATIVE EFFECTS SUMMARY**

Project	Construction	Distance From Proposed Action	Additional Natural Landscape Permanently Affected	Permanent Visual Change	Visibility
SFPUC Crystal Springs Valve Station Upgrade	2014		0.4 acre	Upgraded valves, upgraded access road, a slightly larger footprint, fencing,	Facility size and fencing more noticeable from east rest stop parking spaces, but generally screened by rest stop facilities
SFPUC Half Moon Bay Valve Station Upgrade	2014		0.007 acre	Minor upgrades to valves and small increase in footprint	Minor visibility from rear of nearby residences
Line 109, Replacement Segment 4B	2014	Just south of Bunker Hill segment	1.43 acres	Slight change in alignment and location of pipeline sign locations, and installation of cathode protection monitoring facilities, 25-foot wider easement with routine vegetation trimming	The project ROW is visible to traffic on I280
Line 109, Replacement Segment 4D	2014	0.5 mile north of Crystal Springs segment	2.03 acres	Slight change in alignment and location of pipeline sign locations, and installation of cathode protection monitoring facilities, 25-foot wider easement with routine vegetation trimming	The project ROW is visible from parts of the golf course to users of the golf course
Proposed action	2015		10 acres	12 new signs along Cañada Road, 5 CATS*, and 7 ETS** scattered throughout project area, and slight changes to vegetation and pipeline sign locations	Visibility of new signs along Cañada Road, slight adjustments to current pipeline sign locations visible from areas along Bunker Hill and Crystal Springs segments
Crystal Springs Dam Bridge Replacement Project	2015–2017	0.6 mile south of the Crystal Springs segment	0 acre	Within existing footprint, removal of old bridge and construction of new bridge	Visible to users of the bridge and some visibility from other locations
L-109 San Mateo Creek Pipeline Replacement Project	2016	0.0 mile north of the Bunker Hill segment	~5 acre	Replacement of existing easement, slight changes to vegetation and pipeline sign locations	Potential visibility from I-280, residences, and local roads in the vicinity

**TABLE 3-8
VISUAL RESOURCES CUMULATIVE EFFECTS SUMMARY**

Project	Construction	Distance From Proposed Action	Additional Natural Landscape Permanently Affected	Permanent Visual Change	Visibility
Route 92 Uphill Slow Vehicle Lane and Safety Improvements		0.3 mile southwest of the Bunker Hill segment	~1 acre	Wider road, additional lane, some topographic modifications, some vegetation removal	Visibility generally limited to users of the road, minor distant visibility from scenic vistas on east side of the watershed
Summaries	14 Projects Reviewed	Proposed action spatially connected to Crystal Springs and Half Moon Bay valve stations, 4B replacement, and San Mateo Creek Pipeline replacement	~21 acres of the ~200,000 acres reviewed or 0.0105%	Slight differences in the appearance of existing infrastructure, more visible roadway for one mile, slight modifications in vegetation, expanded valve lot facilities, slight changes to appearance of valve lot facilities, fence around Crystal Springs valve lot facility, additional of pipeline signs, and addition of intermittent CATS* and ETS** poles.	Changes visible from I-280, Cañada Road, residences, local roads, golf course, and users of Edgewood Park, and potentially visible from various other locations and scenic vistas on the east side of the scenic and recreation easement.
*Cathodic Anti-corrosion System, **Electrolysis Test System					

Sixteen projects were reviewed and analyzed for distance from the proposed action, additional natural landscape permanently affected, permanent visual change, and visibility. Projects reviewed occurred within 5.2 miles from the proposed action, affected approximately 21 acres, had a variety of minor visual changes, and were visible to a variety of receptors. Generally, these projects were upgrades to existing facilities and did not individually represent a substantial effect to particular resources or receptors. Environmental documents reviewed did not identify any individual project as having a significant effect on visual resources, nor did any call out specific visual resource mitigation requirements.

Due to the proximity of the Edgewood, Crystal Springs, and Half Moon Bay valve lots and the Line 109 4B and 4D replacement projects, a more detailed analysis was performed. These projects are depicted in the following before and after photographs (Figures 3-9, 3-10, and 3-11).



Figure 3-9. Before and after photographs of the Edgewater valve lot area.



Figure 3-10. Before and after photographs of the Crystal Springs valve lot area.



Figure 3-11. Before and after photographs of the Half Moon Bay valve lot area.

The following is an inventory of visual resources associated with the above projects and an analysis of impacts to visual resources.

TABLE 3-9 VALVE LOT AND REPLACEMENT PROJECTS VISUAL RESOURCE IMPACTS			
Element	Projects	Change	Impact
Mixed oak, chaparral, and grass vegetation community	EW	Removal of some woody vegetation and replacement with grass	Negligible Effect
Rolling hills	All	Minor changes in topography at EW	Negligible Effect
Grassy clearings	All	Replacement of grass generally	No Effect

TABLE 3-9 VALVE LOT AND REPLACEMENT PROJECTS VISUAL RESOURCE IMPACTS			
Element	Projects	Change	Impact
Pines with mixed grass shrub understory	HM, 4B, 4D	Removal of some pines along 4D	Negligible Effect
Large individual cypress	4D	Removal of some cypress along 4D	Negligible Effect
Paved trails	4D	No change	No Effect
Dirt roads (no cut/fill)	HM, CS 4B	Increased footprint of dirt roads as CS	Negligible Effect
Tilled grass	HM, CS, 4B	Ongoing maintenance practice	No Effect
Landscaping	4D	Minor visual changes to landscaping	Negligible Effect
Gravel roads	CS	Increased footprint	Negligible Effect
Paved roads	4B, 4D	No change	No Effect
Pipeline signs	All	Changes in sign locations and increased number of signs	Negligible Effect
Fences	EW, CS, 4B	New fence around CS and expanded fence around EW	Minor Effect
Above-ground pipeline facilities	All	Additional above ground facilities at EW, CS, and HM addition of CATS* and ETS** poles along 4B and 4D	Minor Effect
Power transmission structures/lines	HM, CS, 4B	No change	No Effect
EW – Edgewood Valve Lot; HM – Half Moon Bay Valve Lot; CS – Crystal Springs Valve Lot; 4B – Line 109 4B Replacement Project; 4D – Line 109 4D Replacement Project; *Cathodic Anti-corrosion System, **Electrolysis Test System			

The following is an inventory of visual receptors associated with the above projects and an analysis of impacts to these receptors.

TABLE 3-10 VALVE LOT AND REPLACEMENT PROJECTS VISUAL RECEPTORS			
Receptor Group	Project	Change	Impact
Lexington Avenue residence owners	HM, 4B	Additional facilities and signage	Negligible Effect
Golf course users	4D	Minor changes in vegetation and signage	Negligible Effect
I-280 traffic	EW, 4B	Minor, distant changes in vegetation, increased fencing, minor topography changes	Minor Effect
Rest stop users	CS	Additional facilities, signage, and fencing	Minor Effect
Satellite imagery and other aerial viewers	All	Minor changes in vegetation patterns, larger facility footprints	Negligible Effect

A careful review of the above projects combined with the proposed action and potential future actions may constitute a minor-to-moderate impact to visual resources. When considered cumulatively, these projects have and may continue to increase the visibility of the pipeline corridor within the landscape in a way that is contrary to the desired natural visual character unless these changes are mitigated.

Visual changes noted in the analysis for the above projects, the proposed action, and future related actions which may need to be mitigated include new and existing signage, CATS and ETS poles, above ground valve lot facilities and fencing, unnatural-looking vegetation clearing and/or trimming patterns, and access routes. Visibility of these changes may need to be minimized as seen from I-280; Cañada Road, adjacent residences, local roads, and trails; within Edgewood Park; and within the golf course.

To ensure cumulative effects to visual resources are minor or less, the following mitigation measures are recommended.

Mitigation Measures:

VR-2: Proposed action, 4B and 4D replacement, future projects

- *Blend facilities into the landscape by using context sensitive paint to screen these facilities*
- *Carefully plan vegetation clearing within temporary work zones to either side of the permanent ROW to mimic natural patterns, and, where necessary, request additional temporary disturbance to clear additional vegetation as appropriate*

VR-3: Crystal Springs valve lot

- *Use vegetation to screen facilities from the Caltrans rest stop*

VR-4: Edgewood valve lot

- *Use context sensitive paint/materials*

VR-5: Half Moon Bay valve lot

- *Use context sensitive paint/materials to limit visibility from residences*

Where these incremental changes are mitigated, it is anticipated that the proposed action would result in a minor effect on visual resources.

3.10 VISITOR USE AND EXPERIENCE

This section examines the recreational facilities and opportunities available for lands within the Watershed and in the vicinity of the Pipeline Replacement Project segments; it also evaluates the potential impacts the Project could have on visitor use and experience.

3.10.1 Affected Environment

3.10.1.1 Applicable Regulations, Plans, and Standards

Although PG&E is not subject to local land-use regulations, land-use plans in the area are included to assist with NEPA evaluation. Under the requirements of the Grant of the Scenic Easement and the Scenic and Recreation Easement, coordination with and approval from the GGNRA is required to proceed with the Project.

Federal

Department of the Interior, Grant of Scenic and Recreation Easement, San Francisco Peninsula Watershed Lands

The Pipeline Replacement Project route passes through Watershed lands held under easement by GGNRA. With the State of California's approval, the Scenic and Recreation Easement was first granted by CCSF, acting through the Department of Public Works and the County of San Mateo, to the United States

Department of the Interior in 1969 for “preserving said land in its present state as open-space land for public use and enjoyment” (CCSF 1969). The Grant also provisions that entrance to the premises for recreational purposes are “subject to rules and regulations as may be imposed and be published by Grantor” (CCSF 1969). In 1980, Congress wrote legislation stipulating the transfer of responsibility for easement administration to the NPS GGNRA. Regular pipeline maintenance activities have occurred and are authorized for the existing L-109 gas transmission line under easement established in 1932 when the pipeline was installed. The Scenic and Recreation Easement requires the SFPUC to obtain GGNRA concurrence for actions that may affect the scenic and recreation resources.

Department of the Interior, NPS, Golden Gate National Recreation Area, General Management Plan (2014)

The GGNRA GMP, the guiding document for GGNRA, and its corresponding Environmental Impact Statement were reviewed during the development of this EA. The Watershed is specifically addressed in the updated GMP with NPS management responsibility over the Watershed limited to administration of the easement. The NPS has identified the actions below as those which the agency will:

- continue to coordinate with SFPUC to administer the easements in a manner consistent with easement goals and restrictions
- promote preservation while providing improved public access where appropriate
- continue to work with SFPUC to preserve the natural, cultural, scenic, and recreation values of the Watershed
- encourage construction of new multi-use trail connections through Peninsula Watershed lands between Cañada Road and Skyline Boulevard, north of Phleger Estate
- promote the preservation of scenic views from I-280 vista points and scenic overlooks in conjunction with Caltrans and SFPUC
- offer to cooperate with SFPUC to create a Watershed visitor center near Pulgas Water Temple on Cañada Road

Department of the Interior, NPS Management Policies (2006)

The NPS Management Policies are guided by the Organic Act of 1916, which created the NPS to protect park resources, provide for the enjoyment of the same, to take appropriate management actions to avoid or mitigate the adverse effects of any proposed use or activity.

UNESCO Golden Gate Biosphere Reserve

The Golden Gate Biosphere Reserve is not subject to international agreements or treaties, but rather is guided by the *Statutory Framework for Biosphere Reserves*; management is left to the authority of the land owners. There are 11 administrative authorities for the Golden Gate Biosphere Reserve: Audubon Canyon Ranch, University of California, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, NPS, Stanford University, Marin Municipal Water District, California Department of Parks and Recreation, San Francisco Public Utilities Commission, Point Reyes Bird Observatory, and Presidio Trust. The Golden Gate Biosphere Reserve is a partnership—created in 1988—of 13 protected areas in the greater San Francisco Bay Area. The San Francisco Peninsula Watershed forms the core of the Golden Gate Biosphere Reserve. The aim of this designation is to conserve genetic resources, species, and ecosystems, scientific research and monitoring, and to promote sustainable development in communities of the surrounding region.

State

California State Parks - California Outdoor Recreation Plan (2008)

The Project would cross land in the State of California subject to management goals provided in the California Outdoor Recreation Plan (CORP), which was developed by the California State Parks' Office of Grants and Local Services (OGALS) to provide policy guidance for all outdoor recreation providers throughout California. Although CORP does not issue requirements for compliance with its management goals, it reviews the state's recreational needs and provides strategies, priorities, and actions for improving the quality of recreational outlets based on the current and projected needs of the population.

Local

San Francisco Public Utilities Commission, Watershed Management Plan (2001)

The Project route is located on Watershed land owned by the CCSF and managed by the SFPUC "to provide the best environment for the production, collection, and storage of the highest quality water for CCSF and suburban customers" (SFPUC 2002). The Watershed Management Plan describes the management goals and policies that provide a regulatory framework for decision-making. The following may apply:

- Policy WA13 – 18 – These policies cover varying aspects of recreational access.
- Policy WA37a – d, WA38a – b – These policy groups address the alternative policies for Fifield/Cahill Ridge Trail.
- Section 5.21 Fifield/Cahill Ridge Trail – This section covers proposed alternatives, public access restrictions, and history of this multi-use connector trail to the Bay Area Ridge Trail.

County of San Mateo Parks Department, General Plan (1986)

Specific recreation policies, as identified in the General Plan and related to the Project, were reviewed.

- Policy 6.5.a. Attempt to provide appropriate access and conveniences for all people in park and recreation facilities
- Policy 6.5.c. Attempt to provide adequate access for emergency services
- Policy 6.18 Regulate the encroachment into park and recreation facilities by non-park users; when encroachment is deemed necessary, minimize adverse impacts
- Policy 6.18.c. Require restoration or other mitigation measures for damaged park land
- Policy 6.32 Consider closing park and recreation facilities temporarily during the day, week, or year when use could be detrimental to resources or the public

County of San Mateo Parks Department, Trails Plan (2001)

The Project route most notably intersects with Sheep Camp Trail, which is managed by the County of San Mateo Parks Department. The following management guidelines may apply.

- M.G.1.4.1 Reasons for trail closure. Reasons for trail closure include but are not limited to:
 - During trail construction, major repair, or seasonal maintenance
 - When a hazardous condition exists
 - During special events
 - Where adjacent land uses may prevent unsafe conditions that could affect the trail user
- M.G.1.4.2 Authority. The Parks and Recreation Division shall decide whether or not to close County trails or trail segments
- M.G.1.4.3 Notice. Notice of trail closure shall be posted at all trail entrances and staging areas; barriers shall be placed at strategic points where feasible

- M.G.1.4.4 Information. Trail closure notices should include: the reason(s) for the closure, what steps will be taken to correct the problem, an estimate of how long the trail will be closed, and a telephone number to call for further information
- M.G.1.4.5 Posting Time. Trail closures should be as short in duration as possible; repairs shall be made as necessary. Prior to opening a closed trail, the Parks and Recreation Division shall make a determination that there is no danger to public safety or potential long-term adverse effects on the trail setting

3.10.1.2 Characterization

The Pipeline Replacement Project segments pass through Watershed lands in San Mateo County that are owned by the CCSF and managed by the SFPUC. The Watershed is currently closed to public access except along established hiking and equestrian trails and existing roads. The Watershed forms the core of the UNESCO Golden Gate Biosphere Reserve, an area rich in native plant and animal life. The NPS GGNRA holds Scenic and Recreation Easements over Watershed lands. The easements provide for the protection of these lands as open space for public recreation, compatible with the rules and regulations imposed and published by the SFPUC.

The Watershed provides access to a variety of recreational uses for the inhabitants and visitors of the San Francisco Bay metropolitan area. These recreational activities include sports, hiking, nature study, wildlife viewing, sightseeing, bicycling, equestrianism, and special events in designated locations. Existing public access trails, restricted use trails, recreation areas, and events in the vicinity of the Project area include Edgewood Park and Natural Preserve, Pulgas Ridge Open Space Preserve, Pulgas Water Temple, Crystal Springs Regional Trail, Sheep Camp Trail/ Gate Vista Point Trail, Quarry Road Trail, Fifield/Cahill Ridge Road Trail, Filoli Estate, Phleger Estate, “Bicycle Sunday” along Cañada Road, City of Belmont, San Carlos and San Mateo Parks and Recreation facilities, Burlingame Country Club, Crystal Springs Golf Club, and Peninsula Golf and Country Club. Additionally, Cañada Road is a popular route for bicyclists throughout the week.

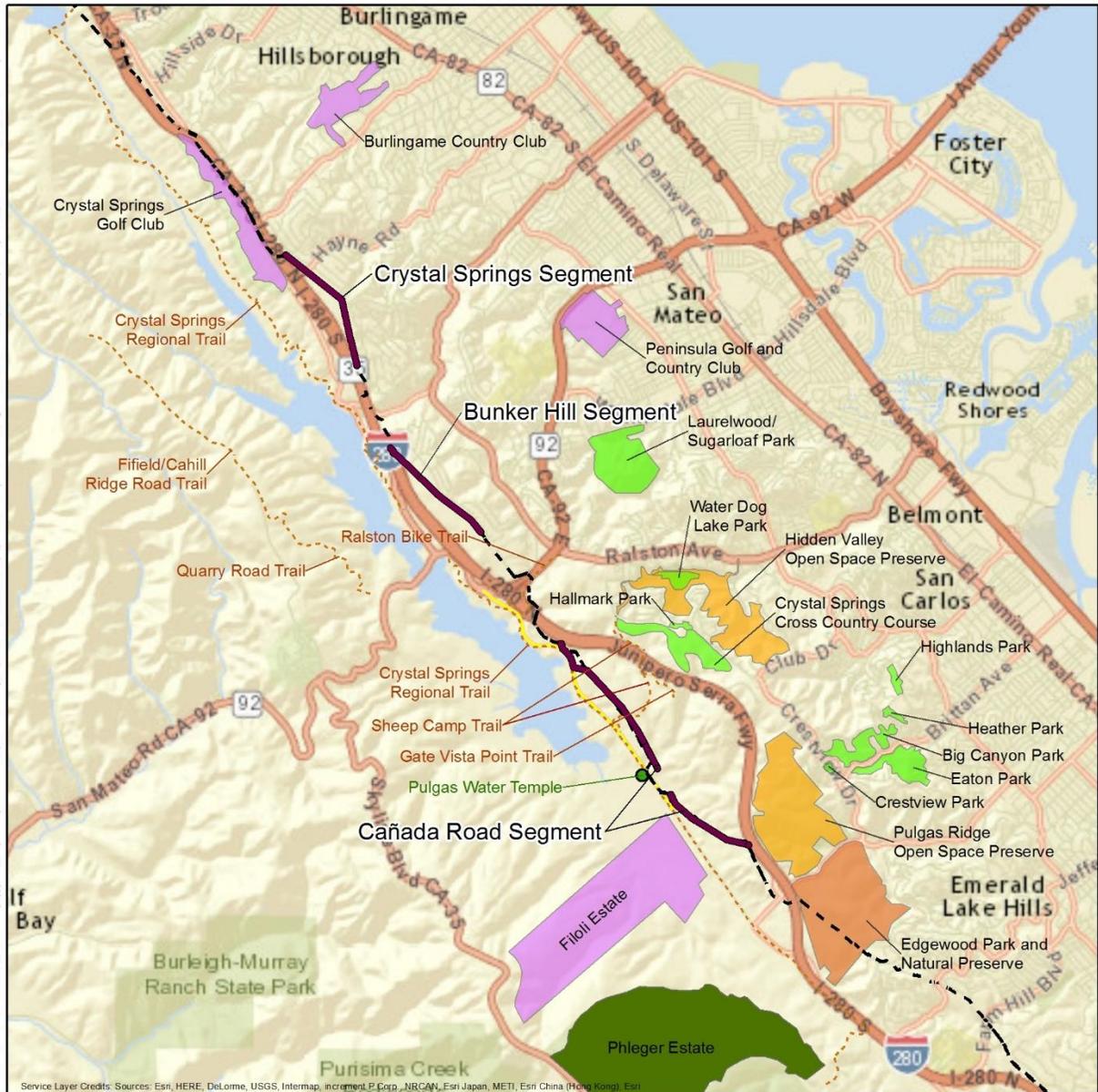
There are no future trail development projects located within the vicinity of the Pipeline Replacement Project segments. San Mateo County Parks Department has acknowledged a communal desire to expand recreational trails and bike paths within its jurisdiction, though specific trail development has not been proposed. The San Francisco Planning Department’s Peninsula Watershed Management Plan details the proposed Fifield/Cahill Ridge Trail project that would, when completed, become a segment of the Bay Area Ridge Trail.

Recreation facilities within or adjacent to the three pipeline replacement segments are listed in Table 3-11 and depicted in Figure 3-12.

TABLE 3-11 RECREATIONAL RESOURCES BY JURISDICTION NEAR PROJECT AREA							
Jurisdiction / Recreational Resource	Pedestrian (Hiking, Running, Walking)	Biking	Equestrian	Dogs	Events/ Weddings	Restricted Access/ Admission Fees	Developed Park and Sports Facilities
<i>County of San Mateo Parks Department</i>							
Edgewood Park and Natural Preserve	•		•				
Crystal Springs Regional Trail	•	•	•				

**TABLE 3-11
RECREATIONAL RESOURCES BY JURISDICTION NEAR PROJECT AREA**

Jurisdiction / Recreational Resource	Pedestrian (Hiking, Running, Walking)	Biking	Equestrian	Dogs	Events/ Weddings	Restricted Access/ Admission Fees	Developed Park and Sports Facilities
Sheep Camp Trail	●	●	●				
Gate Vista Point Trail	●		●				
Bicycle Sunday Event	●	●					
<i>Midpeninsula Regional Open Space District</i>							
Pulgas Ridge Open Space Preserve	●			●			
<i>San Francisco Public Utilities Commission</i>							
Pulgas Water Temple	●				●		
Quarry Road Trail and Fifield/Cahill Ridge Road Trail	●	●	●			●	
<i>Golden Gate National Recreation Area</i>							
Phleger Estate	●		●				
<i>Private Ownership</i>							
Filoli Estate	●					●	
Burlingame Country Club					●	●	●
Crystal Springs Golf Club					●	●	●
Peninsula Golf and Country Club					●	●	●
<i>City of Belmont Parks and Recreation</i>							
Crystal Springs Cross Country Course	●				●		
Hallmark Park	●			●			●
Water Dog Lake Park	●	●	●	●			
Hidden Valley Open Space Preserve	●	●		●			
<i>City of San Carlos Parks and Recreation</i>							
Big Canyon Park	●			●			
Crestview Park	●			●			●
Eaton Park	●			●			
Heather Park	●			●			
Highlands Park	●			●			●
<i>City of San Mateo Parks and Recreation</i>							
Laurelwood/ Sugarloaf Park	●	●		●			



Legend

- Project Segment
- Existing Gas Line
- Bicycle Sunday Event
- Multi-use Trail
- City Park
- County Park
- GGNRA
- Open Space Preserve
- Privately-Owned Facility

Recreational Facilities

- Burlingame Country Club
- Crystal Springs Golf Club
- Peninsula Golf and Country Club
- Laurelwood/Sugarloaf Park
- Water Dog Lake Park
- Hidden Valley Open Space Preserve
- Crystal Springs Cross Country Course
- Highlands Park
- Heather Park
- Big Canyon Park
- Eaton Park
- Crestview Park
- Pulgas Ridge Open Space Preserve
- Edgewood Park and Natural Preserve

Figure 3-12



Edgewood Park and Natural Preserve

Edgewood Park and Natural Preserve is bordered by Edgewood Road to the south, and Cañada Road and I-280 to the east. The 467 acres of grasslands and woodlands are managed by the County of San Mateo Parks Department. Recreation activities are restricted to hiking and equestrian use on designated trails.

Pulgas Ridge Open Space Reserve

Pulgas Ridge Open Space Preserve is located just north of Edgewood Road, with I-280 to the east. The 366 acres of mixed evergreen forest, oak woodlands, and grasslands are managed by the Midpeninsula Regional Open Space District (MROSD). Recreation activities are restricted to hiking and dog walking (on-leash dogs are permitted on all established trails and off-leash dogs only in designated areas).

Pulgas Water Temple

Pulgas Water Temple is located just west of Cañada Road and just south of Upper Crystal Springs Reservoir. This monument to the Hetch Hetchy Aqueduct was built at the terminus in 1938 by the SFPUC. Recreation activities at the monument are restricted to weekdays and include sightseeing and walking. On weekends, Pulgas Water Temple is available by permit for special events and weddings.

Crystal Springs Regional Trail and Ralston Bike Trail

Crystal Springs Regional Trail is managed by the San Mateo County Department of Parks and runs adjacent and parallel to Cañada Road from Raymundo Drive near Huddart County Park to San Bruno Avenue north of San Andreas Lake. Access is restricted to hikers and equestrians on the Crystal Springs segment from the southern access point to just north of CA 92 East. North of the Crystal Springs segment the trail is open to bicyclists, hikers, and equestrians. Ralston Bike Trail is a connector trail for biking, hiking, and jogging that links the City of Belmont with the Crystal Springs Trail. This trail extends east from Ralston Avenue along CA 92 and crosses over I-280.

Sheep Camp Trail and Gate Vista Point Trail

Sheep Camp Trail spurs off the Crystal Springs segment of Crystal Springs Regional Trail approximately 0.3 mile north of Pulgas Water Temple and serves as a connector to other San Mateo Department of Parks mid-county trails. This multi-use trail runs for approximately 1.4 miles and crosses under I-280. It is accessible to hikers, bicyclists, equestrians, and permitted vehicles as an SFPUC access road.

Gate Vista Point Trail spurs southeast off of the Sheep Camp Trail crossing under I-280. The trail is accessible to equestrians and hikers. Dogs and bicyclists are not permitted on this trail.

Quarry Road and Fifield/Cahill Ridge Road Trail

Quarry Road Trail, owned by the SFPUC, is a restricted-use trail extending north from CA 92/35, following Quarry Road. It is accessible by hikers, bicyclists, and equestrians on docent-led trips only, limited to groups of 20 people or fewer for a maximum of 3 trips per day on Wednesdays, Saturdays, and Sundays. The Quarry Road Trail merges into the Fifield/Cahill Ridge Road Trail as it extends northwest and parallel to the Crystal Springs Reservoir.

Filoli Estate

The privately-owned Filoli Estate is an historic site of the National Trust for Historic Preservation; it is open to the public Tuesday through Saturday from 10:00 AM to 3:30 PM and Sundays from 11:00 AM to 3:30 PM for an admission fee. Admission to Filoli Estate allows visitors to explore the historic house and garden at their leisure.

Phleger Estate

The Peninsula Open Space Trust purchased Phleger Estate in early 1995 from a private owner, Mary Elena Phleger. The land was later turned over to NPS (GGNRA) management. Phleger Estate is located adjacent and to the north of Huddart County Park and can be accessed from Crystal Springs Regional Trail or through the Huddart County Park entrance. The trails are open to hikers and equestrians.

Bicycle Sunday Event

Bicycle Sunday is a regular San Mateo County event that closes a section of Cañada Road—between the Filoli Estate entrance and CA 92—to all motorized vehicle traffic, allowing exclusive use for all non-motorized activities including jogging, bicycling, hiking, roller-skating, and walking. The event takes place every Sunday from 9:00 AM to 3:00 PM.

Cañada Road

Cañada Road from Skyline Boulevard to the town of Woodside is a frequently used public access roadway for bicyclists throughout the week. Cyclists enjoy this route for its minimal traffic and wide-paved road shoulders. This section of Cañada Road can be combined with other roadways to form a variety of popular long-distance rides.

City of Belmont Parks and Recreation

The City of Belmont manages the Crystal Springs Cross Country Course, Hallmark Park, Water Dog Lake Park, and Hidden Valley Open Space Preserve, also known as the John Brooks Memorial Open Space. Crystal Springs Cross Country Course is a scenic 2.95-mile packed dirt trail used by trail running groups, high school and college cross country meets, and the general public for hiking and trail running. The Cross Country Course is located southeast of the I-280/ CA 92 intersection off Hallmark Drive in Belmont.

Hallmark Park is a neighborhood park that provides public access to trails, a playground, and tennis courts. It is located adjacent to the Crystal Springs Cross Country Course off of Hallmark Drive in the City of Belmont.

Water Dog Lake Park consists of a network of single track trails that wind through steep rocky terrain surrounding Water Dog Lake, and is managed by the City of Belmont. Mountain bikers, hikers, equestrians and leashed dogs are permitted on trails. Trails are not suitable for wheelchairs. The park can be accessed from Hallmark Drive and Lake Road in the City of Belmont, or from one of the many access points to the adjoining network of trails.

Hidden Valley Open Space Preserve contains a network of trails of varying lengths that connect to Water Dog Lake Park and Sheep Camp Trail. These trails are accessible to hikers, leashed dogs, and mountain bikers.

City of San Carlos Parks and Recreation

The City of San Carlos maintains Big Canyon Park, Crestview Park, Eaton Park, Heather Park, and Highlands Park. Big Canyon Park and Eaton Park consist of open space, trails, and pathways for hikers and runners. Crestview Park and Highlands Park amenities include picnic areas, play equipment, restrooms, basketball courts, soccer fields, trails, and pathways. Additionally, Highlands Park contains baseball diamonds. Heather Park features an unleashed dog exercise area in addition to open space, trails, and pathways for hikers and runners. Each of these parks allow for leashed dogs.

City of San Mateo Parks and Recreation

City of San Mateo maintains Laurelwood/Sugarloaf Park, an open space parkland with multiple hiking trails. This parkland is located east of CA 92, off of DeAnza Boulevard.

Burlingame Country Club

Burlingame Country Club is a private 6,289-square-yard, 18-hole golf course in Hillsborough. The Country Club provides members with access to a swimming pool, tennis courts, golf course, bar, and restaurant; it also hosts weddings and special events.

Crystal Springs Golf Club

Crystal Springs Golf Club is a privately-owned and operated 6,628-square-yard par-72 course with practice facilities; it was built in 1924 by British architect William Herbert Fowler. The Golf Club hosts tournaments, summer golf camps, private and group lessons, and weddings. It also contains an on-site golf shop and a pub and grill. The Golf Club is located just north of I-280 and CA 35/Hayne Road on Golf Course Drive in Hillsborough.

Peninsula Golf and Country Club

Peninsula Golf and Country Club is a private, full-service social club founded in 1911, located off of CA 92 in San Mateo. The social club provides members with access to tennis courts, a golf course, swimming pool, gym, club house, and restaurant. The Golf and Country Club also hosts weddings and special events.

3.10.2 Environmental Consequences

3.10.2.1 Impact Analysis

This subsection describes the potential impacts to recreation facilities and recreationists within a two-mile radius of the proposed Project segments. Factors considered in determining whether the proposed Project would have visitor use and experience impacts include the extent or degree to which its implementation would result in:

- 1) Conflicts with applicable land use plans, policies, goals, or regulations of an agency with jurisdiction over the Project (including recreational or wilderness land management)
- 2) Project-related changes that alter or otherwise physically affect federal or state established, designated, or planned recreation or wilderness areas or activities
- 3) Project-related changes that affect duration, quantity, and quality of impact to recreational or wilderness resources

3.10.2.2 Environmental Impacts

Recreational activities can be affected both through physical closures of recreational areas, entrances, trails, or parking lots and through disturbance of users' enjoyment. Views of construction equipment, and noise, vibration, dust, or odor from construction activities can disrupt recreationists' enjoyment.

Proposed Action Alternative

Edgewood Park and Natural Preserve

Due to distance and terrain, the Project would have negligible to no impact on the recreational experience of visitors to Edgewood Park and Natural Preserve. At its closest point, the southernmost portion of the Cañada Road segment is approximately one mile from Edgewood Park and Natural Preserve. Any noticeable construction noise resulting from equipment, vehicles, and staging area activities would be temporary, occur during normal business hours, and would compete with the ambient traffic noise of I-280, which is currently audible from locations within Edgewood Park and Natural Preserve.

Pulgas Ridge Open Space Reserve

Due to distance, terrain, and proximity to I-280, the Project would have negligible to no impact on the recreational experience of visitors to Pulgas Ridge Open Space Reserve. Any noticeable construction noise resulting from equipment, vehicles, and staging area activities would be temporary, occur during normal business hours, and would compete with the ambient traffic noise of I-280, which is currently audible from locations within Pulgas Ridge Open Space Reserve.

Pulgas Water Temple

Construction-related activities associated with the Cañada Road segment may result in minor, short-term impacts to this facility. Impacts from other portions of the proposed Project would be negligible due to distance and terrain. With the implementation of the following mitigation measure to reduce possible impacts during scheduled special events, any impacts to recreational activities at Pulgas Water Temple from the Project would be temporary and minimal.

Mitigation Measure

VUE-1: Reduce Noise, Dust, and Traffic-Related Impacts During Previously Scheduled Special Events

- *PG&E would provide notice to the public of the construction timeframe and potential construction-related impacts. PG&E would prepare a Traffic Control and Safety Plan to minimize potential impacts.*

Crystal Springs Regional Trail and Ralston Bike Trail

The Project could have minor impacts to recreationists along the Crystal Springs Regional Trail from north of Edgewood Road to Crystal Springs Road due to its proximity to the construction areas. Recreationists using this trail note wildlife sightings, scenic views, and tranquility as attributes that contribute to their experience on this trail. While the Crystal Springs Regional Trail would not be closed during construction, visitors may experience a temporary increase in noise levels, dust, and vehicle traffic along Cañada Road. Any impacts would be local, temporary and minimal. The Project would have no impact to Ralston Bike Trail.

Sheep Camp Trail and Gate Vista Point Trail

The Project would result in local, short-term impacts to recreationists using the Sheep Camp Trail and Gate Vista Point Trail due to the intersection of the Sheep Camp Trail with the northern Cañada Road segment of the Project. This section would be temporarily closed during the period of construction (approximately seven months) in accordance with policies regarding trail closures in the San Mateo Parks Department 2001 Trails Plan noted in Section 3.9 of this EA. Due to the large number of alternate recreational facilities in the area that provide similar access and amenities, temporary closure of Sheep Camp Trail would not be expected to increase visitor use impacts to alternate recreational facilities. Any impacts would occur only for the duration of construction and result in minor impacts to these trails.

Quarry Road Trail and Fifield/Cahill Ridge Road Trail

Due to the limited access, distance, and terrain, construction-related impacts, if any, from implementation of the Proposed Action to the Quarry Road Trail and Fifield/Cahill Ridge Road Trail would be short-term, local, and negligible.

Filoli Estate

The Project could have local and temporary impacts on visitors to Filoli Estate resulting from proximity to the southern Cañada Road segment. Increased traffic flow along Cañada Road, construction noise, and dust could have a temporary and minor effect on visitor experience at Filoli Estate. Impacts would be short-term, localized, and minimal.

Phleger Estate

Due to distance and terrain, the Project would have negligible to no impacts on visitors to Phleger Estate. Any audible construction noise resulting from equipment, vehicles, and staging area activities would be temporary and occur during normal business hours.

Bicycle Sunday Event

An increase in road debris from the ingress and egress of construction vehicles would result in a temporary impact to recreation. The implementation of the following mitigation measure would limit impacts to the Bicycle Sunday Event.

Mitigation Measure

VUE-2: Reduce Road Debris for Bicycle Sunday Events

- *PG&E would provide street sweeping with water sweepers as necessary to clear excess debris from roadways prior to each Bicycle Sunday Event during the construction period. No construction work would be permitted on Sundays.*

Cañada Road

An increase in road debris from the ingress and egress of construction vehicles would result in a temporary impact to recreationists using Cañada Road during the construction period. This impact, if present, could be reduced to minor or negligible intensity with the implementation of the following mitigation measure.

Mitigation Measure

VUE-3: Reduce Road Debris and Other Potential Construction Equipment Traffic Related Hazards

- *PG&E would provide street sweeping with water sweepers as necessary to clear excess debris from roadways. Construction equipment and vehicles entering and exiting the project site along Cañada Road will be cautious of bicyclists and other recreationists, and use adequate traffic control measures to alert recreationists of their presence. As part of a Traffic Control and Safety Plan, traffic on Cañada Road along the project route may be restricted and PG&E would install temporary road signs to encourage motorists and other users to share the road.*

City of Belmont Parks and Recreation

Due to distance and terrain, the Project would have negligible to no impacts to visitors to the City of Belmont Parks and Recreation facilities, including Hallmark Park, Water Dog Lake Park, Hidden Valley Open Space Preserve, and Crystal Springs Cross Country Course. The Project will not impact access roads, and any construction noise will be temporary, occur during normal business hours, and compete with the current ambient traffic noise of I-280.

City of San Carlos Parks and Recreation

Due to distance and terrain, the Project would have negligible to no impacts to visitors to the City of San Carlos Parks and Recreation facilities, including Highlands Park, Heather Park, Big Canyon Park, Eaton Park, and Crestview Park. The Project will not impact access roads and any construction noise would be temporary, occur during normal business hours, and compete with the current ambient traffic noise of I-280.

City of San Mateo Parks and Recreation

Due to distance and terrain, the Project would have negligible to no impacts to visitors to the City of San Mateo Parks and Recreation facilities, including Laurelwood/Sugarloaf Park. The Project will not impact

access roads and any construction noise would be temporary, occur during normal business hours, and compete with the current ambient traffic noise of CA-92 and I-280.

Burlingame Country Club

Due to distance and terrain, the Project would have negligible to no impacts to visitors to Burlingame Country Club. Any audible construction noise resulting from equipment, vehicles, and staging area activities would be temporary and occur during normal business hours.

Crystal Springs Golf Club

The Project could have local and temporary impacts to visitors to Crystal Springs Golf Club resulting from proximity to the Crystal Springs segment. Increased construction noise, dust, and visibility of construction equipment could have a temporary and minor effect on visitor experience at Crystal Springs Golf Club. Any construction-related noise would be temporary and compete with the current ambient traffic noise of I-280.

Peninsula Golf and Country Club

Due to distance and terrain, the Project would have negligible to no impacts to visitors to Peninsula Golf and Country Club. Any audible construction noise resulting from equipment, vehicles, and staging area activities would be temporary and compete with the current ambient traffic noise of I-280.

It is anticipated that all recreational facilities will be open as normal and accessible during the construction period, except Sheep Camp Trail and Gate Vista Point Trail. All impacts from the Project on visitor use and experience on GGNRA-managed lands would be local, short-term and minor.

No Action Alternative

Implementation of the No Action Alternative would result in no impact to visitor use and experience in the Project area. Current recreational facilities and activities would be unaffected if the proposed pipeline replacement segments are not constructed. Maintenance activities of the existing pipeline would continue and result in negligible impacts to visitor use and experience of the area.

Cumulative Effects

Minor negative cumulative effects to visitor use and experience of recreational resources from the proposed Project, combined with past, present, and reasonably foreseeable actions, are anticipated. A review of the cumulative impacts of past, present, and future projects combined with the proposed Project do not substantially impact visitor use and experience related to recreational resources within the Watershed or surrounding areas. Therefore, no substantial cumulative impacts to recreational resources are expected from the minor and temporary impacts of the proposed Project when added to other past, present, and reasonably foreseeable future actions.

A review of the past, present, and reasonably foreseeable actions additionally included analysis of impacts resulting from the 2013 L-132 Edgewood Preserve – Elbow Replacement Project, the Crystal Springs, Edgewood, and Half Moon Bay Valve Station Upgrades, as well as the L-109 4D and 4B replacements. These upgrades and replacements did not result in long-term negative impacts to visitor use and experience. Therefore, there is a reasonable expectation that recent PG&E actions on the Watershed will not interact with the proposed Project to cumulatively impact visitor use and experience.

3.11 AIR QUALITY

This section discusses existing air quality conditions in the vicinity of the L-109 Pipeline Replacement Project and evaluates the potential for Project implementation to affect air quality in the area.

3.11.1 Affected Environment

3.11.1.1 Applicable Regulations, Plans, and Standards

Federal, state, and regional agencies have established air quality standards, regulations, and plans that affect the Project. The major regulations, plans, and standards are listed below with a brief description of what each is intended to do and the agency responsible for oversight and enforcement.

Federal

Clean Air Act

The Federal Clean Air Act (CAA) directs local air quality management agencies to implement programs that lead to attainment and maintenance of air quality standards. The U.S. Environmental Protection Agency (EPA) establishes these air quality standards and reviews the plans and regulations developed by the local agencies in their efforts to attain the standards. The EPA also oversees implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources.

The NPS has a responsibility to protect air quality under the CAA and the 1916 Organic Act (16 USC §1). NPS management policies state: “The Service will seek to perpetuate the best possible air quality in parks to (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas. Vegetation, visibility, water quality, wildlife, historic and pre-historic structures and objects, cultural landscapes, and most other elements of a park environment are sensitive to air pollution and are referred to as ‘air quality- related values.’ The Service will assume an aggressive role in promoting and pursuing measures to protect these values from the adverse impacts of air pollution. In cases of doubt as to the impacts of existing or potential air pollution on park resources, the Service will err on the side of protecting air quality and related values for future generations.” (NPS 2006).

The CAA requires each state to identify areas with ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas. Deadlines for achieving the federal air quality standards vary according to air pollutant and the severity of air quality problems. The SIP must be submitted to and approved by the EPA. SIP elements are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated.

Section 176(c) of the CAA, also known as the General Conformity Rule, requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the Clean Air Act and the applicable SIP. The General Conformity Rule is codified at 40 CFR, Part 51, Subpart W, and 40 CFR, Part 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans. General conformity requirements are intended to demonstrate that the proposed federal action would not cause or contribute to new violations of federal air quality standards, increase the frequency or severity of existing violations, or delay the timely attainment of federal air quality standards. Compliance with the general conformity rule is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* emissions thresholds. The EPA has established the National Ambient Air Quality Standards (NAAQS) to regulate common air pollutants known as criteria pollutants: carbon monoxide, sulfur oxides, nitrogen oxides, ozone, lead, and particulate matter. In the San Francisco Bay Area, the *de minimis* emission thresholds are 100 tons per year of either volatile organic compounds (VOC), nitrogen oxides (NO_x), or carbon monoxide (CO). Particulate matter ten micrometers in diameter and smaller (PM₁₀) emissions are not considered by the General Conformity rule because the Bay Area Air Basin is federally-designated as attainment for PM₁₀ (see Table 3-12 for state and federal criteria pollutant standards).

The Clean Air Act also requires the EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAP) to protect public health and welfare. Hazardous air pollutants (HAP) are those pollutants known or suspected to cause cancer or other serious health effects or adverse environmental effects. The NESHAPs are found in 40 CFR Part 61 and 40 CFR Part 63. Collectively, the NESHAPs regulate nearly 200 HAPs. These include asbestos, certain volatile organic compounds, mercury, vinyl chloride, pesticides, herbicides, and radionuclides.

GHGs are components of the atmosphere that trap heat relatively near the surface of the earth and contribute to the greenhouse effect and global warming. Most GHGs occur naturally in the atmosphere, but atmospheric concentrations can come from human activities, such as burning fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO₂), methane, nitrous oxides, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether rainfall increases or decreases remains difficult to project for specific regions (IPCC 2007).

State

California Air Resources Board

Regulation of air quality began in California before its coordination at the national level. In California, air quality regulation is a joint responsibility between the CARB and local air quality management agencies. State-level standards established and regulated by CARB are generally more stringent than those set forth by the EPA. The CARB designates those portions of the state where federal or state ambient air quality standards are not met as “nonattainment” areas (refer to Table 3-12). CARB’s responsibilities include coordination and oversight of state and local air pollution control programs, developing and implementing air pollution control plans to achieve and maintain the NAAQS, and implementing the California Clean Air Act (CCAA).

Local

Bay Area Air Quality Management District

BAAQMD is the agency that implements standards and policies set forth by the CARB and maintains local air quality management authority in the nine-county San Francisco Bay Area Air Basin, including all of San Mateo County. The BAAQMD holds the primary responsibility for most air quality regulatory programs, with CARB exercising oversight responsibilities. EPA has delegated implementation and enforcement of some New Source Performance Standards and NESHAPS to BAAQMD. California has adopted criteria pollutant standards similar to and generally more stringent than the NAAQS known as the California Ambient Air Quality Standards (CAAQS).

At the state level, HAPs are generally referred to as toxic air contaminants (TACs). CARB regulates TACs through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. The primary state regulations for TACs are the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). These in conjunction with additional rules set forth by the BAAQMD establish the regulatory framework for TACs.

BAAQMD prepared the *2010 Clean Air Plan* to address noncompliance with and to create a plan to attain the federal and state ambient air quality standards for ozone. The plan updates the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone. The plan evaluates recent air quality data, establishes new emission control measures, and evaluates the impacts of existing control measures.

**TABLE 3-12
STATE AND FEDERAL CRITERIA POLLUTANT STANDARDS**

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Ozone (O ₃)	0.09 ppm/1-hour 0.07 ppm/8-hour	0.075 ppm/8-hour	(a) Decline in pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; and (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm/1-hour 9.0 ppm/8-hour	35.0 ppm/1-hour 9.0 ppm/8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO ₂)	0.18 ppm/1-hour 0.03 ppm/annual	.100 ppb/1-hour 0.053 ppm/annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO ₂)	0.25 ppm/1-hour 0.04 ppm/24-hour	75 ppb/1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM ₁₀)	50 µg/m ³ /24-hour 20 µg/m ³ /annual	150 µg/m ³ /24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter (PM _{2.5})	12 µg/m ³ / annual	35 µg/m ³ /24-hour 12 µg/m ³ /annual	
Sulfur Dioxide (SO ₂)	0.04 ppm/24-hour	0.075 ppm/1-hour	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) property damage.
Lead	1.5 µg/m ³ /30-day	0.15 µg/m ³ /3-month rolling	(a) Learning disabilities; and (b) Impairment of blood formation and nerve conduction.

**TABLE 3-12
STATE AND FEDERAL CRITERIA POLLUTANT STANDARDS**

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particles when humidity is less than 70 percent.	No Federal Standards	(a) Visibility impairment on days when relative humidity is fewer than 70 percent.

Source: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

3.11.1.2 Characterization

The proposed pipeline replacement segments are located in the San Francisco Bay Area, which is subject to moderately wet winters and dry summers. Average summertime high temperatures are between 70 and 82 degrees Fahrenheit (°F) in San Mateo, and are below 75°F at the San Francisco International Airport. Average wintertime low temperatures in San Mateo range from 40 to 45°F (Table 3-13). The prevailing winds along the eastern slope of the peninsula are generally from the west depending on the influence of local topography. Annual average wind speeds range from five to ten miles per hour (mph) throughout the peninsula, with higher wind speeds usually found along the coast. Air quality in the Bay Area is affected by persistent temperature inversions, persistent on-shore winds, coastal mountain and valley topography, and available sunlight.

Descriptor	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Average Maximum Temperature	58	62	65	69	74	79	82	81	80	74	65	58
Average Minimum Temperature	40	43	45	46	50	54	56	56	54	50	44	40
Average Total Precipitation (inches)	4.02	4.09	3.13	1.16	0.47	0.10	0.00	0.05	0.16	2.06	2.37	3.84

Source: <http://www.weather.com/weather/wxclimatology/monthly/graph/USCA1005>

The environmental quality of ground-level air quality is determined by measuring ambient concentrations of pollutants that are known to have deleterious effects. The degree of air quality degradation is then compared to the current NAAQS and CAAQS. In accordance with the CAA and CCAA, air pollutant standards are identified for the following six criteria air pollutants: ozone, CO, particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. These air pollutants are termed criteria air pollutants because they are regulated by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Historically, violations of federal and state ambient air quality standards for ozone, particulate matter, and carbon monoxide have occurred throughout the San Francisco Bay Area. Since the early 1970s, substantial progress has been made toward controlling these pollutants. Although some air quality improvements have occurred, violations of ambient air quality standards for particulate matter and ozone persist. See Table 3-12 above for details state and federal criteria pollutant standards. Table 3-14 shows the national and state attainment status for the San Francisco Bay Area Air Basin (SFBAAB). The three basic designation categories are “nonattainment,” “attainment,” and “unclassified.” The “unclassified” designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards.

Pollutant	Averaging Time	National Standards¹	California Standards²
Ozone	1-Hour	-- ³	Nonattainment
	8-Hour	Nonattainment ⁴	Nonattainment ⁵
CO	1-Hour	Attainment ⁶	Attainment
	8-Hour		

**TABLE 3-14
SAN FRANCISCO BAY AREA AIR BASIN AIR QUALITY ATTAINMENT STATUS**

Pollutant	Averaging Time	National Standards¹	California Standards²
NO ₂	1-Hour Annual	Unclassified	Attainment
SO ₂	1-Hour	Attainment	Attainment
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Attainment	
PM ₁₀	24-Hour (150 µg/m ³)	--	Nonattainment ⁷
PM _{2.5}	24-Hour (35 µg/m ³)	Nonattainment	Nonattainment ⁷
Lead	3-Months Rolling (0.15 µg/m ³)	Attainment ⁸	--

Source: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

¹ National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM₁₀ standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m³. The 24-hour PM_{2.5} standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM₁₀ is met if the 3-year average falls below the standard at every site. The annual PM_{2.5} standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

² California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), NO₂, suspended particulate matter - PM₁₀, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM₁₀ annual standard), then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.

³ The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

⁴ Final designations effective July 20, 2012.

⁵ The 8-hour CA ozone standard was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.

⁶ In April 1998, the Bay Area was re-designated to attainment for the national 8-hour carbon monoxide standard.

⁷ In June 2002, CARB established new annual standards for PM_{2.5} and PM₁₀.

⁸ ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure below which there are no adverse health effects determined.

As summarized in Table 3-14, the SFBAAB generally experiences low concentrations of most pollutants as compared to federal or state standards. The SFBAAB is designated as a nonattainment area for ozone, PM₁₀, and PM_{2.5}, and as an attainment or unclassified area for all other pollutants. With respect to the NAAQS, the SFBAAB is designated as a marginal nonattainment area for ozone and as an attainment or unclassified area for all other pollutants.

Ozone. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NO_x. The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants, which may contribute to an existing or projected air quality violation, is based on the state and federal CAA emissions limits for

stationary sources. To ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulations require any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions.

Particulate Matter (PM₁₀ and PM_{2.5}). PM₁₀ is often termed “coarse” particulate matter and is made of particulates that are ten or fewer microns in diameter. PM_{2.5} is termed “fine” particulate matter and is composed of particles that are 2.5 or fewer microns in diameter. The federal New Source Review program was created by the federal CAA to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards.

In addition to criteria air pollutants, individual projects may emit toxic air contaminants (TACs). TACs collectively refer to a diverse group of air pollutants that are capable of causing chronic (i.e., long duration) and acute (i.e., severe but short term) adverse effects, including carcinogenic effects on human health. Exposures to PM_{2.5} are strongly associated with mortality, respiratory diseases, and improper lung development in children, as well as cardiopulmonary disease which may require hospitalization. In addition to PM_{2.5}, diesel particulate matter is of concern. The CARB identified diesel particulate matter as a TAC, primarily based on evidence demonstrating cancer effects in humans (CARB 1998). The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the region.

Air pollution does not affect all individuals in the same way; some individuals or groups are considered more sensitive to dust and other air contaminants. Sensitive receptors are those portions of the population most susceptible to poor air quality, specifically children, the elderly, and those with applicable preexisting health problems. Table 3-15 shows the existing local area air quality levels as reported by the CARB Redwood City air monitoring station. Places where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, convalescent centers, and residential communities.

TABLE 3-15 LOCAL AREA AIR QUALITY LEVELS FROM THE REDWOOD CITY AIR MONITORING STATION¹			
Pollutant (Standard)²	Year		
	2011	2012	2013
<i>Ozone</i>			
Maximum 1-Hour Concentration (ppm)	0.076	0.063	0.083
Days > CAAQS (0.09 ppm)	0	0	0
Maximum 8-Hour Concentration (ppm)	0.061	0.054	0.075
Days > NAAQS (0.075 ppm)	0	0	1
Days > CAAQS (0.070 ppm)	0	0	0
<i>Carbon Monoxide</i>			
Maximum 8-Hour Concentration (ppm)	1.67	1.81	--
Days > NAAQS (9 ppm)	0	0	0
<i>Nitrogen Dioxide</i>			
Maximum 1-Hour Concentration (ppb)	56.3	60.4	53.8
Days > NAAQS (0.25 ppm)	0	0	0

TABLE 3-15 LOCAL AREA AIR QUALITY LEVELS FROM THE REDWOOD CITY AIR MONITORING STATION¹			
Pollutant (Standard)²	Year		
	2011	2012	2013
<i>Inhalable Particulates (PM10)</i>			
Maximum 24-Hour Concentration (ug/m ³)	45.6	50.6	44.3
Days > NAAQS (150 ug/m ³)	0	0	0
Days > CAAQS (50 ug/m ³)	0	1	0
Annual Average (ug/m ³)	19.5	17.5	--
<i>Ultra-Fine Particulates (PM2.5)</i>			
Maximum 24-Hour Concentration (ug/m ³)	39.7	33.3	39.0
Days > NAAQS (35 ug/m ³)	1	0	3
Annual Average (ug/m ³)	8.7	8.5	10.7
¹ Source: http://www.arb.ca.gov/adam/			
² ppm = parts per million			
³ Data obtained from the San Francisco-Arkansas Station			

The Cañada Road segment is approximately 2.4 miles long and is located west of I-280 and along the east side of Cañada Road within the GGNRA Scenic and Recreational Easement area. Recreational uses near this segment include the Pulgas Water Temple (approximately 650 feet from the alignment, on the west side of Cañada Road); the Crystal Springs Regional Trail (approximately 485 feet from the alignment, on the west side of Cañada Road); and the Sheep Camp Trail, which crosses the Cañada Road segment. On the west side of I-280, the Edgewood Park and Natural Preserve is located about 0.5 mile from the closest portion of the Cañada Road segment and the Pulgas Ridge Open Space Preserve is located on the opposite side of I-280, at least 500 feet away. There are no private residences, schools, or other sensitive receptors within 0.5 mile of the proposed project alignment.

The Bunker Hill segment is approximately 1.1 miles long and is located about 1,500 feet east of I-280 in the GGNRA Scenic and Recreational Easement area. Sensitive receptors near this segment include single family homes, a school and a recreation center located to the east along Lexington Avenue and Laurel Hill Drive. The boundary of the nearest residence is within 100 feet northeast of the Bunker Hill alignment.

The Crystal Springs segment is approximately 1.2 miles long and is located about 1,000 feet east of I-280 and east of Cañada Road within the GGNRA Scenic and Recreational Easement area. Sensitive receptors near the alignment include residences along Black Mountain Road and Wedgewood Drive, with some residences located within 150 feet at certain points along the proposed alignment. Another sensitive receptor is an elementary school, located about 500 feet north of the proposed pipeline alignment. There are no major recreational facilities or trails in the vicinity of this segment.

3.11.2 Environmental Consequences

3.11.2.1 Impact Analysis

Factors considered in determining whether the Project would have adverse air quality impacts include the extent or degree to which its implementation would result in:

- 1) Violation of ambient air quality or emissions standards applicable to the Project area
- 2) Exposing sensitive receptors to detrimental pollution concentrations

- 3) Contributing to a collective air quality effect of the proposed Project and alternatives and foreseeable other projects that lead to violation of air quality standards, even if the individual effect of the project/activity is relatively minor compared to other sources
- 4) Frequent exposure to objectionable odors affecting a considerable number of people.

3.11.2.2 Environmental Impacts

Proposed Action Alternative

Project-related air quality impacts for the proposed Project are primarily associated with short-term impacts from Project construction. Long-term impacts from Project operation are primarily related to infrequent maintenance and monitoring activities and would be similar to those activities currently occurring on the existing pipeline. The following impact assessment for air quality is based on the air quality analysis and resulting Air Quality Technical Memorandum and findings conducted and prepared for the CEQA Mitigated Negative Declaration (MND) for the Project. Resource protection measures (including best management practices for air quality recommended in the CEQA MND) are considered in the assessment of impacts. Additional mitigation has also been recommended to reduce potential Project-related air quality impacts.

Impacts to Emission Standards

Construction activities can be grouped into those occurring on- and off-site. Construction emissions are generally considered short-term and temporary in nature; however, they have the potential to substantially affect air quality if daily construction emissions exceed the BAAQMND's proposed thresholds of significance. During pipeline construction, various types of construction equipment and vehicles would temporarily operate in the Project area. Construction exhaust emissions would be generated from a variety of sources, including construction equipment, vegetation clearing, construction personnel commuting, and hauling construction material. These activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Generation of these emissions would vary depending on vehicle trips per day associated with delivery of construction materials, importing and exporting soil, vendor trips, and worker commute trips, as well as the types and number of heavy-duty, off-road equipment used, and the intensity and frequency of their operation.

The air quality analysis performed for the CEQA MND-assessed construction-generated emissions of criteria air pollutants and ozone precursors in accordance with methods recommended by the BAAQMD. PG&E's pipeline construction activities were quantified using the California Emission Estimator Model (CalEEMod) Version 2013.2.2. Individual CalEEMod Modeling runs were performed for each of the three project segments – Cañada Road, Bunker Hill, and Crystal Springs. The CalEEMod model inputs and outputs are discussed in detail in the technical memorandum, Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results. based on this analysis, with the exception of NO_x (oxides of nitrogen) emissions (discussed below), the proposed project's average daily construction emissions would not exceed the BAAQMD's proposed thresholds of significance (PG&E 2015). None of the emissions would exceed the General Conformity "de minimis" annual thresholds and impacts are considered to be negligible. Because General Conformity "de minimum" thresholds would not be exceeded during construction, the Project is exempt from performing a comprehensive Air Quality Conformity Analysis and is considered to be in conformity with the State Implementation Plan.

The air quality analysis determined that NO_x emissions would exceed BAAQMD thresholds and therefore potentially result in a significant impact. Implementation of a mitigation measure recommended as part of the CEQA MND analysis (designated as M-AQ-1b in the CEQA MND) would result in a reduction of NO_x to below the BAAQMD significance threshold to a less-than-significant level. Mitigation measure M-AQ-

1b is the submittal and implementation of a Construction Emissions Minimization Plan, as summarized below.

Mitigation Measure

AQ-1: Construction Emissions Minimization Plan

Prior to construction, PG&E shall submit a Construction Emissions Minimization Plan to the Environmental Review Officer (ERO) for review and approval by an Environmental Planning Air Quality Specialist. The plan shall detail project compliance with the following requirements:

- *All on-road and off-road construction equipment engine tiers shall be consistent with the United States Environmental Protection Agency (USEPA) engine tiers provided in the Construction Equipment Summary. Documentation of equipment tiers for in-use equipment shall be maintained on site as part of the plan.*
- *Construction equipment shall be equipped with CARB-approved Level III Verified Diesel Emission Control Strategies (VDECS). Documentation of VDECS for in-use Tier III equipment shall be maintained on site as part of the plan. To accomplish this, diesel particulate filters (DPF) will be used.*

Impacts to Sensitive Receptors

In order to assess potential detrimental pollution concentration impacts on sensitive receptors, a health risk screening assessment (HRSA) was performed as part of the CEQA MND analysis. to evaluate potential health risk to nearby sensitive receptors. Health risk impacts are evaluated differently from regional criteria pollutants. Health risk impacts are localized and are evaluated based on a specific sensitive receptor's exposure to air pollutants that are typically within 1,000 feet of an emission source. No sensitive receptors were identified within 1,000 feet of the Cañada Road segment. Therefore, construction activities along the Cañada Road segment would not result in substantial health risks to sensitive receptors, and further analysis of this segment's construction impact is not required. For the Bunker Hill segment, the nearest sensitive receptors are multiple residences located within 100 feet of the proposed alignment. For the Crystal Springs segment, the nearest receptor to the proposed Project alignment is estimated to be located within approximately 150 feet. An HRSA was conducted using the Air Quality and Risk Analysis Screening Tool that was prepared by ENVIRON International Corporation for the SFPUC and Planning Department. The Air Quality and Risk Analysis Screening Tool was developed to evaluate health risk from construction equipment exhaust on adjacent sensitive receptors. The tool provides a conservative estimate of project emissions, air concentrations, and potential health impacts. The HRSA was conducted for the Bunker Hill and Crystal Springs segments because construction of these segments would occur within 1,000 feet of sensitive receptors. The HRSA findings concluded that cancer risk and the acute Health Indices would exceed significance thresholds. With the implementation of the Construction Emissions Minimization Plan mitigation where construction equipment shall be equipped with CARB-approved Level III VDECS, the proposed construction activities would not expose sensitive receptors to either cancer, chronic, acute, or PM_{2.5} risk in excess of the significance thresholds.

Collective Air Quality Impacts

Each segment of the proposed project would involve clearing, grading, boring, excavation, pipe installation, backfilling, testing, and final grading. During the project's approximately 15-month-long construction period, construction activities would have the potential to result in emissions of ozone precursors and particulate matter. Project-related site preparation, excavation, trenching, grading, and other construction activities may cause wind-blown dust that could contribute particulate matter to the local atmosphere. Although there are federal standards for air pollutants and implementation of state and regional air quality control plans, air pollutants continue to have an impact on human health throughout the country. California has found that particulate matter exposure can cause health effects at lower levels than national standards.

The current health burden of particulate matter demands that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure.

Dust can be an irritant, causing watering eyes or irritation to the lungs, nose, and throat. Depending on exposure, adverse health effects can occur due to this particulate matter in general and also due to specific contaminants, such as lead or asbestos, that may be constituents of soil. California Code of Regulations Title 17, Section 93105, the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations became effective November 19, 2002, in the BAAQMD. ATCM applies when “any portion of the area to be disturbed has naturally-occurring asbestos, serpentine, or ultramafic rock as determined by the owner.” PG&E has identified naturally occurring asbestos in the alignments of the Bunker Hill and Crystal Springs segments. Consequently, an Asbestos Dust Mitigation Plan would be submitted to the BAAQMD prior to conducting grading or excavation activities for the Bunker Hill and Crystal Springs segments. The requirements of the Asbestos Dust Mitigation Plan would ensure that no visible dust could cross the project boundary. The plan would specify a responsible point of contact, trackout prevention, stockpile management, speed limits, air monitoring, earth-moving operations, and inactive/post-project stabilization and corrective actions. Compliance with the Asbestos ACTM would ensure that fugitive dust impacts from the Bunker Hill and Crystal Springs segments would be minimized.

No naturally occurring asbestos has been identified along the Cañada Road segment, and, as a result, an Asbestos Dust Mitigation Plan would not be required for this segment. However, without this Plan, uncontrolled fugitive dust emissions would be a substantial impact. The BAAQMD has identified feasible BMPs that effectively control fugitive dust emissions at construction sites and the following Mitigation Measure described in the CEQA MND (referred to as M-AQ-1a) would reduce fugitive dust emissions generated during construction of the Cañada Road segment to minimal levels.

Mitigation Measure

AQ-2: Dust Control

For the Cañada Road segment and any other areas not already subject to the Asbestos Air Toxic Control Measure, PG&E shall post one or more publicly visible signs with the telephone number and person to contact at PG&E with complaints related to excessive dust or vehicle idling. This person shall respond to complaints and, if necessary, take corrective action within 48 hours. The telephone number and person to contact at the BAAQMD’s Compliance and Enforcement Division shall also be provided on the sign(s) in the event that the complainant also wishes to contact the applicable air district.

In addition, to limit dust, criteria pollutants, and precursor emissions associated with project construction, the following BAAQMD-recommended Basic Construction Measures shall be required for the Cañada Road segment and any other areas not already subject to the Asbestos Air Toxic Control Measure:

- Water all active construction areas with exposed soil surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads that have not been stabilized with soil binder, mulch, gravel, vegetation or other cover) sufficiently to prevent dust from becoming airborne. Reclaimed water should be used whenever possible.*
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.*
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
- Vehicle speeds on unpaved areas shall be limited to 15 mph.*
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*

- *Idling times for construction equipment (including vehicles) shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes, except for situations allowed under California's commercial vehicle idling regulations. California's Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.*
- *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*

Objectionable Odor Impacts

Construction activities involving heavy-duty trucks and off-road construction equipment would generate diesel exhaust, which can be considered offensive by some individuals. As described previously, proposed project construction sites would be located within 100 feet of some residences. However, pipeline installation would use typical construction techniques and any odors generated would be temporary, short term, and representative of most construction sites. Furthermore, construction activities would cease temporarily at night. The intermittent and temporary construction activities are not expected to cause an odor impact on a substantial number of sensitive receptors. Therefore, the potential odor generation impacts would be minimal.

No Action Alternative

Implementation of the No Action Alternative would result in no construction activities along the pipeline alignment. It would be anticipated that on-going inspection and maintenance would occur until further action is needed. Air quality impacts associated with the No Action Alternative would primarily be related to emissions and dust from vehicles accessing the pipeline for inspection and maintenance. Emissions and dust from maintenance operations would have a negligible affect to air quality.

Cumulative Effects

Air quality emissions from past, present, and future projects contribute to the region's air quality on a cumulative basis. The proposed Project's emissions are expected to nominally contribute to existing cumulative adverse air quality impacts in the region. The Pipeline Replacement Project does not involve any new long-term operational emissions in the BAAQMD. The short-term construction emissions would be temporary and minor. The potential for the proposed Project to result in cumulative air impacts would be limited to the construction period after which air quality impacts are expected to be negligible. When considered with potential impacts from other development actions, the effects would be minor.

3.12 WATER RESOURCES

This section describes the water resources in the area including the hydrologic processes, water uses, additional sources, and water quality. The purpose of this section is to evaluate potential impacts to water resources in the vicinity of the Project segments.

3.12.1 Affected Environment

The Project segments are adjacent to I-280 and both the Lower and Upper Crystal Springs Reservoirs west of the City of San Mateo. Average annual precipitation for the area varies between 20 and 40 inches per year, depending on elevation. The Project locations are at higher elevations along the ridgeline above San Mateo, suggesting the precipitation would be closer to 40 inches per year. Approximately 95 percent of the total annual precipitation falls between the months of October and April. The San Francisco Bay lies to the west and down gradient from the Project segments. Both surface water and ground water are expected to follow topography and discharge into the San Francisco Bay.

3.12.1.1 Applicable Regulations, Plans, and Standards

Federal

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States and regulates quality standards for surface waters. The CWA makes it unlawful to discharge any pollutant from a point source into navigable waters without a NPDES permit (CWA 1972).

State

Streambed Alteration Agreement

The streambed alteration program requires the CDFW to be notified of any proposed activity that will substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water (California Fish and Game Code 2004).

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act grants the State Water Resources Control Board and each regional board the primary responsibility for the coordination and control of water quality (Porter-Cologne Water Quality Control Act 2013).

Local

Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin

The Basin Plan—administered by the Regional Water Quality Control Board (RWQCB)—describes the water quality regulations in the San Francisco Bay region (Water Quality Control Plan for the San Francisco Bay Basin 2013).

San Mateo County Stormwater Pollution Prevention Program (SWPPP)

SWPPP defines best management practices for preventing stormwater pollution in San Mateo County, and is part of the NPDES permit issued to the county (San Mateo Area Stormwater Program Evaluation Report 2002).

Peninsula Watershed Management Plan

The Peninsula Watershed Management Plan defines regulations and best practices for the San Francisco Public Utilities Commission (SFPUC). The purpose of the Watershed Management Plan is to allow SFPUC to provide the highest quality water to San Francisco County and surrounding suburban customers. Several policies laid out by the management plan relate to SFPUC's primary goal which is to "maintain and improve source water quality to protect public health and safety" (PWMP 2002).

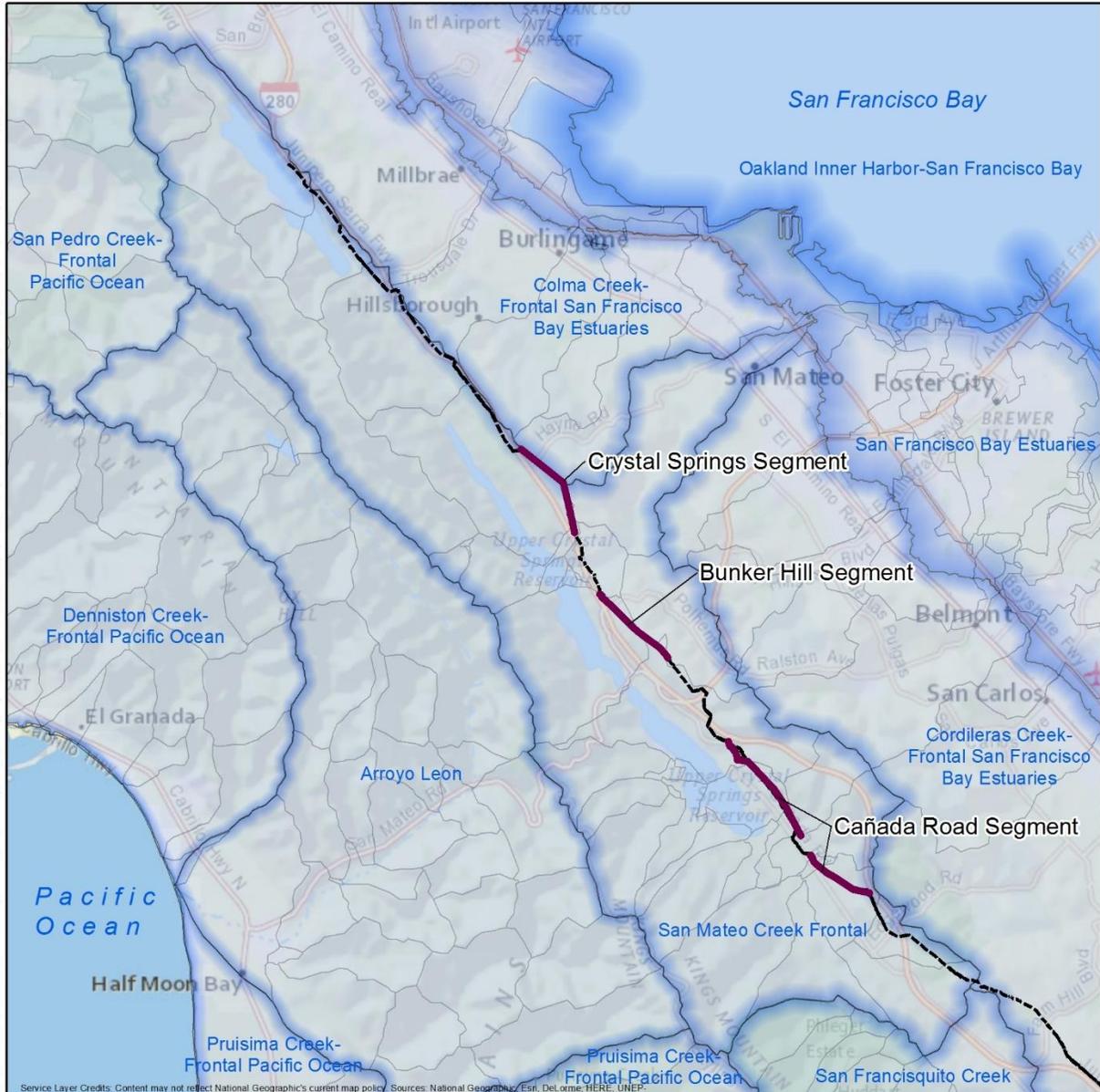
3.12.1.2 Characterization

Surface Water

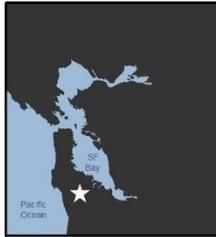
The Project area sits completely in the San Mateo Creek Frontal San Francisco Bay Estuaries Hydrologic Unit (Hydrologic Unit). The Hydrologic Unit consists primarily of the area surrounding San Andreas Lake, Upper Crystal Springs Reservoir, and Lower Crystal Springs Reservoir (Figure 3-13). The Hydrologic Unit follows San Mateo Creek from Lower Crystal Springs Reservoir to the San Francisco Bay.

Most of the creeks in the Hydrologic Unit are unnamed and lead to one of the previously mentioned bodies of water. There are some exceptions including San Mateo Creek, which both feeds and drains Lower Crystal Springs Reservoir, and Flume Creek, which drains San Andreas Lake into Lower Crystal Springs Reservoir. However, none of the larger creeks would be crossed by the Project. San Mateo Creek is listed as an EPA Impaired Water with pesticides listed as the cause of impairment (EPA 2014a).

Nine unnamed drainages would be crossed by the proposed Project (Table 3-16). Six drainages would be crossed by the Cañada Road segment and three would be crossed by the Crystal Springs segment.



Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP.



Legend

- Project Segment
- Gas Line 109
- Hydrologic Unit Boundary
- Groundwater Basin

Surface Water Catchment and Groundwater Basin

San Francisco Peninsula Watershed
Gas Line 109 Replacement Project



Figure 3-13

TABLE 3-16 DRAINAGES CROSSED BY PROJECT			
Feature	Length (feet)	Average Width (feet)	Area (acres)
<i>Cañada Road</i>			
D-1	188	6	0.026
D-2	276	10	0.063
D-3	387	16	0.142
D-4	280	12	0.077
D-5	203	8	0.037
D-6	225	6	0.031
<i>Crystal Springs</i>			
D-1	140	4	0.013
D-2	245	6	0.034
D-3	n/a	n/a	n/a
TOTAL	1,944	Not applicable	0.423

The Watershed Management Plan also defines Water Quality Vulnerability Zones (Figure 3-14). These zones define where soil disturbance would have the most potential to impact water quality. The Project is primarily in zones classified as high and moderate vulnerability (PWMP 2002). The water stored in the reservoirs and San Andreas Lake is mostly derived from Hetch Hetchy Reservoir waters and has typical contaminant levels for untreated waters (San Francisco Annual Water Quality Report 2013).

Ground Water

The Project is located on the ridge line above the San Mateo Ground Water Basin (Basin) (see Figure 3-14). Ground water in the lower portions of the Basin is typically found at depths greater than 20 feet, and the depth to ground water increases with proximity to the Project location (California Department of Water Resources 2014). In the lower regions of the Basin, there are many wells for irrigation, industrial, and potable uses; however, there are no known wells in the Project vicinity. There are several unmarked springs in the Project area; however, they are mainly in the vicinity of surface waters. Ground water is unlikely to be encountered in the Project location with exception to areas in the immediate vicinity of surface waters.

Based on topography, any surface water that infiltrates in the Hydrologic Unit would flow into and recharge the Basin. Ground water within the Hydrologic unit that is north of the eastern portion of San Mateo Creek would flow primarily south, while ground water within the Hydrologic Unit that is south of the eastern portion of San Mateo Creek would flow primarily north. The San Mateo Creek cuts through the ridgeline towards the San Francisco Bay, allowing any infiltrated ground water to flow east and into the Basin. The Basin is a sub-basin of the larger Santa Clara Valley Basin. The Santa Clara Valley Basin consists of four sub-basins and covers the entire Santa Clara Valley floor. The Santa Clara Valley Basin runs from Morgan Hill to Richmond and South San Francisco, wrapping around the southern portion of the San Francisco Bay.



Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP.



0 2 Miles

Legend

- Project Segment
- Gas Line 109
- Bodies of Water
- High Vulnerability
- Moderate Vulnerability

Water Quality Vulnerability Zones

San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 3-14

3.12.2 Environmental Consequences

This subsection describes the potential impacts to surface water, ground water, and water quality in the vicinity of the proposed Project.

3.12.2.1 Impact Analysis

Factors considered in determining whether the Project would have adverse water resource impacts include the extent or degree to which its implementation would result in:

- 1) Project activities modifying the floodway, substantially altering the floodplain, or diverting floodwaters to areas previously outside the 100-year floodplain.
- 2) Surface water being contaminated by stormwater runoff from flash floods to levels above federal and state water quality standards.
- 3) Project activities substantially altering the area's existing drainage pattern.
- 4) An increase in scouring during a flood event that would result in structural or property damage.
- 5) Surface water quality impacts occurring that would violate Section 401 of the CWA or other applicable surface water regulations, including state-established standards for designated uses.
- 6) Surface water quality degradation occurring that would cause a long-term loss of human use or use by aquatic wildlife and plants.
- 7) Indirect loss of wetlands or riparian areas, caused by degradation of water quality, diversion of water sources or erosion, and sedimentation resulting from altered drainage patterns.
- 8) Substantial degradation or depletion of ground water resources.
- 9) Ground water quality degradation that causes ground water quality to exceed state or federal standards.

3.12.2.2 Environmental Impacts

Proposed Action Alternative

Surface Water

Increased sedimentation in the streambed channels from construction related activities could potentially reduce the natural drainage patterns and capacity of the streambed floodplains. Risk of erosion, increased sedimentation, and alteration of the floodplain and drainage patterns of all streambed crossings would be negligible with the use of BMPs.

The proposed Project area is not located within a FEMA-designated flood zone and is unlikely to experience a major flood event with swift moving waters that could cause scouring and structural or property damage.

Ground Water

Ground water pumping is not part of the scope of the Proposed Action Alternative; therefore, there is no potential for proposed Project activities to substantially deplete ground water resources.

Water Quality

An increase in turbidity could decrease the water quality in the surrounding lakes and streams. Lower Crystal Springs and Upper Crystal Springs Reservoirs are protected as an emergency drinking water supply for people in San Mateo and San Francisco counties and support aquatic wildlife and aquatic plants. Surface water contamination or increased turbidity could negatively impact the integrity of these resources and subsequently impact dependent species. Stockpiled soils, resulting from construction activities, could be washed into local water bodies during storms. Sediment in any of the six crossings in the Cañada Road segment could directly impact the turbidity in Lower Crystal Springs Reservoir. Similarly, sediment in any

of the three Crystal Springs crossings could directly impact the turbidity in Upper Crystal Springs Reservoir.

Proposed Project construction activities could result in the indirect loss of wetlands or riparian areas through degradation of water quality, diversion of water sources, or erosion and sedimentation from altered drainage patterns. Erosion resulting from construction activities could cause sedimentation in the wetland near Cañada Road. Several of the riparian streams in the Cañada Road segment could also experience erosion or sedimentation from construction activities.

The SWPPP, which includes a site-specific Erosion Control Plan prepared by PG&E for the Project construction would outline appropriate BMPs for managing spoil storage, excavation and grading activities, and appropriate monitoring. Furthermore, a post-construction erosion control and vegetation restoration plan prepared by PG&E would also ensure that BMPs were implemented to reduce the risk and impact of long-term erosion potential. Implementation of these BMPs would reduce the risk of erosion and accidental spills; as a result, all impacts to water quality would be minimal.

A release of hazardous materials into the soil from improper storage and disposal or vehicle/equipment leakage could also result in surface water or ground water degradation. Contaminants in the Cañada Road segment could be conveyed through one of the six crossings into Lower Crystal Springs Reservoir. Similarly, contaminants in the Crystal Springs segment could be transported through the three crossings into Upper Crystal Springs Reservoir. Contaminants throughout the Project area could be washed directly into one of the two reservoirs or seep into shallow ground water. Implementation of the following mitigation measure would reduce the risk and impact of spills to minimal levels.

Mitigation Measure

WR-1: Hazardous Substance Control

- *PG&E will develop and implement general Project-wide hazardous substance control and emergency response measures included in the SWPPP. Additionally, care shall be exercised to minimize, contain, and properly dispose of paint flakes generated during removal and dismantling of equipment coated with lead-based paint.*

All impacts to water resources resulting from the Proposed Action Alternative would be temporary and minor.

No Action Alternative

Under the No Action Alternative, maintenance, operation, and line inspection activities would continue on the existing L-109 segments. The continued operation of L-109 does not involve activities that would increase potential for altering drainage patterns, decrease surface water quality, deplete the ground water supply, or increase ground water contamination. No new construction activities would take place along the existing pipeline. Therefore, no impact to water resources would occur.

3.12.2.3 Cumulative Effects

No substantial cumulative effects to water resources are anticipated from the Project when analyzed in combination with past, present, and reasonably foreseeable actions.

PG&E would develop an SWPPP and attempt to coordinate with developers of concurrent projects within the proposed Project ROW to ensure that storm runoff from adjacent projects combined with the proposed Project is minimized. Other projects within the Project vicinity have been or will be required to comply with federal, state, and local mandated erosion control requirements; as a result, impacts from these other

projects is expected to be minimal. Due to erosion and sedimentation control and monitoring, the incremental impact of past, present, and future projects in conjunction with the proposed Project on water resources would be negligible.

3.13 GEOLOGY, MINERAL RESOURCES, AND SOILS

This section provides applicable areal and regulatory background on geologic conditions and resources within the Project area including physiography, underlying geology, stability, seismicity, mineral and soil resources, and paleontological resources. This section also analyzes the potential impacts of the proposed L-109 Pipeline Replacement Project on geologic resources and identifies any mitigation measure required to avoid adverse impacts.

3.13.1 Affected Environment

3.13.1.1 Applicable Regulations, Plans, and Standards

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates human-occupied structural developments within California, intending to reduce loss of life and property due to surface fault rupture. Under this law, the State Geologist is required to establish regulatory zones around surface traces of active faults. Cities and counties must require a geologic investigation to show that proposed buildings are not constructed across active faults (CCR 1971). The maps issued by the State Geologist determining earthquake fault zones can help determine the most critical areas for fault rupture.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (SHMA) of 1990 “directs the Department of Conservation, California Geological Survey to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking.” The SHMA was passed after the Loma Prieta earthquake of 1989 and is intended to minimize the loss of life and property by identifying, evaluating, and mitigating seismic hazards (CDOC 2007).

State Mining and Reclamation Act

The State Mining and Reclamation Act of 1975 provides policy regulating environmental impacts associated with surface mining (CDOC 2014). The act requires the State Mining and Geology Board to adopt policies for conservation of mineral resources and reclamation of mined lands.

NPS Management Policies 2006, Paleontological Resources

Paleontological resources are protected as described in the NPS Management Policies (2006), Section 4.8.2.1, Paleontological Resources and Their Contexts. According to the policy, construction projects in areas with potential paleontological resources must be preceded by a preconstruction surface assessment prior to disturbance.

3.13.1.2 Characterization

Physiography and Topography

The proposed L-109 Pipeline Replacement Project is located on the northeastern side of Crystal Springs Reservoir in San Mateo County. This area is part of the southern half of the Coast Range Geomorphic Province, which averages 50 miles wide and extends from the Oregon border to south of San Luis Obispo, California (CGS 2002). Like most of the ranges and valleys of the Coast Range Geomorphic Province, the rift valley surrounding the Project area trends northwest. Surrounding topographic features include San Andreas Lake, Upper and Lower Crystal Springs Reservoirs, and Scarpet Peak. Elevations in the valley range from over 500 feet at the southern end of the Project’s Cañada Road segment to less than 200 feet

below Crystal Springs Dam. Ridge-top elevations average 600 feet on the eastern side of the valley to over 1,000 feet on the western side.

Geology

The underlying geology of the Project area consists of two distinct basement rock groups. The rock to the north and east of the faults is part of the Franciscan Complex, while the bedrock to the south and west is part of the granitic Salinian Block. These two distinct formations contact each other near the Pilarcitos Fault, located approximately two miles west of the San Andreas Fault (Andersen et al. 2001). Located to the east of the San Andreas Fault, the Project segments are primarily underlain by rock belonging to the Franciscan Complex. The Franciscan Complex is believed to have been formed from the spasmodic scraping of the Pacific Plate subducting under the North American Plate in layers known as terranes. It is comprised primarily of greywacke sandstone and argillite with smaller amounts of limestone, greenstone, radiolarian ribbon chert, serpentinite, and other metamorphic rocks, often found as mélangé (Elder 2002). Quaternary deposits in the Project area include both recent artificial fill northeast of Crystal Springs Reservoir and alluvial fan deposits above the upper reservoir, directly south of the Cañada Road segment (Witter et al. 2006). A summary of the geologic formations underlying the Project segments are summarized in Table 3-17.

Formation	Description	Age
Alluvial Fan Deposits	Gravel, sand, clay; medium dense to fine	Holocene
Whiskey Hill Formation	Light-gray to buff marine sandstone	Eocene
Franciscan Sandstone	Marine greywacke sandstone; some shale	Jurassic and Cretaceous
Franciscan Serpentinite	Green-gray; variable size from centimeters to meters	Jurassic and Cretaceous
Franciscan Chert	Varied colors; often banded	Jurassic and Cretaceous
Franciscan Greenstone	Dark-green to red basalt; variable thickness	Jurassic and Cretaceous
Franciscan Mélangé	Mix of Franciscan types; mixed and sheared	Jurassic and Cretaceous
Artificial Fill	Variable size; variable compaction	Historic
Source: Brabb et al. 1998		

Two areas containing serpentinite and other types of ultramafic rock—the presence of which is generally associated with higher levels of naturally-occurring asbestos—are identified in close proximity to the Project location. The first underlies the I-280 corridor north of its intersection with Highway 92 for an approximate distance of four miles. The second underlies the Edgewood Preserve and Emerald Hills area between Edgewood Road at I-280 and Farm Hill Boulevard (Churchill et al. 2000).

Landslides and Slope Stability

Isolated landslide areas have been identified along the slopes of the ridges surrounding the Project area, and they are a fairly common feature in the hills and mountains of the San Francisco peninsula in general (Wentworth et al. 1997). A landslide is a mass of soil, rock, and/or debris that is displaced when shear stresses within the material exceed the available shear strength. Shear stresses typically increase due to increased weight, often due to saturation or increase of overlying material, or decreased shear strength within the slope. Certain soil types or soil boundaries within a slope often provide the zone of low shear

strength and the slip plane that results in a landslide. Landslides can occur due to either rapid, sudden failure, or over a long period of time where the slope material slowly oozes downslope.

Several landslide areas are identified in the Project area. A one-half-mile stretch along San Mateo Creek, north of the Bunker Hill segment, is identified as “mostly landslide” by the United States Geologic Survey (USGS). Four other small, isolated pockets above the Crystal Springs and Bunker Hill segments are identified as “mostly landslide.” Another area containing the southern portion of the Cañada Road segment is also identified as “mostly landslide.” All other areas along the Project corridor are designated as “few landslides” (Wentworth et al. 1997). Areas with few landslides contain small, scattered mapped landslides and few, if any, larger mapped landslides, or larger landslides that are only questionably identified. Areas of mostly landslide consist of larger mapped landslides with intervening areas and typically less than 1,500 feet between landslides.

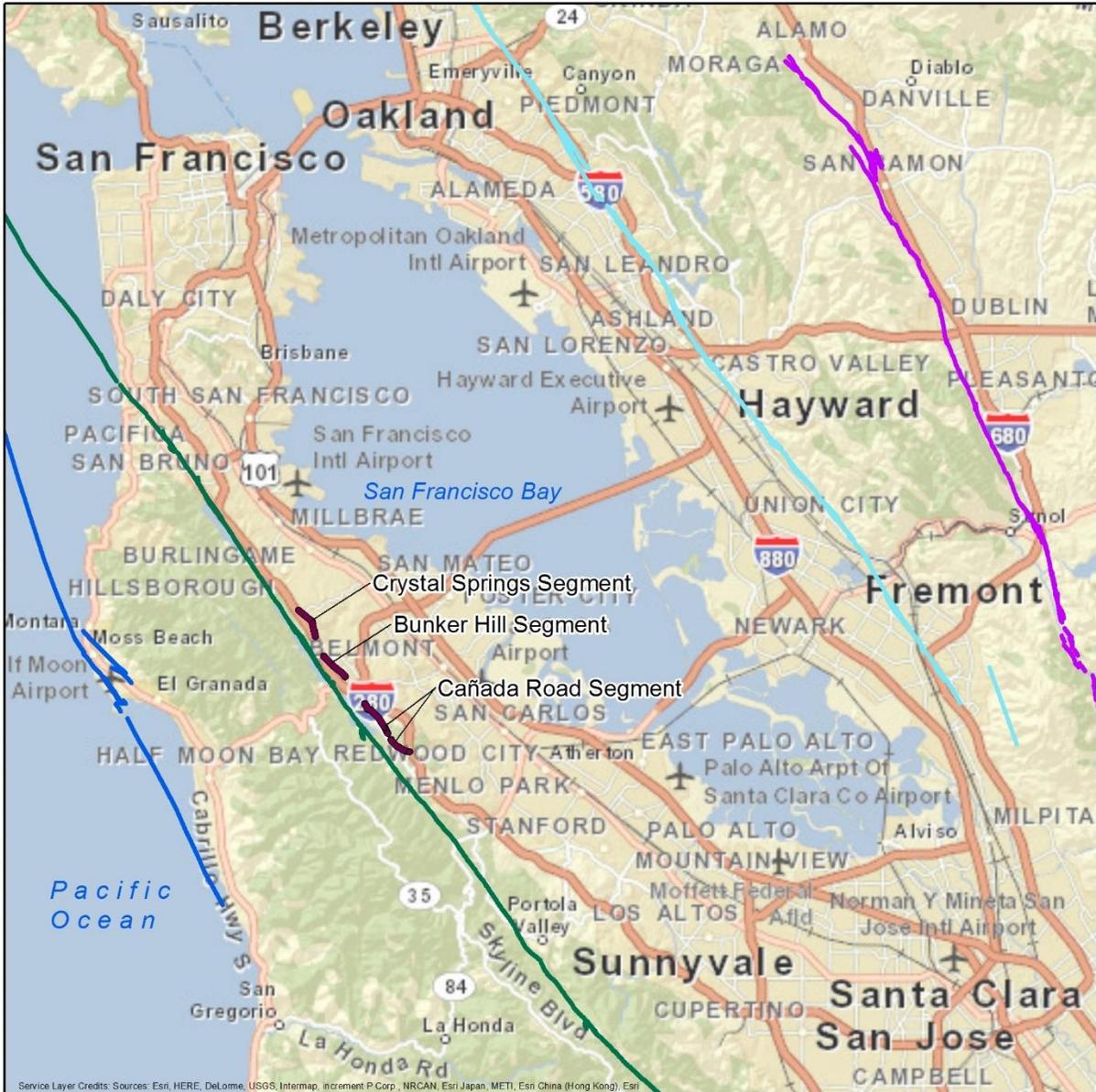
Seismicity

The proposed L-109 Pipeline Replacement Project is located in a seismically active region, and earthquakes are a known general hazard in the San Francisco Bay Area. The Pacific Plate and North America Plate contact each other underneath the San Francisco Peninsula in what is known as the San Andreas Fault Zone (Stoffer 2006). The active San Andreas Fault runs parallel to the Project location at a distance of less than one-half mile, and several other known active faults exist within 40 miles of the Project area (Figure 3-15). These include the Hayward, Calaveras, and San Gregorio faults, located 25 miles east, 32 miles east, and 15 miles west, respectively (CGS 2010). Most of the active faults in the area are right-lateral strike-slip faults (Andersen 2001), where the seismic offset is primarily horizontal. Structures built across strike-slip faults have heightened potential to be damaged from motion occurring along the fault. All of the faults in the region pose a potential risk to the Project area, but the San Andreas Fault is of most concern due to its size, proximity, and recent historical activity. However, the Project segments do not cross, and more or less run parallel to, the fault.

The 7.1 surface-wave magnitude Loma Prieta earthquake in 1989 occurred along the San Andreas Fault (Spudich 1996). The most recent Bay Area earthquake over magnitude 6.0 occurred in summer 2014 near Napa, California. The overall probability of a magnitude 6.7 or larger earthquake striking the region within the next 30 years is 63 percent (SCEC 2008). The fault with the highest probability of a magnitude 6.7 quake in the next 30 years is the Rogers Creek/Hayward Fault Zone with a 31 percent chance. Second to that is the San Andreas Fault, estimated at a 21 percent chance over the next 30 years (SCEC 2008). Periodic earthquakes are expected to be a hazard over the lifetime of the Project. Besides shaking effects, other seismic-induced hazards include soil liquefaction, settlement, and tsunamis.

The risk area for tsunami hazards in the Bay Area is primarily confined to areas directly adjacent to the Pacific Ocean and San Francisco Bay. The Project area is located at an elevation of greater than 250 feet and at least 4 miles from either the ocean or the bay. Seiche generation is another hazard affecting areas near water bodies that accompanies seismic activity. However, thrust-type faults are generally more favorable for seismic seiche generation than strike-slip faults (USGS 2013).

Seismically-induced soil liquefaction is the phenomenon where shaking ground loses bearing strength and behaves like a fluid. Multiple liquefaction events were recorded after the 1906 San Francisco earthquake. The most vulnerable areas are typically comprised of recent fill that is relatively un-compacted and often saturated (Witter et al. 2006). No high-risk areas are identified within one mile of the Project segments; the Crystal Springs and Bunker Hill segments are within exclusively very-low to low liquefaction risk zones, while the Cañada Road segment lies within very-low to moderate risk zones (Figure 3-16). The bulk of the moderate risk zone lies to the west of Cañada Road where it passes Pulgas Water Temple where there are alluvial deposits above the reservoir.

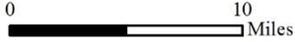


Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri



Legend

- Project Segment
- Calaveras fault zone
- Hayward fault zone
- San Andreas fault zone
- San Gregorio fault zone



Major faults in the San Francisco Bay Area

- San Francisco Peninsula Watershed Gas Line 109 Replacement Project



Figure 3-15

Soils

A summary of the soil types in the immediate Project vicinity is presented in Table 3-18. Data was obtained from a custom, site-specific report generated from the Natural Resource Conservation Service (NRCS) database. The most common soil type at the location of the three Project segments is Fagan Loam. The parent materials for Fagan loam are residuum sandstone and shale, and bedrock under Fagan series soils is typically encountered at a shallow depth. The Los Gatos soils are the next most common soil type; they have been formed from weathered sandstone (SCS 1991) and are typically mesic fine-loam and characterized by a fairly high saturated hydraulic conductivity and a low available water capacity. Candlestick Loam is characterized by a deep profile and usage as farmland; it is typically comprised of a mixed variety of alluvium. Maymen Loam is comprised of residuum from siltstone and makes up only a small percentage of the area around the Project.

Urban Orthents soils are characterized by a deeper profile and good drainage, having been formed from deposited alluvium. These soils are also highly variable. Obispo clay is the most rarely encountered soil within the Project area, and the depth to bedrock underneath Obispo clay is typically very shallow. Suitability of any soils to use as backfill for Project excavations would have to be determined in the field. Soil limitations pertaining to excavation within the Project context range from moderately restrictive to severe, depending on the type and depth to bedrock.

Classification	Slopes (%)	Characteristics
Candlestick Variant Loam	2–15	More than 80 inches to bedrock; well drained; high water capacity; NRCS group C
Fagan Loam	15–50	40–60 inches to bedrock; well drained; moderate water capacity; NRCS group C
Los Gatos Loam	30–75	24– 39 inches to bedrock; well drained; low water capacity; NRCS group C
Maymen Loam	30–50	10–20 inches to bedrock; well drained; very low water capacity; NRCS group D
Obispo Clay	5–30	8–20 inches to bedrock; well drained; very low water storage; NRCS group D
Urban Land Orthents	5–75	More than 80 inches to bedrock; well drained; highly variable
Sources: USDA 2014		

Farmland and Agriculture

Approximately 20 percent of San Mateo County land is devoted to agriculture. Only one soil type, Candlestick Variant Loam, has been classified as a suitable farmland soil, and it is not encountered in large amounts in the Project vicinity (USDA 2014). Neither the Project corridor nor immediate surrounding areas are designated as prime farmland (CDOC 2014).

Mineral Resources

The State of California adopted guidelines for classifying significant mineral resources within the state, pursuant to the State Mining and Reclamation Act of 1975. Mineral resources in the State of California are categorized by the California Division of Mines and Geology into one of five mineral resource zones. Several areas of aggregate mining exist along the San Francisco Peninsula. The only one fairly close to the Project area is the now inactive Pilarcitos Quarry, located two miles west of the Crystal Springs Reservoir

along Highway 92. No other known major mineral resources have been mapped in the area, nor are there any known metallic mineral resources located in the vicinity of the Project segments (Pampeyan, 1994).

Paleontological Resources

Paleontological resources (fossils) are the remains or traces of prehistoric plants and animals. They may range from the actual bones and shells of ancient organisms, to mineral replacements of a once-living organism, to simple impressions. Fossils are important scientific and educational resources because of their use in (1) documenting the presence and evolutionary history of particular groups of now extinct organisms, (2) reconstructing the environments in which these organisms lived, and (3) in determining the relative ages of the strata in which they occur and the geologic events that resulted in the deposition of the sediments that formed these strata.

3.13.2 Environmental Consequences

3.13.2.1 Impact Analysis

Factors considered in determining whether the Project would have adverse impacts to soil, geology, and mineral resources include the extent or degree to which its implementation would result in:

- 1) Increase in the probability or magnitude of mass ground movement such as landslides, slumps, or slope failures
- 2) Increase in hazards due to geologic events from fault activity such as severe ground-shaking, ground displacement, liquefaction, seiche, or tsunami
- 3) Loss of availability of any known mineral resources that are of value to the region
- 4) Loss of availability of any mineral resource recovery site identified on a local or regional general plan or land use plan
- 5) Disturbance to soil resources that results in severe erosion or contamination
- 6) Loss of hydric soils or any other soils that results in formation of rills, gullies, down-gradient sediment deposition, or any other erosion feature
- 7) Failure of structures or an increase in slope instability due to adverse soil conditions such as compressible, expansive, or corrosive soils
- 8) Increase in soil compaction that alters re-vegetative growth or current use
- 9) Loss of farmland or substantial loss of suitable farmland soils
- 10) Ground disturbance within geologic units with a high sensitivity for paleontological resources, resulting in a high likelihood of finding significant fossils

3.13.2.2 Environmental Impacts

Proposed Action Alternative

Implementation of the proposed L-109 Pipeline Replacement Project would result in ground disturbance due to construction activities including but not limited to grading, trenching, horizontal directional drilling, and backfilling. Other project activities with possible effects pertaining to soil resources include the construction of a temporary access road, removal of material if deemed unsuitable for backfilling, and removal of weed-infested topsoil.

The project area is at general risk of seismic hazards, including landslides and debris flows, liquefaction, and ground-shaking. All three pipeline segments to be replaced under the proposed project are in close proximity to the San Andreas Fault; however, none of them cross the fault trace itself. Thus, it can be assumed the project would be subjected to severe ground-shaking in the event of an earthquake, but no damage to the pipeline would be anticipated due to direct fault rupture. Due to current presence of the active gas pipeline, replacement of the pipeline is expected to result in a net decrease in seismic ground shaking

hazards due to improved strength and testing of the new line. Standard practices for natural gas pipelines in accordance with all federal and California Public Utilities Commission (CPUC) regulations are assumed to be incorporated; consequently, the pipeline after replacement is assumed to have greater seismic design strength than the existing pipeline. The associated adverse impacts due to ground-shaking are therefore considered minor, and the overall impacts of the improved pipeline would be considered beneficial.

Pipelines that otherwise perform well during ground shaking events still have the potential to be damaged during liquefaction and other events of permanent ground displacement. Liquefaction risk areas due to seismic events are currently mapped as ‘very low’ to ‘low’ along the vast majority of the pipeline corridor. One area of ‘moderate liquefaction risk’ is located to the west of the Cañada Road segment, but the pipeline itself is not within the risk zone. No high risk zones occur anywhere near the project corridor, and the proposed replacement routes do not place the pipeline at a greater risk than the current alignment. Therefore, impacts related to an increase in liquefaction risk due to the construction of the proposed project would be minimal.

Seismically induced landslides and debris flows have the potential to stress, bend, shear, and/or rupture the proposed pipeline. The majority of the pipeline passes through areas with few mapped landslides, if any, but a substantial number of small, isolated areas around the pipeline corridor have been mapped as existing landslide areas. Only the southern portion of the Cañada Road segment passes directly through an existing landslide area, known as the Edgewood Landslide Area. A geotechnical investigation was conducted for the Edgewood Landslide area in 2014, to explore and evaluate the geologic and subsurface conditions to provide recommendations in support of the design and construction of the proposed improvements (Infraterra 2014b). The report indicated that the landslide is confirmed as inactive, the slope is stable in low and high groundwater conditions, and is anticipated to be stable during a characteristic seismic event on the San Andreas Fault Peninsula segment. Geotechnical hazards along this section of the alignment were found to be minimal, and the report concluded that construction of the proposed Project alignment through the Edgewood Landslide area would not be subject to undue geotechnical hazards.

Due to the elevation of the project area and the distance from the ocean, the impacts due to tsunami hazard are considered to be minimal. Nearby Crystal Springs Reservoir has a small potential for seiche hazard from a strong seismic event occurring along the San Andreas Fault, but due to the geometry and small size of the reservoir and the location of the project, seiche hazard impacts would be minimal.

The soil disturbance associated with trenching, grading, and other project activities has the potential to result in severe erosion or contamination of ephemeral drainages with soil material. Soils excavated from trenches would be stored on-site for use as fill, and the loss of vegetation along the pipeline corridor could result in a temporary increase in erosion potential. However, with the implementation of BMPs outlined in the project SWPPP, the erosional impact of the project would be minimized. Construction activities are scheduled for the summer months when rainfall is lowest, and soil stockpiles would not be stored for long periods of time, typically being used to backfill the trench within 72 hours.

Substantial loss of soil or mineral resources from the project site is not anticipated. All of the soils identified in the project corridor are well-drained, upland soils. Excavated materials are expected to be overwhelmingly soil material, although rock could potentially be encountered, but no major mineral resources have been identified on-site. Materials considered to be unsuitable for backfilling the excavated pipeline trench would be removed from the site.

None of the land within the project corridor or in the immediate vicinity is designated as prime farmland, and only a small fraction of the soil types encountered in the project area are designated as suitable farmland soil. Therefore, the project would be anticipated to have no impact to farmland and farmland soils.

The underlying bedrock of the project area is mostly comprised of the Franciscan Complex, which has a Low Sensitivity for Paleontological Resources. Portions of the Cañada Road Segment also have underlying bedrock of the Whiskey Hill Formation, characterized as having a Medium Sensitivity. This formation unconformably overlies the Franciscan Complex and is comprised of sandstone, silty claystone, glauconitic sandstone, and tuffaceous siltstone (Brabb et al. 1998). Foraminifers dating to between the early and late Eocene are present within this formation. Where the Whiskey Hill Formation is present within the project area, it is overlain by an 8–10 foot thick residual deposit of soils and weathered bedrock. In drainages, the bedrock is overlain by 50–70 feet of stream alluvium (Infra Terra 2014). Trenching in this area would be limited to a depth of 4 to 6.5 feet and would therefore avoid impacting any fossiliferous formations. Potential impacts to paleontological resources would be further minimized by the implementation of the following mitigation measure.

Mitigation Measure

GMS-1: Reduce Impacts to Paleontological Resources Discovered during Construction.

- *If unanticipated paleontological resources are discovered during ground-disturbing activities, excavations in the immediate vicinity of the find shall be temporarily halted until the discovery is examined by a qualified paleontologist in accordance with Society of Vertebrate Paleontology standards (SVP 1995a). If the find is determined to be significant, PG&E shall determine the appropriate avoidance measures or other appropriate mitigation in consultation with a qualified paleontologist and the Lead Agency. Significant paleontological finds shall be curated according to current professional standards.*

To the east, and outside, of the Project area are Pleistocene-aged Alluvial Fan and Fluvial deposits. These can contain extinct late Pleistocene vertebrae fossils, such as the juvenile mammoth discovered near San Jose (UCMP 2011).

With the implementation of the mitigation measures as outlined, all potential impacts from the proposed Project are considered to be minimal in regard geology, soils, and mineral resources.

No Action Alternative

Under the No Action Alternative, there would be no new impacts to geology, mineral resources, or soils. Implementation of the No Action Alternative would result in no additional ROW acquisitions and no new impacts in the Project area. No new construction activities would take place along the line, and maintenance and line inspection activities would continue on the existing L-109. The on-going operation of L-109 may periodically involve excavation and removal of soil, but would not have any adverse effect to soil and mineral resources.

The alignment of the current existing pipeline does not cross known faults, although the pipeline is located in close proximity to the San Andreas Fault. The area crossed by the current pipeline alignment could be subject to severe ground shaking, liquefaction, landslides and debris flows, and other seismically-induced effects in the event of an earthquake along the San Andreas Fault. Seismic events along other faults in the San Francisco Bay Area pose a risk to the project as well, although likely less damaging. Natural gas pipelines are designed to tolerate a maximum displacement at fault crossings, but because the existing pipeline alignment does not cross faults, it is not designed for displacement. The existing pipeline is designed to move with typical seismic loads; as a result, no geologic or seismic impacts would be expected.

Cumulative Effects

The Proposed Action Alternative would not contribute to cumulative impacts to geologic hazards, mineral resources, or soils within the San Francisco Peninsula Watershed. The temporary nature of the soil-

disturbing construction activities and the reuse of materials on-site as appropriate will not cause any appreciable cumulative depletion of soil resources. Additionally, wider-scale soil impacts resulting from chronic erosion due to the implementation of the proposed pipeline replacement project are not anticipated, presupposing the construction activities occur as described and a SWPPP is properly implemented. No major mineral resources in the project area are identified, so the pipeline replacement project would not add to the cumulative depletion of any resource.

The pipeline replacement project would not contribute to any cumulative hazards associated with liquefaction and landslide risk. The replacement of the existing L-109 does not add any additional infrastructure or buildings that would add to these cumulative risks. Structural and safety improvements made to the structures by implementation of the project would have a net positive effect on cumulative seismic safety hazards. Overall, it is not anticipated that effects from the proposed pipeline replacement project would combine with past, present, or future actions to result in cumulative impacts to local or regional geologic resources and seismic hazards.

The No Action Alternative would not contribute to any cumulative effects. Construction of the proposed pipeline project would not occur, and operation and maintenance activities of the existing pipeline would continue normally.

3.14 SOUNDCAPES

This section describes the existing conditions of the noise environment in the proposed Project area, specifically the ambient noise levels expected prior to the implementation of the proposed pipeline replacement activities. The environmental consequences portion of this section evaluates and describes the potential impacts to the noise environment in the vicinity of the Project segments.

3.14.1 Affected Environment

3.1.14.1 Applicable Regulations, Plans, and Standards

Federal

Environmental Protection Agency

The Environmental Protection Agency (EPA) provides a summary of recommended noise levels for protecting public health and welfare with an adequate margin of safety. These recommendations are included in the 1974 Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) has established regulations to safeguard the hearing of workers exposed to occupational noise (29 CFR Section 1910.95, Code of Federal Regulations).

National Park Service

NPS Director's Order 47 states "The Service will take action to prevent or minimize all noise that, through frequency, magnitude, or duration, adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified as being acceptable to, or appropriate for, visitor uses at the sites being monitored."

3.14.1.2 Characterization

Noise is generally defined as unwanted sound. Impacts from noise occur if a project conflicts with an adopted noise policy or threshold, or results in a substantial permanent increase in ambient noise in the project vicinity. The fundamental measure of sound levels is expressed in units of decibels (dB) using a

logarithmic scale. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Estimates of representative noise sources and their corresponding noise levels in dBA are depicted in Table 3-19.

TABLE 3-19 TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT		
Examples of Common, Easily Recognized Sounds	A-Weighted Decibels (dBA)	Subjective Evaluations
Near jet engine	140	Deafening
Threshold of pain	130	
Threshold of feeling – hard rock band	120	
Accelerating motorcycle (at a few feet away)	110	
Loud horn (at 10 feet away)	100	Very Loud
Noisy urban street	90	
Noisy factory	85	Loud
School cafeteria with untreated surfaces	80	
Lawnmower	70	
Near freeway auto traffic	60	Moderate
Average office	50	
Soft radio music in apartment	40	Faint
Average residence without stereo playing	30	
Average whisper	20	Very Faint
Rustle of leaves in wind	10	
Human breathing	5	
Threshold of audibility	0	
Source: U.S. Department of Housing and Urban Development (1985).		

For most activities, sound production tends to be widely variable over time. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level (in dBA) occurring over a 24-hour day-night period (Ldn) with a 10 dBA penalty applied to nighttime sounds occurring between 10:00 PM and 7:00 AM. Table 3-20 depicts the EPA's guidelines on the yearly average equivalent sound levels identified as requisite to protect the public health and welfare.

**TABLE 3-20
YEARLY AVERAGE EQUIVALENT SOUND LEVELS IDENTIFIED AS
REQUISITE TO PROTECT THE PUBLIC HEALTH AND WELFARE
WITH AN ADEQUATE MARGIN OF SAFETY¹**

Land Use/Sensitive Receptor	Indoor			Outdoor			
	Measure	Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	L _{dn}	45	-	45	55	-	55
	L _{eq(24)}	-	70	-	-	70	-
Residential with No Outside Space	L _{dn}	45	-	45	-	-	-
	L _{eq(24)}	-	70	-	-	-	-
Commercial	L _{eq(24)}	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	L _{eq(24)}	(a)	70	(a)	-	-	-
Industrial	L _{eq(24)(d)}	(a)	70	70(c)	(a)	70	70(c)
Hospitals	L _{dn}	45	-	45	55	-	55
	L _{eq(24)}	-	70	-	-	70	-
Educational	L _{eq(24)}	45	-	45	55	-	55
	L _{eq(24)(d)}	-	70	-	-	70	-
Recreational Areas	L _{eq(24)}	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	L _{eq(24)}	-	-	-	(a)	70	70(c)

a Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.
b Based on lowest level
c Based on hearing loss.
d An Leq(8) of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 224-hour average, i.e., no greater than an Leq of 60 dB.
Source: Environmental Protection Agency in the 1974 Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety

Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. The surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. People in residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks, and some outdoor recreation areas are generally more sensitive to noise than people at commercial and industrial establishments. Consequently, the noise standards for these sensitive land uses are more stringent than those for less sensitive uses.

3.14.1.3 Ambient Noise Levels

Roadway noise impacts would generally be considered the main source of ambient noise affecting the natural environment near the project site. I-280 serves as the major north-south thoroughfare through the GGNRA and generally runs parallel and adjacent to the three pipeline segments proposed for replacement. Based on existing traffic volumes and distribution data (e.g., average daily traffic volume and heavy vehicle percentage), noise levels can be calculated from I-280 to the surrounding natural environment. The following noise levels represent the existing noise levels near the pipeline replacement segments based on roadway noise impacts from I-280.

The Cañada Road segment is approximately 2.4 miles in total length and is located west of I-280 and along the east side of Cañada Road within the GGNRA Scenic and Recreation Easement area. The ambient noise levels in this area are predominately based on roadway noise impacts from I-280 and Cañada Road. Recreational uses and sensitive noise receptors near this segment include the Pulgas Water Temple (approximately 650 feet from the alignment, on the west side of Cañada Road); the Crystal Springs Regional Trail (approximately 485 feet from the alignment, on the west side of Cañada Road); and the Sheep Camp Trail, which crosses the Cañada Road segment. On the west side of I-280, the Edgewood Park and Natural Preserve is located about 0.5 miles from the closest portion of the Cañada Road segment and the Pulgas Ridge Open Space Preserve is located on the opposite side of I-280, at least 500 feet away. There are no private residences, schools, or other sensitive receptors within 0.5 miles of the proposed pipeline alignment.

The Bunker Hill segment is approximately 1.1 miles in total length and is located about 1,500 feet east of I-280 in the GGNRA Scenic and Recreation Easement area. The ambient noise levels in this area are predominately based on roadway noise impacts from I-280 and Bunker Hill Drive. Sensitive receptors near this segment include single-family homes, Highlands Elementary School, Highlands Recreation Center located to the east along Lexington Avenue and Laurel Hill Drive, Highlands-Baywood Park located approximately 0.50 mile north of the proposed pipeline alignment, and Timberland Park is approximately 0.70 mile northeast of the proposed Bunker Hill segment.

The Crystal Springs segment is approximately 1.2 miles in total length and is located about 1,000 feet east of I-280 and east of Cañada Road within the GGNRA Scenic and Recreation Easement area. The ambient noise levels in this area are predominately based on roadway noise impacts from I-280, Highway 35, Black Mountain Road, and Hayne Road. Sensitive receptors near the proposed alignment include residences along Black Mountain Road and Wedgewood Drive, with some residences located within 150 feet at certain points along the proposed alignment. Another sensitive receptor is the Hillsborough Elementary School, located about 500 feet north of the proposed pipeline alignment. There are no major recreational facilities or trails in the vicinity of this segment.

3.14.1.4 Typical Construction Noise

The noise assessment conducted for the Preliminary Mitigated Negative Declaration used the Roadway Construction Noise Model (RCNM), prepared by the Federal Highway Administration (FHWA), to estimate construction noise for the proposed pipeline replacement project (FHWA 2006).

The types of equipment anticipated to be used for the pipeline construction are shown in Table 3-21: Estimated Construction Equipment Noise Levels. All listed noise levels are maximum A-weighted sound pressure levels at a reference distance of 50 feet. The acoustical usage factor is the fraction of time that the equipment generates noise at the maximum level. The RCNM Roadway Construction Noise Model calculates the total noise level at the receptor by determining the noise from each piece of equipment, taking into account the reduction of noise with distance, and adding the contribution of each to get the total noise anticipated from all of the construction equipment.

**TABLE 3-21
ESTIMATED CONSTRUCTION EQUIPMENT NOISE LEVELS**

Equipment Description	Acoustical Usage Factor (%)	Specified L_{max} at 50 feet (dBA)	Actual Measured L_{max} at 50 feet (dBA)	No. of Actual Data Samples (Count)
All other equipment > 5 horsepower	50	85	Not applicable	0
Backhoe	40	80	78	372
Compressor (air)	40	80	78	18
Crane	16	85	81	405
Dozer	40	85	82	55
Dump truck	40	84	76	31
Excavator	40	85	81	170
Flat-bed truck	40	84	74	4
Front-end loader	40	80	79	96
Generator	50	82	81	19
Grader	40	85	Not applicable	0
Pickup truck	40	55	75	1

Source: FHWA 2006
L_{max} = maximum decibel noise level
dBA = decibels (A-weighted scale)

An HDD directional bore machine would be used to directionally bore under Bunker Hill Drive. The HDD directional bore machine is expected to have a 114 horse power engine and could generate up to 77.3 dBA at a distance of 50 feet.

3.14.2 Environmental Consequences

3.14.2.1 Impact Analysis

Factors considered in determining whether the Project would have soundscapes (noise) impacts include the extent or degree to which its implementation would result in:

- 1) Exposure of persons to, or generation of, noise levels in excess of standards established in the local noise ordinance, or applicable standards of regulatory agencies.
- 2) Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels where they live, work, or recreate.
- 3) A substantial permanent increase in ambient noise levels in the study area vicinity above levels existing without project implementation.
- 4) Exposure of harmful noise levels to sensitive receptors such as residences, hospitals, schools, or areas of ecological concern.

3.14.2.2 Environmental Impacts

Although the NPS does not maintain an adopted policy of acceptable noise levels for the Project site, it does provide direction regarding acceptable levels of noise within the park system. NPS DO 47 states “The

Service will take action to prevent or minimize all noise that, through frequency, magnitude, or duration, adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified as being acceptable to, or appropriate for, visitor uses at the sites being monitored” (NPS 2006). This assessment also uses the recommended noise levels published by the EPA in the 1974 *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* are depicted above in Table 3-21. Much of the noise impact assessment presented in this section is derived from the noise analysis conducted for the Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project Preliminary Mitigated Negative Declaration.

Proposed Action Alternative

Proposed Project construction has potential to result in short-term noise increases that could be in excess of local noise ordinances and standards. According to the San Mateo County Code of Ordinances, noise from construction activities is allowed between the hours of 7:00 AM and 6:00 PM on weekdays, 9:00 AM and 5:00 PM on Saturdays, and prohibited on Sundays. San Mateo County Code of Ordinances Chapter 4.88.360 exempts noise sources associated with “demolition, construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 6:00 PM and 7:00 AM weekdays, 5:00 PM and 9:00 AM on Saturdays, or at any time on Sundays, Thanksgiving, and Christmas.” During these times of operation, in unincorporated County areas, there is no decibel noise limit for construction activities. PG&E would follow the noise ordinances and hours for construction described in the San Mateo County Code of Ordinances to the extent feasible and depending on the phase of construction. Construction activities would typically occur within the allowable work hours, Monday through Saturday.

Construction Noise

Construction noise would temporarily increase ambient noise levels in the vicinity of the pipeline. Noise would be generated at each staging area 8 hours per day for 25 days, although noise would not be continuous. At any single general location along the pipeline corridor, noise would be generated for 8 hours per day for no more than a few days to one week at a time, as construction activities move along the corridor. The pipeline replacement procedure would include trenching, stringing, pipe installation, backfilling, and trenching, aerial spans, and horizontal directional drilling. The noise levels of primary concern are those associated with the site preparation and excavation phases, as the equipment used for clearing, grading, excavating, and removing material from the site usually generate the highest noise levels.

The areas surrounding the proposed pipeline replacement project are primarily used by the public for recreation, transportation, and single-family private residential use. The Project vicinity is rural in nature along the Cañada Road segment. Residential uses are located to the east along the Bunker Hill and Crystal Springs segments. The equipment used for clearing, grading, excavating, and removing material from the site would typically generate 85 dB maximum decibel noise level (L_{max}) at 50 feet). Maximum noise exposure from project construction is not expected to exceed 85 dB L_{max} at a distance of 50 feet, which would be approximately the distance from the pipeline alignment to the nearest residences along the Bunker Hill and Crystal Springs segments. Residences located further from the construction site would experience lower noise levels due to spherical divergence (spreading loss). The noise expected to be generated would not be continuous and would be short term, lasting for no more than one week at each location along the pipeline corridor. The HDD directional bore activities in the Bunker Hill segment may result in high noise levels and affect residents in the area. Potential noise levels for HDD activities in the Bunker Hill segment were evaluated under the assumption that HDD work would only occur during daytime hours. The noise analysis conducted for the Preliminary Mitigated Negative Declaration indicated that exterior noise levels for HDD activities at the nearest residences to the HDD entry location would generate noise levels of 79 dBA without mitigation, and noise levels would be 72 dBA at the closest residences to the HDD exit location. Because of these high noise levels, mitigation is proposed to decrease the noise levels to below 70

dBa. The mitigation measure proposed is to install a Sound Barrier Wall. The recommended sound barrier wall is a 20-foot-high, two-sided barrier wall which is expected to decrease exterior noise levels to 66 dBA and 62 dBA, respectively. At these noise levels, in a residence with the windows open, interior noise levels would be 51 and 47 dBA, respectively. According to the San Mateo County Code of Ordinances Chapter 4.88.330, the acceptable exterior noise level is 50 dBA. Therefore, noise levels from daytime HDD activities would be moderate to minor with implementation of these Mitigation Measures.

Mitigation Measures

S-1: Install Sound Barrier Wall

- *A 20-foot-high sound barrier—consisting of transportable wall with acoustical absorptive fiber fill or foam panel inserts—shall be used during daytime and nighttime construction activities to shield HDD equipment from nearby noise-sensitive uses at the Bunker Hill entry and exit locations, such that daytime and nighttime noise levels at nearby sensitive receptors are reduced. This sound barrier wall shall be long enough to block the line-of-sight between the noise-generating equipment and receptors.*

Although all HDD activities are expected to occur during the daytime hours, there is a possibility that the work may be required to extend into the evening/nighttime hours. PG&E's Mitigation Measure to Install Sound Barrier Wall would reduce the daytime and nighttime noise levels at nearby residences as much as feasible. However, even with a 20-foot-high barrier wall in place, the noise level to some of the nearest residences would remain above the nighttime exterior threshold. Therefore, PG&E would also implement a Mitigation Measures to Notify Nearby Residents of HDD Activities, which would include notification of residents both two weeks and one day prior to the daytime and nighttime HDD work, and a Mitigation Measure to Temporarily Relocate Nearby Residents from Nighttime HDD Activities, in which PG&E would offer to relocate homeowners with special medical conditions to a nearby hotel during the potential one night of HDD work.

S-2: Notify Nearby Residents of HDD Activities

- *PG&E shall notify residents that may experience sound levels above 70 dBA during daytime drilling and above 50 dBA during nighttime drilling at the Bunker Hill segment—based on modeling results—in writing two weeks prior and again one day prior to daytime and potential nighttime HDD activities.*

S-3: Temporarily Relocate Nearby Residents from Nighttime HDD Activities

- *For the limited locations where PG&E is unable to mitigate noise through resident notification, PG&E shall, on a case-by-case basis when there are special circumstances, such as those residents with verified special medical conditions, offer to temporarily relocate residents to a nearby hotel for the one night of potential HDD activities.*

Ground Borne Vibration

Construction of the Proposed Action Alternative would involve some ground-disturbing activities, including drilling, excavation, grading, and clearing, that would generate some localized ground borne vibration and noise. However, the ground borne vibration or noise generated by these temporary and short-term activities is not anticipated to be excessive. It is expected that no major vibration-generating activities such as blasting would occur for pipeline construction activities. For excavation, shoring boxes would be used, and the use of a vibratory hammer is not anticipated.

Noise from Inspection and Maintenance Activities

Construction of the pipeline would create temporary and short-term noise-related impacts, which would cease once construction is completed. After the pipeline replacement is complete, routine inspection and maintenance of the pipeline would be accomplished using light duty trucks to access the facilities. Noise

impacts from inspection and maintenance would be considered short-term and minor. The proposed project would not result in a permanent increase in noise relative to current ambient noise levels in the project area.

Noise Exposure to other Sensitive Receptors

Two schools have been identified with 1,000 feet of the proposed pipeline alignment. The nearest school to the Bunker Hill segment is Highlands Elementary School, located northeast of this segment, and the nearest school to the Crystal Springs segment is West Hillsborough Elementary School, located northeast of this segment. At this distance, noise levels from project construction would be attenuated to approximately 60 dB L_{max} , which is a moderate noise level. It is assumed that buildings provide 15-dBA attenuation with the windows open. Therefore, the interior noise environment at the nearest schools would be 45 dBA with the windows open. An interior sound level of 45 dBA is similar to that of a quiet office environment. Because the exterior noise level at the schools would be less than the San Mateo County threshold of 70 dBA, impacts on nearby schools from daytime construction noise would not be excessive.

Potential noise impacts from the proposed Project could also adversely affect GGNRA resources by modifying or intruding upon the natural soundscape and indirectly impact resources by interfering with sounds important for animal communication, navigation, mating, nurturing, predation, and foraging functions. Noise can also adversely impact GGNRA visitor experiences by intruding upon or disrupting experiences of solitude, serenity, tranquility, contemplation, or a natural environment.

The recreational areas most affected by the proposed Project would occur within the Cañada Road segment. The proposed Project would temporarily implement trail closures and rerouting of foot traffic on Sheep Camp Trail and the Cañada Road bicycle lane on the east side of the road, which would reduce potential construction noise impacts to those utilizing these facilities. Recreational corridors adjacent to the Cañada Road segment include bicycle routes and hiking trails, and at one point Sheep Camp Trail crosses over the Cañada Road segment of the project area. Recreationalists passing through the area would only be subjected to construction noise for a brief distance and a relatively short amount of time, resulting in minimal impacts.

Impact Summary

Noise related to construction and operation of the pipeline would have local and short-term noise impacts on GGNRA recreationists and sensitive receptors. These impacts would not be substantial, and noise reduction measures have been recommended to further reduce short-term impacts to a minimal level during construction. No substantial noise impacts from the operation of the L-109 pipeline would be expected.

No Action Alternative

Implementation of the No Action Alternative would result in no additional ROW acquisition or ground disturbing activities along L-109. It would be anticipated that on-going inspection and maintenance would occur until further action is needed. No substantial impacts from the operation of the existing L-109 pipeline have been identified; therefore, measures to minimize noise impacts are not proposed.

Noise impacts associated with the No Action Alternative would be minimal and related to inspection and maintenance activities. Noise related impacts would be negligible to minor since some would not be of any measurable or perceptible consequence to visitor experience or to biological resources and some would be localized and of little consequence.

Cumulative Effects

Noise and vibration impacts from construction of the pipeline would be limited to the Project site and the immediate vicinities; therefore, the geographic scope of potential cumulative noise and vibration impacts encompasses the immediate vicinity of the project.

PG&E recently upgraded equipment at the Half Moon Bay Valve Station, Edgewood Valve Station, and Crystal Springs Valve Station. The upgrades consisted of minor alteration of existing facilities. The San Francisco Planning Department issued a Certificate of Determination Exemption from Environmental Review, finding that the proposed upgrades would not have a significant effect on the environment. The valve stations are located near the Project site and potential overlap in activity area may occur. Because the construction of these facilities is complete, noise from these facilities is related to the operation and maintenance, and is considered minor. As a result, there would be no substantial cumulative increase in noise levels adjacent to the site.

There are also several other construction projects occurring within the Watershed. However, these projects are generally located distant to the Project alignment, and impacts to the immediate vicinity where construction would occur are not expected. During construction, there would be a potential for increased noise on local roadways, but the amount of construction traffic is not expected to be substantial and would be short-term and temporary.

3.15 TRANSPORTATION AND UTILITIES

This section examines the existing environment and any potential impacts the Project could have on transportation and utilities within the Watershed and in the vicinity of the Project segments.

3.15.1 Affected Environment

3.15.1.1 Applicable Regulations, Plans, and Standards

Federal

Department of the Interior, Grant of Scenic and Recreation Easement, San Francisco Peninsula Watershed Lands – A grant managed by the GGNRA that identifies compatible uses and requires the preservation of scenic values and limited recreation.

Golden Gate National Recreation Area Muir Woods National Monument – Final General Management Plan/Environmental Impact Statement – This document is the GGNRA guiding framework that directs and sustains detailed implementation planning and guides management decisions for the next 20 years.

Title 49 CFR, Part 192, Subpart – O, Transportation of Natural and Other Gas by Pipeline Minimum Federal Safety Standards, Gas Transmission Pipeline Integrity Management – This regulation identifies minimum requirements for gas transmission integrity management program as it relates to L-109.

State

California Public Utilities Commission Decision No. 11-06-017, Decision Determining Maximum Allowable Operating Pressure Methodology and Requiring Filing of Natural Gas Transmission Pipeline Replacement or Testing Implementation Plans – This decision ordered California utilities to submit implementation plans that ensure pipelines lacking certain test records are either tested or replaced.

California Public Utilities Commission: General Order Number 112-E – Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems – General Order 112-E establishes, “in addition to the Federal Pipeline Safety Regulations, minimum requirements for the design, construction, quality of materials, locations, testing, operations and maintenance of facilities used in the gathering, transmission and distribution of gas and in liquefied natural gas facilities to safeguard life or limb, health, property and public welfare and to provide that adequate service will be maintained by gas utilities operating under the jurisdiction of the commission.” (CPUC 2008)

California Streets and Highways Code, Section 660 (b) – This is a Caltrans policy that identifies and defines encroachment.

California Streets and Highways Code, Section 671.5 (a) – This policy guides and defines the Caltrans approval and permitting process for encroachment permits.

PG&E Natural Gas Transmission Pipeline Replacement or Testing Implementation Plan – PG&E produced this plan to comply with CPUC Decision 11-06-017. The PG&E PSEP ensures tougher, safer standards for pipeline safety.

Local

SFPUC Watershed Policy – FEIR Peninsula Watershed Monument Plan – This document contains the guiding principles for land use and management of the Watershed which includes discussion of transportation and utilities.

San Francisco General Plan – framework for development in San Francisco and guides land use decisions. (The Project is not subject to the San Francisco General Plan although the project will be reviewed by the Board of Supervisors for consistency with the plan prior to approving the proposed easements).

San Mateo County Department of Public Works – San Mateo County requires applicable permits be required for encroachments and use of public ROWs for access to Project sites.

San Mateo County General Plan – The San Mateo County General Plan guides decision-making for unincorporated areas of San Mateo County (decisions made by San Mateo County while reviewing projects in the Watershed are non-binding on CCSF). The San Mateo County General Plan addresses transportation within the Watershed.

3.15.1.2 Characterization

I-280, SR 35, and SR 92 are the primary transportation corridors serving automobile traffic within the area (Table 3-22). Arterial collector roads within the area include Edgewood Road, Cañada Road, Lexington Avenue, Polhemus Road and Bunker Hill Drive, Hayne Road, Crystal Springs Road, and Black Mountain Road (Figures 3-17, 3-18, 3-19).

There are no airports or railroads located in the Project area. Major airports located on the San Francisco Peninsula include San Francisco International Airport, Half Moon Bay Airport, San Carlos Airport, and Palo Alto Airport of Santa Clara County. The Project would not encroach upon air space.

The Cañada Road segment is located west of I-280; the remaining segments—Bunker Hill and Crystal Springs—are located to the east of I-280. None of the Project segments require a perpendicular encroachment of I-280. The last approximately 1,000 feet of the Cañada Road segment would be constructed inside or adjacent to paved Cañada Road. The Bunker Hill segment would require construction under Bunker Hill Drive east of the I-280 on-ramp. The Crystal Springs segment would require a perpendicular crossing of SR 35.

Wastewater and stormwater treatment in the project vicinity is managed by Silicon Valley Clean Water (formerly South Bayside System Authority).

Additional utilities within the Project area include PG&E natural gas facilities, PG&E electric power facilities, numerous un-inventoried telecommunication facilities, SFPUC aqueducts and water pipelines, sewer services, and public street lighting services.

**TABLE 3-22
SUMMARY OF MAJOR ROADWAY CHARACTERISTICS**

Roadway	Jurisdiction	Classification	Lanes	Year	Traffic Volumes			
					Back* Peak Hour Count	Ahead** Peak Hour Count	Back* Annual Average Daily Traffic	Ahead** Annual Average Daily Traffic
I-280: at Cañada Rd.	Caltrans	Freeway	8-10	2013	13,200	13,200	102,000	102,000
I-280: at Edgewood Rd.	Caltrans	Freeway	8-10	2013	13,200	13,600	102,000	105,000
I-280: at Jct. SR 92	Caltrans	Freeway	8-10	2013	13,600	12,900	105,000	100,000
I-280: at Jct. SR 35 / Bunker Hill Dr.	Caltrans	Freeway	8-10	2013	12,900	13,600	100,000	105,000
I-280: at Hayne Rd.	Caltrans	Freeway	8-10	2013	13,600	13,200	105,000	102,000
SR 35: at Jct. SR 92	Caltrans	Arterial	2	2013	280	370	2,200	3,050
SR 35 : at Jct. I-280	Caltrans	Arterial	2	2013	370	1,750	3,050	14,200
SR 92: at Jct. SR 35 South	Caltrans	Arterial	2	2013	2,000	2,250	24,000	26,000
SR 92: at Ralston Ave / Skyline Blvd.; Jct. SR 35 North	Caltrans	Arterial	2	2013	2,250	1,950	26,000	22,000
SR 92: on Ralston Ave., Jct. I-280	Caltrans	Arterial	2	2013	1,950	7,900	22,000	72,000
SR 92: at Ralston Ave. / Polhemus Rd.	Caltrans	Arterial	2	2013	7,900	6,800	72,000	62,000

*Back: On north-south roads, *back* specifies the traffic count north of survey location. On east-west roads, *back* specifies the traffic count east of survey location.
**Ahead: On north-south roads, *ahead* specifies the traffic count south of survey location. On east-west roads, *ahead* specifies the traffic count west of survey location.
Source: Caltrans 2013



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri



Legend

— Cañada Road Project Segment



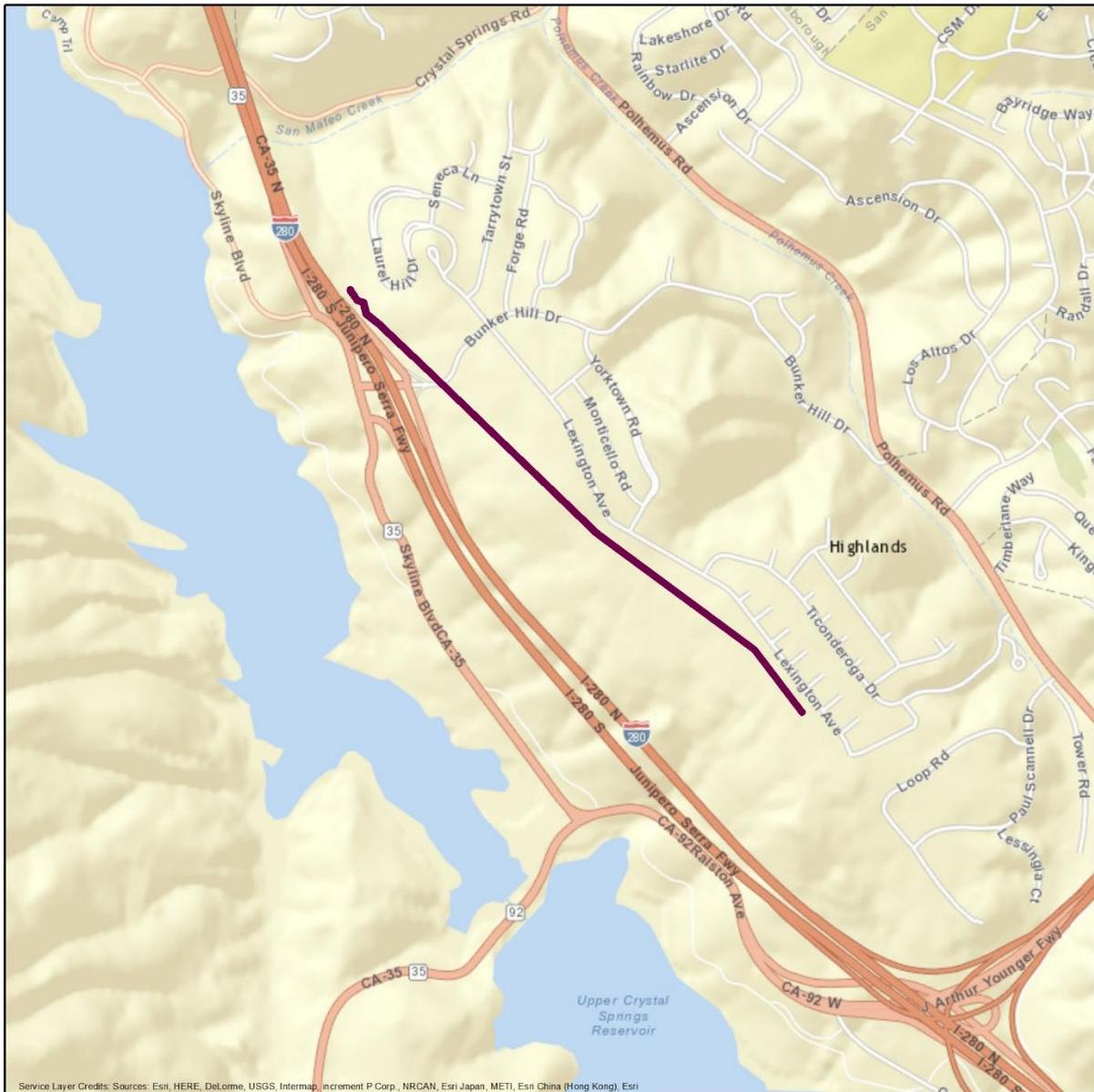
0 2,500 Feet

Transportation
Cañada Road Segment

San Francisco
Peninsula Watershed
Gas Line 109
Replacement Project



Figure 3-17



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri



Legend

 Bunker Hill Project Segment



0 2,000 Feet

Transportation
Bunker Hill Segment

San Francisco
Peninsula Watershed
Gas Line 109
Replacement Project



Figure 3-18



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri



Legend

— Crystal Springs Project Segment



0 2,000 Feet

Transportation
Crystal Springs Segment

San Francisco
Peninsula Watershed
Gas Line 109
Replacement Project



Figure 3-19

Cañada Road Segment

Various utilities are located within Cañada Road segment area, which is defined as the open space east of Cañada Road, west of I-280, north of Edgewood Road, and south of the marsh that is located approximately 200 feet north of the Cañada Road segment tie-in. Within the Cañada Road segment area, PG&E has three gas transmission lines including L-109, a natural gas valve lot known as the Edgewood Valve Lot, one electric transmission line, one 60 kV electric power line, and several overhead and underground electric distribution lines. The proposed Cañada Road segment alignment crosses all of these utilities except for one of the gas transmission lines.

The SFPUC maintains a substation near the western boundary of the I-280 ROW. In addition to the Pulgas Balancing Reservoir, the SFPUC has aqueducts in the area delivering water to Crystal Springs Reservoir as well as supporting infrastructure for water distribution and transmission.

Roads in the vicinity include I-280, Cañada Road, and Edgewood Road. The SFPUC maintains approximately 12 dirt access roads in the segment area.

Cañada Road is a designated Recreation Bicycle Route between SR 92 and Woodside Road in San Mateo County. The Cañada Road Bicycle Route is discussed in detail in Section 3.9 of this document. The Crystal Springs segment of the Crystal Springs Regional Trail is located along the western edge of Cañada Road the Crystal Springs Pedestrian Trail is discussed in Section 3.9.

Bunker Hill Segment

Multiple utility assets are located within the Bunker Hill segment area, which is defined as the open space bound on the west by I-280, on the east by residential homes located west of Lexington Avenue, on the south by SR 92, and on the north by the forested area demarcating the boundary of the San Mateo Creek Canyon. The Bunker Hill segment area contains four 60 kV power lines in addition to several above and underground distribution lines ranging from 4 kV to 12 kV, several substations, two gas transmission lines (including L-109), a natural gas valve lot known as the Half Moon Bay Valve Lot, and one gas distribution feeder main (DFM). The proposed Bunker Hill segment alignment crosses the gas transmission line, the DFM, the electric distribution lines, and three of the 60 kV power lines.

Major roads in the vicinity include I-280, Lexington Avenue, Polhemus Road, and Bunker Hill Drive. The Highlands fire trail is located parallel to the Bunker Hill segment but is closed to the public.

Crystal Springs Segment

The Crystal Springs segment area of the Project is located within open space on Pulgas Ridge and is bound on the west by I-280, and on the north, the east, and the south by the town of Hillsborough. Other utilities located in the Crystal Springs segment area include an additional PG&E gas transmission line and associated facilities including the Crystal Springs Valve lot, several above ground and underground electric distribution lines, three 60 kV electric power lines, and one electric transmission line. The proposed Crystal Springs segment alignment crosses the gas transmission line, two of the 60 kV power lines, one of the electric distribution lines, and the electric transmission line.

Major roads in the vicinity include I-280, Crystal Springs Road, and Black Mountain Road. Caltrans maintains a rest stop west of the segment's alignment. One dirt access road runs in a south-north direction through the segment area and crosses the segment alignment.

3.15.2 Environmental Consequences

3.15.2.1 Impact Analysis

Factors considered in determining whether the Project would have adverse transportation and utilities impacts include the extent or degree to which its implementation would result in:

- Conflict with applicable plans or policies that maintain the effectiveness of the circulation system, with regard to all modes of transportation.
- Conflict with an applicable congestion management program for designated roads or highways.
- Changes in traffic patterns, creating a hazard for motorists or pedestrians.
- Project construction, operation, and maintenance activities impairing implementation of, or physically interfering with, an adopted emergency response plan or emergency evacuation plan.
- Major increase in traffic volume on the regional transportation system.
- Project facilities being determined an “Obstruction” for aviation traffic as defined by 1993 FAA Regulations (Objects Affecting Navigable Airspace – Part 88, Subpart C).
- Changes in air traffic patterns, including an increase in traffic levels or a change in location that results in a substantial safety risk.
- Increased demands on the regional utility system.
- Incompatible use between utilities within the utility corridor.

3.15.2.2 Environmental Impacts

Proposed Action Alternative

Minor, short-term traffic and transportation impacts would occur during construction of the proposed Project. PG&E’s BMPs to maintain public traffic flow would ensure alternate access for the general public when necessary, and would result in no long-term access impacts or safety concerns as a result of construction the Project. The proposed Project would have minor, short-term impacts to utilities.

Access Roads

Existing access roads would be used for all three segments. However, a new construction access road would be built for the Cañada Road segment that, after construction, would be restored to its previous condition. Because the other access roads currently exist, and the new access road would be restored to its original condition and grade following construction, temporary impacts would be minor. Access roads and locations are discussed in detail in Chapter 2.

Traffic

Construction of PG&E’s Pipeline Replacement Project would generate vehicle traffic traveling to and from the access roads on Cañada Road, Bunker Hill Road, Hayne Road, and local and regional roadways. Construction would generate approximately 10 daily, round-trip truck trips and ten daily, round-trip passenger vehicle trips. Construction activities may generate increases in traffic on I-280, SR 35, SR 92, and other local roads. These trips would not necessarily occur at the same time or during peak traffic periods; workers engaged in construction activities would be required to carpool. Because these trips would be intermittent and temporary, impacts to automobile and bicycle traffic would be minor. During construction, workers would use off roadway locations for parking.

To avoid impacts to Bunker Hill Drive (Bunker Hill segment), the pipeline would be installed underneath the road using an HDD. To avoid Hayne Road and Black Mountain Road (Crystal Springs segment), the pipeline would be installed underneath the roads using jack and bore construction techniques. Construction would occur in a position directly adjacent to Cañada Road for approximately 1,000 feet on the northern

end of the Cañada Road segment. During construction of the section adjacent to the roadway, traffic on Cañada Road would be limited to one lane of traffic and one bike lane Monday through Saturday, from 7:00 a.m. to 5:30 p.m., and no work would be conducted on Sundays. Traffic would be flagged and the control pattern would be modified as necessary. Construction of this portion of the L-109 Cañada Road segment would have minor, temporary impacts to automobile and bicycle traffic flow.

Mass Transit

The SamTrans 294 bus route operates along the SR 92 corridor and would not be impacted by PG&E's Pipeline Replacement Project due to the distance from the Cañada Road and Bunker Hill segments. The SamTrans bus route 58 runs parallel to the Bunker Hill segment and runs only on school days. Construction trips would not interfere with bus service because the 58 route turns northeast on Newport Street before reaching the Lexington Avenue and Bunker Hill Drive intersection; therefore, there would be no impact to the bus services. There is no mass transit in the vicinity of the Crystal Springs segment.

Pedestrian Use

Hiking trails are discussed in detail in Section 3.9. The PG&E pipeline replacement project crosses Bunker Hill Drive, Hayne Road, and Black Mountain Road. Trenching would occur for approximately 1,000 feet along Cañada Road. None of these roads have sidewalks and there would be no impact to pedestrian use.

Water Services

During construction, water for dust control and hydrostatic testing would be trucked in and stored on-site in Baker Tanks or would be sourced from a nearby fire hydrant operated by either the City of San Mateo or the California Water Service Company. Water used for hydrostatic testing of the new pipeline would be discharged on-site in accordance with San Francisco Bay RWQCB requirements, or collected for discharge at a publicly-owned treatment works (POTW) such as Seaport in Redwood City of the East Bay Municipal Utility District in West Oakland. Existing water entitlements and resources would accommodate the temporary needs for the Project. The Project would have no impact to water supply or water delivery infrastructure.

No Action Alternative

Under the No Action Alternative, maintenance, operation, and line inspection activities would continue on the existing L-109 segments. No new construction activities would take place along the line and no increase in traffic volume would occur. In addition, the No Action Alternative would not affect any local or regional emergency response or evacuation plans. Therefore, no impacts would be expected.

Cumulative Effects

Minor, short-term cumulative effects to transportation and utilities from the Project in addition to past, present, and reasonably foreseeable future actions are anticipated. Construction and operation of the Project would not result in any substantial transportation or traffic impacts. Except for the road crossings, and the northern section of the Cañada Road segment where the line would be constructed inside the Cañada Road ROW, construction would take place in undeveloped areas.

Construction phases of any project could cause some additional traffic congestion. However, even if other projects were constructed simultaneously and near the Project, the incremental contribution of project-related construction vehicles using the same roadways for site access would not constitute a considerable contribution to cumulative transportation or traffic impacts. It is anticipated that any incremental effects from the Project combined with other past, present, or reasonably foreseeable future actions would result in minimal cumulative impacts to transportation.

The project could increase demand on utilities while construction is on-going. However, the increase would be minor and temporary and utility systems would easily absorb any system impact resulting from the proposed Project. Therefore cumulative utility impacts of this Project, when considered in conjunction with past, present, and reasonably foreseeable future actions, would be minimal.

The No Action Alternative would not result in any cumulative impacts to transportation or utilities.

3.16 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section provides baseline data on employment, income, population, ethnicity, housing, and the local economy near the L-109 Cañada Road, Bunker Hill and Crystal Springs pipeline replacement segments. This section focuses on the Project area where construction and long-term operations would occur and also addresses potential socioeconomic and environmental justice effects along the three segments.

3.16.1 Affected Environment

The Pipeline Replacement Project is located on unincorporated land in San Mateo County, California, near or adjacent to the incorporated cities and towns of Belmont, Burlingame, Hillsborough, Millbrae, Redwood City, San Carlos, and San Mateo. These cities and towns and the unincorporated Census Designated Places (CDPs) of Emerald Lake Hills and Highlands-Baywood Park comprise the area of study for the socioeconomic and environmental justice analysis.

3.16.1.1 Applicable Regulations, Plans, and Standards

Federal

Occupational Safety and Health Act of 1970 – This is a federal law that protects the health, safety, and welfare of people engaged in employment. The Act also created the Occupational Safety and Health Administration (OSHA), which enforces workplace safety standards.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations – This Executive Order was issued by President William J. Clinton in 1994 to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities (EPA 2014b).

State

California Occupational Safety and Health Act of 1973 – This act established the California Occupational Safety and Health Program (Cal/OSHA) which is administered by the California Department of Industrial Relations' Division of Occupational Safety and Health. Cal/OSHA adopts and enforces workplace safety and health standards.

Local

Because the Easement granted by the CCSF to the GGNRA bestows NPS-GGNRA exclusive jurisdiction for concurrence/approval authority for construction projects within the Watershed, the Project is not subject to local discretionary regulations relating to population and housing.

3.16.1.2 Characterization

Employment and Income

Primary employment industries within San Mateo County are educational services, health care, and social assistance (21.2 percent); professional, scientific, management, administrative, and waste management services (17.4 percent); retail trade (9.7 percent); and arts, entertainment, recreation, accommodation, and

food services (8.9 percent). Median household income in the County in 2012 was estimated at \$87,751 (U.S. Census 2014a).

Some of the County’s largest employers include Genentech, Inc., Oracle Corp., San Mateo County, Kaiser Permanente, Mills-Peninsula Health Services, Electronic Arts, Inc., United Airlines, and the San Mateo County Community College District. San Mateo County is also home to seven of the ten largest venture capital firms in the Bay Area, as well to five of the Bay Area’s ten largest biotech patent recipients in 2009. Facebook and five of the Bay Area’s largest software companies are also based in San Mateo County (San Mateo County 2009).

Employment and income for the nearby incorporated cities of Belmont, Burlingame, Hillsborough, Millbrae, Redwood City, San Carlos, and San Mateo, plus San Mateo County and the Emerald Lake Hills and Highlands-Baywood Park CDPs, as compared with data gathered for the state of California and the United States as a whole, is presented in Table 3-23.

TABLE 3-23 UNEMPLOYMENT RATE AND MEDIAN HOUSEHOLD INCOME		
Location	Unemployment Rate (%)	Median Household Income (\$)
Belmont	6.6	103,083
Burlingame	5.5	77,661
Emerald Lake Hills CDP	4.9	175,938
Highlands-Baywood Park CDP	7.9	132,019
Hillsborough	7.8	228,036
Millbrae	5.8	86,364
Redwood City	7.6	77,488
San Carlos	7.0	120,112
San Mateo	7.2	87,662
San Mateo County	7.8	87,751
California	11.0	61,400
United States	9.3	53,046
Source: U.S. Census 2014a		

Demographic Trends

The County includes a mix of urban bayside and coastal incorporated cities mixed with small pocket communities of unincorporated jurisdiction, including the Emerald Lake Hills, San Mateo Highlands, and Highlands-Baywood Park residential neighborhoods, all located adjacent to the Project area (San Mateo County 2010). In general, the total population of San Mateo County and associated unincorporated areas has seen a modest increase of 1.6 percent since its population of 707,163 in 2000 to its population of 718,451 in 2010, according to the 2010 U.S. Census data (San Mateo County 2012). The unincorporated areas’ projected population for 2013 is 67,372 (San Mateo County 2009). Redwood City, with a 2010 U.S. Census population of 76,815, serves as the county seat.

Table 3-24 presents general demographic information regarding the residents of nearby Belmont, Burlingame, Hillsborough, Millbrae, Redwood City, San Carlos, San Mateo, plus San Mateo County and

the Emerald Lake Hills and Highlands-Baywood Park CDPs, as well as for the state of California and the United States as a whole.

**TABLE 3-24
GENERAL DEMOGRAPHIC PROFILES**

Location	Total Population	Ethnic Composition (percent)							
		White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino
Belmont	25,835	67.6	1.6	0.3	19.9	0.8	3.7	6.1	11.5
Burlingame	28,806	67.7	1.2	0.3	20.3	0.5	5.0	5.0	13.8
Emerald Lake Hills CDP	4,278	85.4	0.9	0.1	7.5	0.4	1.3	4.3	6.7
Highlands-Baywood Park CDP	4,027	66.0	1.3	0.2	25.3	0.4	1.2	5.6	7.6
Hillsborough	10,825	66.3	0.4	0.1	28.1	0.2	1.0	3.9	3.4
Millbrae	21,532	47.3	0.8	0.2	42.8	1.0	3.6	4.4	11.9
Redwood City	76,815	60.2	2.4	0.7	10.7	1.0	19.5	5.5	38.8
San Carlos	28,406	79.2	0.8	0.2	11.5	0.2	2.9	5.1	10.1
San Mateo	97,207	57.8	2.4	0.5	18.9	2.1	12.6	5.7	26.6
San Mateo County	718,451	53.4	2.8	0.5	24.8	1.4	11.8	5.3	25.4
California	37,253,956	57.6	6.2	1.0	13.0	0.4	17.0	4.9	37.6
United States	308,746,065	72.4	12.6	0.9	4.8	0.2	6.2	2.9	16.3

Source: U.S. Census Bureau 2014b

Housing

According to the San Mateo County 2007–2014 Draft Housing Element of the General Plan (Adopted 2003, Revised May 2012), housing stock in the Project area consists mostly of relatively low to medium density single-family residential development. The current housing stock in the area is considered relatively expensive even by California standards; a need for quality, affordable, new housing exists. By comparison, median housing prices (new and resale houses and condominiums) in April 2011 were \$550,000 in San Mateo County, \$390,000 in the Bay Area, and \$249,000 in California.

Rents also continue to be on the rise. The average rent for a two-bedroom apartment in San Mateo County was \$2,066 during the first quarter of 2012, an increase of 17.1 percent from the previous year. The number of financially distressed homeowners who were issued notices of default, the first step in the foreclosure process, fell 12.1 percent during the first three months of 2011 compared with the same period in 2010.

According to the U.S. Census Bureau, the median monthly housing cost in 2009 for mortgaged owners was \$3,184 and \$1,443 for renters. Many residents of San Mateo County pay more than 30 percent of their income for their home; in 2009, 51.6 percent of owners with mortgages, 13.5 percent of owners without

mortgages, and 47 percent of renters in San Mateo County spent 30 percent or more of their household income on housing. The County is currently in the process of drafting the 2014–2022 Housing Element Update (San Mateo County 2012).

Environmental Justice

Environmental justice refers to the right to a safe and healthy environment for all regardless of race, ethnicity, and socioeconomic status. Federal agencies most commonly use the definition for environmental justice offered by EPA, which is:

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

On 11 February 1994, President Clinton issued Executive Order 12898 addressing environmental justice with an accompanying memorandum to the heads of all federal departments and agencies. The memorandum states:

[The order] is designed to focus federal attention on the environmental and human health conditions in minority and low-income communities with the goal of achieving environmental justice. [The order] is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment and to provide minority and low-income communities access to public information on, and opportunity for public participation in, matters relating to human health and the environment.

The Executive Order charged each federal agency with making the achievement of environmental justice part of its mission by “identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations” (EPA 1998).

By definition, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Hispanic or Latino are minority populations. However, as shown in Table 3-24, the primary residents adjacent to the Project in the Town of Hillsborough and the Emerald Lake Hills and Highlands-Baywood Park residential neighborhoods are White. Fewer minorities are located in the local communities adjacent to the Project.

Additionally, as shown in Table 3-23, in several cases the median household income levels for the communities immediately adjacent to the Project area more than twice as much as the communities located further from the Project.

Despite higher median household income levels, the U.S. Census data five-year estimates collected for 2008–2012 indicate a mix of higher income levels and very low unemployment for these communities nearest the Project.

3.16.3 Environmental Consequences

3.16.3.1 Impact Analysis

Factors considered in determining whether the Project would have adverse socioeconomic or environmental justice impacts include the extent or degree to which its implementation would:

- 1) Induce growth or concentrations of population that exceed official local or regional population projections or that conflict with population projections.
- 2) Cause a major and regionally substantial reduction in employment or income.
- 3) Induce substantial growth in an area, either directly or indirectly.
- 4) Displace existing housing, especially affordable housing.
- 5) Disrupt or divide the physical arrangement of an established community.
- 6) Cause a decrease in local or regional employment.
- 7) Cause a substantial decrease in property values.
- 8) Cause a disproportionate share of the adverse effects to minority and low-income populations.

3.16.3.2 Environmental Impacts

Proposed Action Alternative

Employment and Income

Employment and income levels would not be substantially affected by the proposed Project.

Construction contractors would be involved in all aspects of the Pipeline Replacement Project. The number of crewmembers on-site each day during construction would vary depending on specific work activities, although a peak of approximately 53 workers per day, per segment for a seven-month construction period is anticipated. This need for construction employment is expected to be met with workers who are local or within commuting distance to the Bay Area. While an increase to employment in the region during the construction phases of the Project is therefore unlikely, there is likely to be a short-term beneficial effect to business owners in the immediate project area who experience a greater demand for their services and consumer goods (food vendors, gasoline needs, etc.) from business transactions. After construction activities are complete, no direct or indirect long-term effect to employment or income levels would occur. PG&E would own, operate, and maintain the facilities.

Demographic Trends

The Project would not result in direct or indirect impacts to demographic trends in the project area. Construction of the pipeline replacement segments would be extremely unlikely to result in any permanent in-migration of workers that could adversely affect the demographics of the project area, particularly in the adjacent communities where services would be provided. San Mateo County demographics would not be affected by the proposed Project, nor would California's demographics change. The population would not likely increase in the immediate project area as a result of approving the proposed Project.

As shown in Table 3-24, the primary ethnicity in the communities nearby and adjacent to the project area is White, which is not a minority population. Negative or disproportionate socioeconomic impacts to demographics and population are therefore not likely.

Housing

Construction of the pipeline replacement segments would not result in a need for an increase in housing stock along the proposed routes, since construction is expected to be completed by local workers or workers commuting from neighboring counties and cities. There would be no in-migration of workers to meet the construction labor demands of the Project; therefore, there would be no impacts to the local housing market

or to existing property values. Because the pipeline replacement segments would be constructed in existing or expanded ROWs located adjacent to or away from established residential communities, and would not intersect existing neighborhoods, the proposed Project would not displace existing housing or people, or divide the physical arrangement of an established community.

Environmental Justice

As described above, no concentrations or large numbers of low-income populations have been identified within the project area. Asian and Hispanic or Latino are secondary populations located adjacent to the Project in Hillsborough and the Emerald Lake Hills and Highlands-Baywood Park CDPs; moreover, greater concentrations of Asian and Hispanic or Latino populations are located farther away from the project in the cities of Millbrae and Redwood City, within San Mateo County, and statewide as a whole.

Table 3-23 shows that the median household income levels for Hillsborough and the Emerald Lake Hills and Highlands-Baywood Park CDPs, in comparison to the other communities not immediately adjacent to the project area, and to San Mateo County as a whole, are more than twice as much in several cases; the mean household income levels for Hillsborough, Emerald Lake Hills, and Highlands-Baywood Park were more than three times as much as the state of California.

The U.S. Census data five-year estimates collected for 2008–2012 indicate high unemployment rates of 7.9 and 7.8 percent for Highlands-Baywood Park and Hillsborough, respectively, despite higher median household income levels in these communities. By contrast, data for Emerald Lake Hills reflected a low 4.9 percent unemployment rate, the lowest of all communities included in this analysis. In addition, despite their disparities between median household incomes and unemployment rates, all three of these communities still ranked lower for unemployment when compared to the state of California (11.0 percent) and the United States overall (9.3 percent).

Construction of the pipeline replacement segments is not expected to cause displacement of affordable housing, or affect existing uses where minority or low-income persons reside, work, or recreate. Any minor impacts during construction would be borne uniformly by the population as a whole; thus, there would be no disproportionate share of adverse effects from construction on minority or low-income populations. The Project would not require any additional workers for operation and maintenance of the pipeline facilities.

No Action Alternative

Implementation of the No Action Alternative would not require additional construction activities. As a result, there would be no socioeconomic impacts in the project area; there would be no impact on employment and income, no impact on the existing population or demographics of the area, no impact on the housing market, and no environmental justice impacts.

Cumulative Effects

There would be no negative cumulative effects for socioeconomics and environmental justice from the proposed Project because there would be no negative effects on employment and income, demographics and population, housing, and environmental justice. In addition, cumulative socioeconomic impacts related to future projects are not anticipated due to the short duration of the construction period. Furthermore, the proposed Project and any reasonably foreseeable projects are likely to be constructed at different times. However, the additional tax base generated through the sales of goods and services to workers in the immediate project area would have cumulative positive impacts on the revenues collected by the neighboring communities and San Mateo County in general.

3.17 VISITOR HEALTH AND SAFETY

This section examines the health and safety of visitors to GGNRA Easement lands in the Watershed and in the immediate vicinity of the proposed Project.

3.17.1 Affected Environment

3.17.1.1 Applicable Regulations, Plans, and Standards

Federal

Department of the Interior, National Park Service, Golden Gate National Recreation Area General Management Plan (2014)

The GGNRA GMP is the guiding document for the NPS and was reviewed during the development of this section. The GMP emphasizes adequate signage and access for all people, including those with disabilities. It also identifies the challenges unique to the GGNRA due to its proximity to urban communities. These challenges include visitor failure to bring adequate food and water, lack of situational experience in a natural setting, criminal activity, and crowding and congestion that affect law enforcement response times. The GMP also identifies a public concern over conflicts—attributed to inadequate trail design—between vehicles and pedestrians, equestrians and bicyclists, and between other users. The NPS integrates visitor safety concerns into their educational programs.

Department of the Interior, National Park Service Management Policies (2006)

Chapter 9.1.6 of the NPS Management Policies provides guidance for Waste Management and Contaminant Issues. “The Service will make every reasonable effort to prevent or minimize the release of contaminants on or that will affect NPS lands or resources, and the Service will take all necessary actions to control or minimize such releases when they occur.” Additionally, the Management Policies instruct NPS to hold the responsible party accountable for addressing contamination and restricts park employees from responding to hazardous materials spills without proper certification in accordance with Director’s Order #30B: Hazardous Spill Response. “The Service will take affirmative and aggressive action to ensure that all NPS costs and damages associated with the release of contaminants are borne by those responsible for the contamination of NPS property” (9.1.6.2).

Chapter 9.1.3 informs about construction policy for actions taking place within NPS jurisdiction. “Solid, volatile, and hazardous wastes will be avoided when possible. When they cannot be avoided, they will be properly stored, transported, and disposed of in compliance with federal, state, and local laws and regulations.”

U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety

The DOT PHMSA OPS is the federal safety authority for ensuring the safe, reliable, and environmentally-sound operations of the National Pipeline Transportation System. PHMSA collaborates and coordinates with other federal agencies and programs including Federal Energy Regulatory Commission (FERC), EPA, Department of Homeland Security (DHS), and the Bureau of Safety and Environmental Enforcement. OPS developed the *Common Ground: Study of One-Call Systems and Damage Prevention Best Practices (DOT 1999)* “to identify and validate existing best practices performed in connection with preventing damage to underground facilities.”

State

California Occupational Safety and Health Administration

CAL-OSHA provides standards for ensuring worker safety in the handling and use of workplace chemicals.

PG&E Gas Safety Plan (2013)

PG&E's Gas Safety Plan articulates the policies, procedures, standards, and guidelines for the safe and reliable operation of its gas pipeline facilities.

Local

San Mateo County Office of Emergency Services

The Office of Emergency Services provides guidance for how to respond to a variety of local emergency situations including earthquakes, fire, flooding, hazardous materials, landslides, oil spills, pandemic flu, severe weather, terrorism, and tsunamis.

San Mateo County Fire Department

The San Mateo County Fire Department serves unincorporated San Mateo County through a cooperative agreement with the California Department of Forestry and Fire Protection.

San Mateo County Sheriff's Office

The San Mateo County Sheriff's Office works to enhance the safety and security of the San Mateo County community.

San Francisco Public Utilities Commission, Watershed Management Plan (2002)

Section 5.8 of the SFPUC Watershed Management Plan details the response plan to promote safety and security as it relates to seismic events, flooding, fire, pipeline damage, toxic spills, and hazardous conditions along the trail. The following actions may apply:

- Action saf4 (Phase 1B). Regularly inspect and maintain facilities and areas used by the public
- Action saf5 (Phase 1B). As part of the Safety and Security Program, conduct regular, on-site risk assessment inspections of SFPUC Watershed facilities.
- Action saf7 (Phase 1B). Develop and periodically revise an emergency response plan which includes procedures for the following seven types of emergency situations:
 - A. Toxic spills and leaks
 - B. Gas and water pipeline damage
 - C. Damaged electric transmission and distribution lines
 - D. Fire
 - E. Flooding/inundation
 - F. Geologic and soil-related disturbances
 - G. Human injury incidents and accidents
- Action saf16 (Phase 1A). Coordinate with the GGNRA, San Mateo County Parks Department, and the Sheriff's Department in maintaining and enforcing the safety and security program for areas of the Watershed where public access and use are allowed to occur.

3.17.1.2 Characterization

The health and safety of visitors to the Watershed and GGNRA may be influenced by the following activities or occurrences.

Risks Associated With Outdoor Activities

Visitors to the Watershed and GGNRA may experience health and safety risks inherent to all outdoor activities. Typical risks associated with participation in activities in the natural environment include:

- Wildlife attacks
- Physical injuries
- Tick-borne diseases
- Snake bites
- Allergic reactions
- Dehydration and over-hydration
- Disorientation
- Limited access to medical assistance in the event of a serious health concern including heart attack, seizure, and diabetic attack
- Conflicts between users
- Heat exhaustion and heat stroke

Traffic

Visitors may be exposed to traffic-related hazards as they travel to and from their destination in their vehicles, on foot, and on bicycles.

Natural Disasters

The Project area is at risk for earthquakes, landslides, wildfires, severe weather, and flooding. Section 3.12 of this EA (Geology, Mineral Resources and Soils) details seismicity, landslides, and slope stability of the Project area. The California Department of Forestry and Fire Protection designated the Watershed as a high fire hazard severity zone. The San Francisco Water Department (SFWD) and San Mateo County Firesafe (Firesafe) have partnered together on fire prevention, fuel reduction, community education, and pre-fire planning to reduce the risk of catastrophic wildfires. In January 2014, Governor Jerry Brown declared the State of California to be in a state of emergency due to drought. Drought conditions may increase the intensity and severity of wildfires.

Severe winter storms have the potential to cause subfreezing temperatures, strong winds, ice, hail, and heavy rainfall in the Watershed. Visitor exposure to extreme cold could result in hypothermia and frostbite, conditions requiring immediate medical attention. On average, San Mateo County receives approximately four inches of rain per month during the rainy season. The maximum recorded precipitation in one month was 12.59 inches, with 3.72 inches falling within a 24-hour period in December of 1955 (USACE 1987). Renovations are currently under way on the Lower Crystal Springs Dam to ensure that excess water in a flood event would be accurately directed through the dam's spillway and into the San Mateo Creek (SFPUC 2010).

Crime and Terrorism

Visitors to GGNRA may face additional challenges compared to those found in other national parks due to the proximity of urban neighborhoods. GGNRA notes that "urban challenges include criminal activity, crowding and congestion that affect the ability of law enforcement to respond in a timely manner" (GGNRA GMP VII 108). The San Mateo County Office of Emergency Services recognizes terrorism as a potential emergency situation that could affect civilians in San Mateo County. Terrorism is any violent act or threat intended to cause harm through biological, chemical, explosive, nuclear, or radioactive means.

Pipeline Safety

As detailed in Section 2.2 of this EA (Project Activities), the pipeline replacement procedure would be conducted in accordance with PG&E safety standards to prevent damage to the pipeline that could result in a release of hazardous materials.

The DOT requires all operators of natural gas transmission pipelines to notify the National Response Center at the earliest practicable moment following the discovery of an incident, and to submit a report within 30 days to PHMSA. The Code of Federal Regulations §191.3 defines a gas pipeline incident as any release that results in one or more of the following consequences: a death or personal injury that requires hospitalization; property damage exceeding \$50,000 measured in 1984 dollars, excluding the cost of gas lost; or unintentional gas loss exceeding three million cubic feet. An event identified as significant in the judgment of the operator, even if it does not meet the above criteria, also constitutes an incident. During the 20-year period from 1994 through 2013, a total of 1,238 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide (PHMSA 2014).

PHMSA classifies the causes of national significant pipeline incidents into seven categories: corrosion, excavation damage, incorrect operation, material/weld/equipment failure, natural force damage, other outside force damage, and all other causes. From 1994 to 2013, the two leading causes of significant incidents in national gas transmission pipelines were material/weld/equipment failure (25 percent) and corrosion (23.7 percent) (PHMSA 2014a). The greatest number of fatalities associated with national gas transmission result from third-party excavation damage (PHMSA 2014a). The Project would facilitate the use of a non-destructive ILI gauge to detect corrosion and other defects in the pipeline.

Environmentally Sensitive Resources

The California Code of Regulations defines an environmentally-sensitive pipeline as “pipeline located within 300 feet of any public recreational area, or a building intended for human occupancy that is not necessary to the operation of the production operation, such as residences, schools, hospitals, and businesses” (CCR 2011).

Cañada Road Segment

There are no residential developments, schools, hospitals, or community centers located within 300 feet of the Cañada Road Segment.

Bunker Hill Segment

The Bunker Hill Segment occurs within 300 feet of residential development and the Highlands Recreation Center. Highlands Elementary School is located more than 800 feet from the pipeline route. There are no schools or hospitals identified within 300 feet of this segment.

Crystal Springs Segment

The Crystal Springs Segment occurs within 300 feet of residential development. There are no schools, hospitals, or community centers located within 300 feet of this segment. West Hillsborough Elementary is located more than 700 feet from the pipeline route.

Hazardous Waste and Materials

The EPA defines hazardous waste as any material that is potentially harmful to human health or the environment that is discarded or allocated for recycling. Materials can be designated as harmful due to quantity, concentration, or physical or chemical characteristics. The identification of potentially hazardous sites and conditions can help protect visitor health and safety and reduce public exposure to harmful materials during construction and waste handling. The Project segments pass through Watershed lands

preserved as open space for the integrity of the water supply to San Francisco Bay Area residents. A release of hazardous materials into the soil or ground water system could pose a public health hazard. A review of the CERCLIS list has determined that the Project segments do not intercept any EPA-identified hazardous waste sites or underground storage containers. Vehicle and equipment fluids would be used during the construction activities of the Project.

3.17.2 Environmental Consequences

3.17.2.1 Impact Analysis

Factors considered in determining whether the Project would have adverse visitor health and safety impacts include the extent or degree to which its implementation would result in:

- Hazardous emissions near an existing or proposed sensitive land use including schools or hospitals.
- Serious injuries to workers, visitors to the area, or area land users.
- Creation of public or worker health hazard(s) beyond limits set by health and safety regulatory agencies or that endangers human life and/or property.
- Physical interference with an emergency response plan or emergency evacuation plan.
- Substantial interference with, or disruption of, emergency communications and electronic health/safety devices that would result in substandard performance.

3.17.2.2 Environmental Impacts

Proposed Action Alternative

Risks Associated With Outdoor Activities

The Pipeline Replacement Project would have no impact on visitor health and safety risks associated with outdoor activities. Due to the large number of alternate recreational facilities providing similar access and amenities, the temporary closure of Sheep Camp Trail is not expected to increase visitor use of alternate recreational facilities to a level that would increase conflict between users.

Traffic

Construction equipment and vehicles would have local, short-term, and minor impacts to traffic levels and flow throughout the construction phase of the Project. This could increase the risk of traffic-related hazards for visitors to the area. Adequate signage and traffic control practices would reduce any potential increased risk. Transportation is discussed in detail in Section 3.14 of this EA.

Natural Disasters

The Project would have no impact on the risk or occurrence of natural disasters. PG&E would implement standard fire prevention methods in accordance with PG&E Safety Health and Claims Procedure 236 to minimize the potential for a fire incident. In the unlikely event of a fire or other natural disaster, emergency access and response would not be affected by the Project.

Crime and Terrorism

The Project would have no impact on the risk or occurrence of crime and terrorism. In the event of criminal activity, the ability of law enforcement to respond would not be impacted by the Project.

Pipeline Safety

While all natural gas pipelines carry an inherent safety risk, the proposed Project would replace older sections of the existing pipeline and would have a long-term beneficial impact on pipeline safety. The Project would further enhance safety by facilitating the use of modern in-line-inspection tools to detect

corrosion and other defects in the pipeline. The Project would not affect the volume or distribution of natural gas services provided.

Environmentally Sensitive Resources

The Project would have no impact on environmentally sensitive resources or any buildings intended for human occupancy.

Hazardous Waste and Materials

A release of hazardous materials into the soil from improper storage or vehicle/equipment leakage could enter the ground water system and pose a public health hazard. Compliance with applicable regulations, plans, and standards listed in Section 3.16 of this Environmental Assessment would ensure that any impacts to visitor health and safety would be minimal. Additionally, the pipeline replacement procedure would be conducted in accordance with PG&E Safety Standards to prevent damage to the pipeline that could result in a release of hazardous materials.

No Action Alternative

The No Action Alternative would inflict no immediate impacts to visitor health and safety. Implementation of the No Action Alternative would result in no additional ROW acquisition or ground disturbing activities. No new construction would take place along the line, and maintenance and line inspection activities would continue on the existing L-109. If the pipeline replacement were not to occur, required inspection of the existing pipeline using ILI gauge would not be possible due to variation of the pipeline diameter.

Cumulative Effects

No negative cumulative effects to visitor health and safety are anticipated from the Project when combined with past, present, and reasonably foreseeable actions. Impacts to visitor health and safety from the Project would be minor, short-term, and localized.

Previous projects have not resulted in significant impacts to the health and safety of visitors to the Watershed or surrounding areas. Substantial health and safety impacts are not expected to result from the completion of present and future projects, singularly or cumulatively. A review of the past, present, and reasonably foreseeable actions included analysis of impacts resulting from the Crystal Springs, Edgewood, and Half Moon Bay Valve Station Upgrades, as well as the L-109 4D and 4B replacements. These upgrades and replacements did not result in long-term negative impacts to visitor health and safety, did not produce substantial hazardous wastes or materials, and did not impact the ability of law enforcement or emergency services to respond to incidents. Therefore, recent PG&E actions on the watershed would not interact with the Proposed Project to cumulatively impact visitor health and safety.

Due to the staggered construction dates of the proposed Project and in combination with the minor and temporary nature of any impacts to visitor health and safety, visitors to the Watershed and surrounding areas would experience no substantial increased risks as a result of the Project. Increased risk to visitor health and safety as a result of the Project would occur only during the construction period; the Project would have no permanent negative effects on the health and safety of visitors to the Watershed and Project area.

CHAPTER 4: CONSULTATION AND COORDINATION

4.1 SCOPING AND PUBLIC INVOLVEMENT

Scoping is an early and open process for NEPA environmental review designed to circulate information about the proposed project and determine the scope of issues and alternatives to be addressed regarding the proposed project. The scoping process for this environmental assessment sought involvement from staff, the public, government and regulatory agencies, and environmental organizations. The following paragraphs will summarize the scoping activities for the proposed project.

PG&E presented the project at a San Mateo Highlands Community Association Board Meeting on April 22, 2014. The NPS conducted public scoping for the proposed project from August 14 to August 29, 2014. A scoping notice was sent to more than 1,560 individuals, nearby residents, regulatory and public agencies, San Mateo County environmental organizations, and other groups, and posted on the NPS Planning, Environment, and Public Comment (PEPC) website (<http://parkplanning.nps.gov/goga>).

The scoping notice (Appendix B) described the purpose and need for the project, the location, and the proposed work to replace three segments of the L-109 pipeline. The notice requested the interested public to consider the following in their comments:

- Alternative approaches and ideas for accomplishing project goals;
- The range of issues that need to be considered;
- Other potential projects that might affect or be affected by this project;
- Effects that should be considered and why; and
- Information on resources within or adjacent to this area that your agency has jurisdiction

No comments were received as a result of NPS project scoping. A copy of the NPS scoping notice is included in Appendix B.

The San Francisco Planning Department is concurrently preparing an Initial Study/Mitigated Negative Determination pursuant to CEQA for the same project. Public scoping by the SF Planning Department was initiated on July 3, 2014 and completed on July 17, 2014. Comments submitted to the SF Planning Department will be considered in the preparation of its CEQA document and by NPS in this environmental assessment as required by NEPA. A copy of the SF Planning Department Notification of Project Receiving Environmental Review is included in Appendix B.

Issues of concern raised during public scoping conducted by PG&E and the SF Planning Department have been summarized in Appendix B. Issues have been categorized according to resource area and are addressed in the corresponding section of this environmental assessment.

4.2 REGULATORY COMPLIANCE

This environmental assessment has been prepared in compliance with major federal laws and associated state regulations as summarized below. Discretionary State agency or Federal resource permits apply to the Cañada Road segment; these permits are not required for the Bunker Hill Road or Crystal Springs segments.

4.2.1 NEPA of 1970, PL 91-190, 83 Stat. 852, 42 USC §4341 et seq.

The NEPA process is designed to provide decision makers with an understanding of the environmental consequences of a proposed action such that decisions are executed in a manner that seeks to protect, restore, and enhance the environment. The EA examines and discloses all determined planning and environmental consequences of the proposed action and no action alternative, as required by NEPA. The

EA will be released for a 30 day public review period in which agency and public comments will be reviewed and a determination for further assessment or a Finding of No Significant Impact will be issued.

4.2.2 U.S. Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act (33U.S.C. 1344), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material to Waters of the U.S., including wetlands. Waters of the U.S. that would be affected by the Proposed Project within the NPS Easement are identified in the Jurisdictional Delineation of Wetlands and Other Waters reports prepared for PG&E in June 2013.

4.2.3 U.S. Fish and Wildlife Service

Under Section 7 of the Federal Endangered Species Act as amended, PL 93-205, 87 Stat. 884, 16 USC §1531 et seq., federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) if their actions, including permit approvals, could adversely affect an endangered or threatened species, or its critical habitat. Section 7 consultation would result in the issuance of a biological opinion.

4.2.4 California Department of Fish and Wildlife

Sections 1600 through 1616 of the California Fish and Game Code require that a Lake and Streambed Alteration Application be submitted to the CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream or lake.” CDFW reviews the proposed actions and, if necessary, submits to the Applicant (PG&E) a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the Applicant is the Lake and Streambed Alteration Agreement. Lake and Streambed Alteration Notification Applications were submitted for the three pipeline replacement segments were submitted to CDFW in February 2014.

4.2.5 Advisory Council on Historic Preservation and California SHPO

The 1966 National Historic Preservation Act of 1966, as amended PL 89-665, 80 Stat. 915, 16 USC §470 et seq. and 36 CFR 18, 60, 61, 63, 68, 79, 800, requires federal agencies to consult with the ACHP and the State Historic Preservation Officer (SHPO) regarding undertakings that may affect properties listed in or eligible for listing in the NRHP. SHPO consultation is ongoing. Should unknown resources be discovered during construction, work will be temporarily halted while the resource is evaluated and SHPO consulted as needed.

4.2.6 Regional Water Quality Control Board

Under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, applicants for any activity which may result in a discharge to a water body must obtain certification that the proposed activity will comply with state water quality standards. A permit application for Water Quality Certification was submitted to the San Francisco Bay Regional Water Quality Control Board (RWQCB) in February 2014. In addition, the RWQCB administers the NPDES permit program, which is designed to control water pollution by regulating point sources that discharge pollutants into Waters of the U.S. For stormwater discharges associated with construction activity in the State of California, the State Water Resources Control Board (SWRCB) has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB Order 2009-0009 DWQ; Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. Among other provisions, the Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which would include and specify BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. A Notice of Intent for work under the General Construction Permit was submitted to the RWQCB in September 2014.

4.3 REVIEW OF THIS ENVIRONMENTAL ASSESSMENT

Copies of the PG&E Gas Line 109 Replacement Project EA will be distributed to the general public, local congressional representatives, state and local elected officials, federal agencies, resource organizations, and public libraries. You may also view a copy of the EA at the GGNRA information desk at Fort Mason (Fort Mason Building 201, San Francisco, California, 94123), at any of the public libraries listed under Section 4.5.6 below, or online at:

<http://parkplanning.nps.gov/pgeL109replace>

There will be a 30-day public comment period on the EA. Comments may be electronically provided through the website listed above, or written comments may be mailed to:

Superintendent, Golden Gate National Recreation Area
Fort Mason, Building 201
San Francisco, California 94123-0022
ATTN: Larry Miranda, PG&E Gas Line 109 Replacement Project

4.4 LIST OF PREPARERS AND CONTRIBUTORS

The following individuals worked on the preparation of this EA:

4.4.1 National Park Service – Golden Gate National Recreation Area

Nancy Hornor – Planning Division Chief
Larry Miranda – Environmental Protection Specialist
Steve Ortega – Environmental Specialist
Bob Holloway – Curator, NHPA Section 106 Program Manager
Leo Barker – Archeologist
Alison Forrestel – Vegetation Ecologist
Bill Merkle – Wildlife Ecologist
Darren Fong – Aquatic Specialist
Susan Bennett – Natural Resources Specialist

4.4.2 Pacific Gas and Electric Company

Kristina Zaccardelli – Senior Land Consultant
Rob Stiving – Principal Land Consultant
Chrissie Klinkowski – Senior Terrestrial Biologist
Jennifer D'arcangelo – Supervisor, Environmental Management

4.4.3 Blue Rock Services

George Miller – EA Project Manager
Colin Ganong – EA Coordinator, Transportation and Utilities, Land Use
Brittany Cole – Visitor Use and Experience, Visitor Health and Safety
Christy Holmes – Biological Resources
Adam Klatzker – Biological Resources
Mark Jasper – Biological Resources
Everett Bassett – Cultural Resources
Ian Snyder – Geology, Soils, and Minerals
Chris Moody – Water Resources

Osmer Beck – Visual and Scenic Resources
Susan Morrison – Socioeconomics and Environmental Justice
John Papageorgiou – GIS Specialist
Nicole Dunlap – Technical Editor

4.4.4 MD Acoustics

Michael Dickerson - Soundscapes, Air Quality

4.5 LIST OF RECIPIENTS

The following is a list of agencies and organizations that will receive a notice of availability or a copy of the environmental assessment.

4.5.1 Federal Agencies

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency

4.5.2 Elected Officials

U.S. Senator Barbara Boxer
U.S. Senator Dianne Feinstein
Congressman Nancy Pelosi, District 12
Congresswoman Jackie Speier, District 14
California State Assembly Member Phil Ting, District 19
San Mateo County Board of Supervisors, Attn: Don Horsley
San Francisco County Board of Supervisors, Attn: Julie Christensen
Mayor Edwin Lee, City and County of San Francisco Office of the Mayor
Mayor Karen Ervin, City of Pacifica, Office of the Mayor
City of Pacifica City Council, Attn: Mary Ann Nihart

4.5.3 State Agencies

State Historic Preservation Office
State Water Resources Control Board
State of California Department of Fish and Game
State of California Department of Parks and Recreation
State of California Office of Planning and Resources State Clearinghouse

4.5.4 Regional, County, and Municipal Agencies

City of San Francisco
City of San Bruno
City of Millbrae
Pacifica Planning Department
San Francisco Bay Regional Water Quality Control Board
San Francisco Planning Department
San Francisco Public Utilities Commission
San Mateo County Environmental Services Agency
San Mateo County Parks and Recreation
San Mateo County Planning and Building Division

4.5.5 Organizations

Bay Area Ridge Trail
California Native Plant Society, Yerba Buena Chapter
Committee for Green Foothills
Friends of Sweeney Ridge
Golden Gate Audubon Society
Mid-Peninsula Regional Open Space District
City of Pacifica Open Space & Parkland Advisory Committee
Pacifica Land Trust
Pacifigans for Sustainable Development
Peninsula Open Space Trust
People for a Golden Gate National Recreation Area
San Francisco Planning and Urban Research Association (SPUR)
Sequoia Audubon Society
Sierra Club, Loma Prieta Chapter
Sierra Club, San Francisco Bay Chapter

A complete list of names, including non-governmental organizations, non-profit organizations, and interested citizens on the NPS mailing list for this project, is in the project file and is available from the issuing office. A notice of availability will be mailed to all individuals that have indicated interest in GGNRA planning and management activities.

4.5.6 Libraries

The following is a list of libraries where the public can access this EA and review the document onsite.

S.F. Civic Center Public Library
100 Larkin Street
San Francisco, California 94102
(415) 557-4400

Pacifica Library
104 Hilton Way
Pacifica, California 94044
(650) 355-5196

Millbrae Library
1 Library Avenue
Millbrae, California 94030
(650) 697-7607

San Bruno Public Library
701 Angus Avenue West
San Bruno, California 94066
(650) 616-7078

Burlingame Library
480 Primrose Road
Burlingame, California 94010
(650) 558-7400

CHAPTER 5: REFERENCES

- Adamson, Paul and Arbunich, Marty. 2002. *Eichler: Modernism Rebuilds the American Dream*. Gibbs Smith: Layton, UT.
- Andersen, David W. et al. 2001. *San Andreas Fault and Coastal Geology from Half Moon Bay to Fort Funston: Crustal Motion, Climate Change, and human Activity*. National Association of Geoscience Teachers. Located online at: <http://pubs.usgs.gov/bul/b2188/b2188ch4.pdf>. Accessed September 2014.
- Arnold, R.A. 2014. PG&E's Gasline 109 Bunker Hill in San Mateo County, California – Presence-Absence Survey for the Threatened Bay Checkerspot Butterfly.
- Bay Area Air Quality Management District (BAAQMD). 1999. BAAQMD CEQA GUIDELINES Assessing the Air Quality Impacts of Projects and Plans. December 1999. San Francisco, California.
- Bean, Lowell. 1994. *The Ohlone Past and Present: Native Americans of the San Francisco Bay Region*. Balena Press Anthropological Papers No.42, Novato, Oklahoma.
- Bickel, Polly. 1978. Changing Sea Levels along the California Coast: Anthropological Implications. In *The Journal of California Anthropology* 5(1):6-20.
- Brabb, E.E. et al. 1998. *Geology of the Onshore Part of San Mateo County, California, a digital database*. United States Geologic Survey. Located online at: <http://pubs.usgs.gov/of/1998/of98-137/smmmap.pdf>. (Map) Located online at: <http://pubs.usgs.gov/of/1998/of98-137/smgeo.pdf> (Document). Accessed August 2014.
- Calflora Web database. 2013. Plant Species of San Mateo County. <http://www.calflora.org/cgi-bin/specieslist.cgi>. Accessed various dates in April–June 2013.
- California Air Resources Board (CARB). 1998. Fact Sheet, The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines.
- California Code of Regulations (CCR). 1971. *California Code of Regulations Section 3603(f)*. Policies and Criteria of the State Mining and Geology Board – The Alquist-Priolo Zoning Act.
- _____. 2011. *California Code of Regulations*. Division of Oil, Gas, and Geothermal Resources. Located online at: ftp://ftp.consrv.ca.gov/pub/oil/regulations/pipeline_regs.pdf. Accessed on September 2014.
- California Department of Conservation (CDOC). 2007. *Seismic Hazards Zone Fact Sheet*. Located online at: http://www.conservation.ca.gov/cgs/shzp/Documents/SHZ_FactSheet.pdf. Accessed August 2014.
- _____. 2010. *Fault Activity Map of California*. California Department of Conservation. Located online at: <http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html>. Accessed August 2014.
- _____. 2014. *Surface Mining and Reclamation Act (SMARA) Regulations*. California Department of Conservation. Located online at: http://www.conservation.ca.gov/smgb/Regulations/Documents/SMARA_Regulations_101314.pdf. Accessed August 2014.
- _____. 2014. *San Mateo County Important Farmland 2012 (Map)*. Farmland Mapping and Monitoring Program, Division of Land Resource Protection, Sacramento. Located online at: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2012/smt12.pdf>. Accessed August 2014.

- California Department of Fish and Wildlife (CDFW). 2013. Rarefind 3: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Database, Rarefind for San Mateo 7.5-minute topographic quadrangle, Sacramento, California.
- California Department of Transportation (Caltrans). 2013. *2013 Traffic Volumes on California State Highways*. Located online at: http://traffic-counts.dot.ca.gov/docs/2013_aadt_volumes.pdf. Accessed September 2014.
- California Department of Water Resources. Water Data Library. 2014. Located online at: <http://www.water.ca.gov/waterdatalibrary>. Accessed August 2014.
- California Geological Survey (CGS). 2002. *California Geomorphic Provinces*. California Department of Conservation, Sacramento. Located online at: http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf.
- _____. 2010. *Fault Activity Map of California*. California Department of Conservation. Located online at: <http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html>.
- California Native Plant Society (CNPS). 2013. Online inventory for Woodside quadrangle, Inventory of Rare and Endangered Plants. Sacramento, California. Available at <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>.
- California Natural Diversity Database (CNDDDB). 2013. Biogeographic Data Branch. Department of Fish and Wildlife. Updated June 4, 2013.
- California Public Utilities Commission (CPUC). 2008. *General Order No. 112-E, Rules Governing Design, Construction, Testing, Maintenance, and Operations of Utility Gas Gather, Transmission, and Distribution Piping Systems*. Located online at: http://docs.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/126869.htm. Accessed September 2014.
- California State Fish and Game Code Sect. 1600-1616. 2004. Located online at: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fgc&group=01001-02000&file=1600-1616>. Accessed August 2014.
- California State Legislature. 2008. *An act to amend Section 10514 of, and to add Section 10844 to, the Fish and Game Code, relating to game refuges, SB 1166*. Located online at: http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_1151-1200/sb_1166_bill_20080927_chaptered.html. Accessed August 2014.
- California State Parks. 2008. *California Outdoor Recreation Plan*. California Department of Parks and Recreation. Located online at: <http://www.parks.ca.gov/pages/795/files/2009-2014%20corp.pdf>. Accessed August 2014.
- Castillo, Edward. 1978. The Impact of Euro-American Exploration and Settlement. In *Handbook of North American Indians*, William C. Sturtevant, ed. Volume 8: California. Smithsonian Institution: Washington.
- CH2M HILL. 2014. *Initial Study, Line 109 Cañada Road Pipeline Replacement Project, Case Number 2013.1761E*.
- CH2M HILL. 2015. *Memorandum Line 109 4A Cañada Road 2015 Biological Evaluation*.

- Churchill, Ronald K. and Hill, Robert L. 2000. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. Division of Mines and Geology. Located online at: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf. Accessed August 2014.
- City and County of San Francisco Planning Department (CCSF). 1969. *Grant of Scenic and Recreation Easement*. Accessed August 2014.
- Clean Water Act (CWA). 1972. 33 U.S.C. § 1251 et seq. 2002. Located online at: <http://epw.senate.gov/water.pdf>.
- Consortium of California Herbaria. 2013. Occurrence records for various plant species occurring in San Mateo County. Located online at: <http://ucjeps.berkeley.edu/consortium>. Accessed May 2014.
- County of San Mateo Heritage Tree Ordinance. 1977. Located online at: http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/43/15/390508720heritage%20tree%20ordinance.pdf. Accessed August 2014.
- Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act 1978. 40 CFR Section 1500 – 1508.
- County of San Mateo Parks Department. 1986. *General Plan*. Planning and Building Division, San Mateo County, CA. Located online at: <http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf>. Accessed August 2014.
- _____. 1997. *Edgewood Park Master Plan*. Parks and Recreation Division, San Mateo County, CA. Located online at: <http://parks.smcgov.org/sites/parks.smcgov.org/files/documents/files/Edgewood%20Park%20Master%20Plan.pdf>. Accessed August 2014.
- County of San Mateo Parks and Recreation Commission, MHA Environmental Consulting, Inc. 2001. *Trails Plan*. Environmental Service Agency. Parks and Recreation Division. San Mateo County, California. Located online at: <https://parks.smcgov.org/sites/parks.smcgov.org/files/documents/files/Trails%20Master%20Plan.pdf>. Accessed August 2014.
- Elder, William P. 2002. *Geology of the Golden Gate Headlands*. Golden Gate National Recreation Area, National Park Service, San Francisco. Located online at: <http://www.nps.gov/goga/forteachers/upload/Geology%20of%20the%20Golden%20Gate%20Headlands%20Field%20Guide.pdf>. Accessed August 2014.
- Entomological Consulting Services, Ltd. (ECS). 2013a. PG&E Line 109 Project in San Mateo County, CA. Evaluation of Bay Checkerspot Butterfly Habitat at Cañada Road.
- _____. 2013b. PG&E Line 109 Project in San Mateo & Santa Clara County, CA. Evaluation of Bay Checkerspot Butterfly Habitat at Crystal Springs.
- _____. 2014. PG&E's Gasline 109 Bunker Hill in San Mateo County, CA. Presence-Absence Survey for the Threatened Bay Checkerspot Butterfly.
- _____. 2015. PG&E Line 109 Project in San Mateo & Santa Clara County, CA. Evaluation of Bay Checkerspot Butterfly Habitat at Cañada Road Addendum to 21 August 2013 Memo.

- Erlandson, Jon. 1997. The Middle Holocene on the Western Santa Barbara Coast. In *The Archaeology of the California Coast during the Middle Holocene*, edited by J. M. Erlandson and M. A. Glassow. Perspectives in California Archaeology 4:91-109. UCLA Institute of Archaeology.
- Federal Highway Administration (FHWA). 2006. FHWA Roadway Construction Noise Model User's Guide. Final Report. January.
- Federal Register. 2001. 50 CFR Part 17. Final Determination of Critical Habitat for the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*). URL: <http://www.fws.gov/pacific/news/pdf/BCB-FR%20Final.pdf>. Accessed June 2014.
- Fredrickson, D.A. 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. In *The Journal of California Anthropology*. 1(1):41-54.
- Gregory, P. T. and Stewart, K. W. 1975. Long-distance dispersal and feeding strategy of the red-sided garter snake (*Thamnophis sirtalis parietalis*) in the Interlake of Manitoba. *Canadian Journal of Zoology* 53:238–245.
- Halstead, B. J., Wylie, G. D., Amarello, M., Smith, J. J., Thompson, M. E., Routman, E. J., Casazza, M. L. 2011. Demography of the SFGS in coastal San Mateo County, California. *Journal of Fish and Wildlife Management* 2:41–48.
- Hunzeker, D. 2014. Arborist Evaluation for R-048, Line 109-4C, Crystal Springs.
- InfraTerra, Inc. 2014a. Final Report, Geotechnical Conditions Assessment: Geotechnical Conditions Assessment, Proposed PG&E Stream Undercrossing, Cañada Road. San Mateo County, CA (Work Order 14.PGE.01-W04). Submitted to Campos EPC, Inc.
- _____. 2014b. Geotechnical Conditions Assessment, Proposed PG&E Pipeline Realignment, Edgewood Landslide, San Mateo California.
- Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland.
- Kroeber, Alfred. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington D.C. Reprinted 1976 by Dover, New York.
- Levy, R. 1978. Costanoan. In *Handbook of North American Indians* Volume 8: California, R.F. Heizer. Smithsonian, Washington D.C.
- Manischalchi, D. 2014a. Arborist Report for R-046, Line 109-4A, Cañada Road.
- _____. 2014b. Arborist Report for R-185, Line 109-4A, Bunker Hill.
- Merrit, Frank Clinton. 1928. *History of Alameda County, California*. S.J. Clarke Publishing Co.
- Milliken, R. 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area 1769-1810*. Ballena Press Anthropological Papers No. 43, Menlo Park, California.
- Mills, W., Rondeau, M., and Jones, T. 2005. A Fluted Projectile Point from Nipomo, San Luis Obispo County, California. In *Journal of California and Great Basin Anthropology* 25:68–74.

National Park Service (NPS). 2001. Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-Making. Washington DC.

_____. 2006. *Management Policies*. Located online at: <http://www.nps.gov/policy/mp/policies.html>. United States Department of the Interior.

National Park Service et al. 2014. Programmatic Agreement among the Golden Gate National Recreation Area, National Park Service, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer regarding Various Operational and Maintenance Activities in Golden Gate National Recreation Area. (Draft).

National Park Service – Golden Gate National Recreation Area (GGNRA). 2005. *PG&E Jefferson-Martin 230 kV Transmission Line Project, Settlement Agreement, Environmental Assessment*. Located online at: <http://parkplanning.nps.gov/showFile.cfm?projectID=12322&MIMEType=application%252Fpdf&filename=Final%20Jefferson%20Martin%20EA%20May%202005%2Epdf&sfid=16967> Accessed August 2014.

_____. 2012. *Letter of Conditional Concurrence for 2012 PG&E Projects*. United States Department of the Interior.

_____. 2014. *Final General Management Plan/ Environmental Impact Statement: Golden Gate National Recreation Area and Muir Woods National Monument*. Volume I and II. United States Department of the Interior. Volumes located online at <http://parkplanning.nps.gov/document.cfm?parkID=303&projectID=15075&documentID=58777>. Accessed June 2014.

Orion Environmental Associates (OEA). 2013a. Special-Status Plant Survey Report, Pacific Gas and Electric Company, Line 109 Cañada Road Pipeline Replacement Project.

_____. 2013b. Special-Status Plant Survey Report, Pacific Gas and Electric Company, Line 109 Crystal Springs Pipeline Replacement Project.

_____. 2014. Draft Special-Status Plant Survey Report, Pacific Gas and Electric Company, Line 109 Bunker Hill Pipeline Replacement Project.

Pacheo Patrick, Melinda. 2013. *Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project*. San Mateo County, California. Produced by Patrick GIS Group, Inc. for Western Anthropological Research Group, Inc.

Pacific Gas and Electric Company (PG&E). 1932. Pacific Gas and Electric Company – Gas Line 109: Land Document URL Not Applicable. Accessed August 2014.

_____. 2012. Gas Transmission Vegetation Management Assessment.

_____. 2013a. Jurisdictional Delineation of Wetlands and Other Waters for the PG&E Line 109 Cañada Road Pipeline Replacement Project. Prepared by PG&E 2013.

_____. 2013b. Jurisdictional Delineation of Wetlands and Other Waters for the PG&E Line 109 Crystal Springs Pipeline Replacement Project. Prepared by PG&E 2013.

- Pacheco Patrick, Melinda, et al. 2013a. *Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project*. San Mateo County, California. Produced by Patrick GIS Group, Inc. for Western Anthropological Research Group, Inc.
- _____. 2014. *Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project –Archaeological Survey Report Addendum*. Produced by Patrick GIS Group, Inc. for Western Anthropological Research Group, Inc.
- _____. 2013b. *Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project*. San Mateo County, California. Produced by Patrick GIS Group, Inc. for Western Anthropological Research Group, Inc.
- _____. 2013a. *Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project*. San Mateo County, California. Produced by Patrick GIS Group, Inc. for Western Anthropological Research Group, Inc.
- Pampeyan, Earl H. 1994. *Geologic map of the Montara Mountain and San Mateo 7-1/2' quadrangles, San Mateo County, California*. United States Geologic Survey, IMAP-2390. Located online at: <http://pubs.usgs.gov/imap/2390/report.pdf>. Accessed August 2014.
- Peninsula Watershed Management Plan (PWMP). 2002. Located online at: <http://www.sfwater.org/modules/showdocument.aspx?documentid=756>. Accessed August 2014.
- Pipeline and Hazardous Materials Safety Administration (PHMSA). 2014a. *Significant Pipeline Incident By Cause*. U.S. Department of Transportation. Located online at: http://primis.phmsa.dot.gov/comm/reports/safety/SigPSIDet_1994_2013_US.html?nocache=3982#_ngtrans. Accessed September 2014.
- Porter-Cologne Water Quality Control Act. 2013. Located online at: http://www.swrcb.ca.gov/laws_regulations/docs/portercologne.pdf. Accessed August 2014.
- Postel, Mitchell. 2007. *San Mateo County – A Sesquicentennial History*. Star Publishing Co. San Mateo County.
- San Francisco Annual Water Quality Report. 2013. San Francisco Public Utilities Commission. Located online at: <http://sfwater.org/modules/showdocument.aspx?documentid=5485>. Accessed September 2014.
- San Francisco Public Utilities Commission (SFPUC). 2010. *Lower Crystal Springs Dam Improvements Project: Final Environmental Impact Report Comments and Responses*. Located online at: http://www.sf-planning.org/ftp/files/MEA/2006.0536E_LCSDIP_CR.pdf. Accessed September 2014.
- _____. 2001. *Peninsula Watershed Management Plan, Final Environmental Impact Report*. Located online at: <http://www.sfwater.org/Modules/ShowDocument.aspx?documentID=4343>. Accessed August 2014.
- _____. 2013. Natural Resources Division, map of special-status plants, natural communities, and special restoration sites on the Peninsula Watershed. Maps provided to CH2M HILL on July 16, 2013. 3 pages.
- _____. 2015. *Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project Initial Study/Mitigated Negative Declaration. Case No. 2013.1761E*.

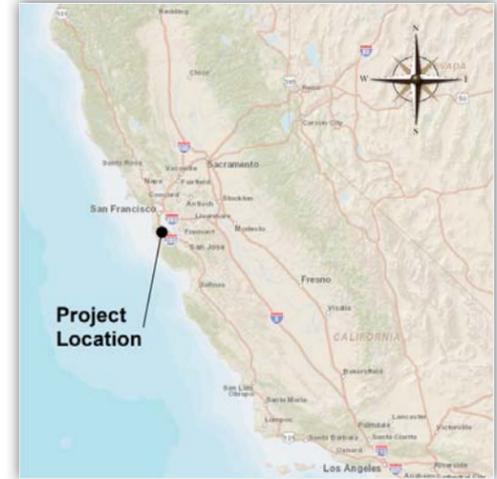
- San Francisco Public Utilities Commission, EDAW Inc. 2002. Peninsula Watershed Management Plan. Located online at: <http://www.sfwater.org/modules/showdocument.aspx?documentid=756> Accessed August 2014.
- San Mateo Area Stormwater Program Evaluation Report. 2002. Located online at: <http://www.epa.gov/region9/water/npdes/pdf/ms4/021024-san-mateo-report.pdf>. Accessed August 2014.
- San Mateo County. 1986. Chapter 5: Historical and Archaeological Resources. In the San Mateo General Plan. Produced by the Environmental Services Agency, Planning and Building Division, San Mateo County, CA. Online website: <https://planning.smcgov.org/sites/planning.SMCGov.org/files/SMC-GP%201986.pdf>. Accessed August 2014.
- _____. 2009. *Housing Element Update Brochure*. Located online at: http://www.co.sanmateo.ca.us/Attachments/planning/PDFs/Major_Projects/SanMateo_Housing_Brochure.pdf. Accessed August 2014.
- _____. 2010. *San Mateo County 2007-2014 Draft Housing Element*. Located online at: http://www.co.sanmateo.ca.us/Attachments/planning/PDFs/Major_Projects/Housing%20Element%20Project%20Draft/SMCo%20Housing%20Element%20May%202012.pdf. Accessed August 2014.
- _____. 2012. *County of San Mateo 2012-2013 Profile*. Located online at: <http://www.co.sanmateo.ca.us/bos.dir/Budget/recommend2012/county/A-19.pdf>. Accessed August 2014.
- _____. 2013. Natural Resources Division, map of special-status plants, natural communities, and special restoration sites on the Peninsula Watershed. Maps provided to CH2M HILL on July 16, 2013. 3 pages.
- SMARA Statutes and Regulations. 2013b. *SMARA Statutes and Regulations*. Located online at: <http://www.conservation.ca.gov/omr/lawsandregulations/Pages/SMARA.aspx>. Accessed August 2014.
- Society of Vertebrate Paleontologists (SVP). 1995a. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Produced by the Society of Vertebrate Paleontology, Impact Mitigation Guidelines Revision Committee. Online Website: <http://vertpaleo.org/PDFS/8f/8Fe02e8f-11a9-43b7-9953-cdcfaf4d69e3.pdf>. Accessed August 2014.
- _____. 1995 Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin, No. 163, January 1995: 22–27.
- _____. 2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* Society of Vertebrate Paleontology. Impact Mitigation Guidelines Revision Committee. pp. 1–11.
- Southern California Earthquake Center (SCEC). 2008. *San Francisco Bay Region Earthquake Probability Map*. United States Geologic Survey. Located online at: <http://earthquake.usgs.gov/regional/nca/ucerf/images/2008probabilities-lrg.jpg>.
- Spudich, Paul, ed. 1996. *The Loma Prieta, California, Earthquake of October 17, 1989 – Main Shock Characteristics*. United State Geologic Survey professional paper 1550-A. United States Government, Washington. Located online at: <http://pubs.usgs.gov/pp/pp1550/pp1550a/pp1550a.pdf>.

- Stoffer, P.W. 2006. *Where's the San Andreas Fault? A guidebook to tracing the fault on public lands in the San Francisco bay region*. USGS General Interest Publication 16, 123. Located online at: <http://pubs.usgs.gov/gip/2006/16/>. Accessed August 2014.
- Swaim Biological, Inc. (SBI). 2013a. Wildlife Constraints Analysis Report, PG&E Line 109 Cañada Road Pipeline Replacement Project. Prepared for CH2M HILL.
- _____. 2013b. Wildlife Constraints Analysis Report, PG&E Line 109 Crystal Springs Pipeline Replacement Project. Prepared for CH2M HILL.
- _____. 2014. Assessment for Special-Status Wildlife at the PG&E Line 109 Pipeline Replacement Project, Bunker Hill (Segment 4A2) Prepared for CH2M HILL.
- TRC Solutions, Inc. 2015. Pacific Gas and Electric Company Line 109 Air Quality Modeling and Health Risk Screening Analysis Methodology, Assumptions, and Results. Prepared by TRC Solutions, Inc.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). 2002. *Biosphere Reserve Information*. Located online at: <http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?mode=all&code=USA+42>. Accessed August 2014.
- United States Army Corps of Engineers San Francisco District (USACE). 1987. *San Francisco Bay Shoreline Study, Interim II Report on Historical Flooding*. Located online at: http://www.southbayrestoration.org/bibliography_files/SLStudyIFloodingSept1987.pdf. Accessed September 2014.
- United States Census Bureau. 2014a. *Selected Economic Characteristics: 2008-2012 American Community Survey 5-Year Estimates*. American Fact Finder. Located online at: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>. Accessed August 2014.
- _____. 2014b. *Race and Hispanic or Latino Origin: 2010*. American FactFinder: Community Facts. Located online at: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed August 2014.
- United States Congress. 1972. *Golden Gate National Recreation Area*, Pub. L. 92-589 § 1, 86 Stat. 1299, codified as amended at 16 U.S.C. §460bb. Located online at: <http://www.gpo.gov/fdsys/pkg/STATUTE-86/pdf/STATUTE-86-Pg1299.pdf>. Accessed August 2014.
- United States Department of Agriculture (USDA). 2014. *Custom Soil Resource Report for San Mateo Area, California; and San Mateo County, Eastern part, and San Francisco County, California*. Custom generated report and map. National Resource Conservation Service. Accessed August 2014.
- United States Department of Agriculture, Soil Conservation Service (SCS). 1991. *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California*. United States Department of Agriculture. Located online at: http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA689/0/sanmateo.pdf. Accessed August 2014.
- United States Department of Housing and Urban Development. 1985. *The Noise Guidebook*. Office of Community Planning and Development.
- United States Department of the Interior, Office of the Solicitor. 1975. *Memorandum Scenic and Scenic and Recreation Easements San Francisco Watershed in San Mateo County*.

- United States Department of State. 1995. *Biosphere Reserves in Action: Case Studies of the American Experience* Volume 10241 of Department of State publication. Located online at: https://books.google.com/books/about/Biosphere_Reserves_in_Action.html?id=2_-w4cxLeOIC. Accessed August 2014.
- United States Department of Transportation. 1999. *Study of One-Call System and Damage Prevention Best Practices*. U.S. Department of Transportation. Located online at: <https://primis.phmsa.dot.gov/comm/publications/CommonGroundStudy090499.pdf> Accessed September 2014.
- _____. 2014. *Significant Pipeline Incidents*. U.S. Department of Transportation. Located online at: http://primis.phmsa.dot.gov/comm/reports/safety/SigPSI.html?nocache=9780#_ngtrans. Accessed September 2014.
- United States Environmental Protection Agency (EPA). 1998. *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. Located online at: http://www3.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_epa0498.pdf Accessed August 2014.
- _____. 2014a. August. *Watershed Assessment, Tracking & Environmental Results*. Located online: http://iaspub.epa.gov/tmdl_waters10/attains_waterbody.control?p_list_id=CAR2000000SAN%20MA%20TEO%20CREEK&p_cycle=2002&p_report_type=. Accessed August 2014.
- _____. 2014b. *Summary of Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Located online at: <http://www2.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice>. Accessed August 2014.
- _____. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*
- United States Fish and Wildlife Service (USFWS). 2007. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*); Proposed Rule Federal Register 72:48178 – 48218*.
- _____. 2008. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*); Final Rule Federal Register 73:50406 – 50452*. Accessed August 2014.
- United States Geologic Survey (USGS). 2013. *Seismic Seiches*. Adapted from *Earthquake Information Bulletin*, 1976, Volume 8, Number 1. Located online at: <http://earthquake.usgs.gov/learn/topics/seiche.php>. Accessed August 2014.
- University of California Museum of Paleontology (UCMP). 2011. *Juvenile mammoth found near San Jose*. Located online at: <http://www.ucmp.berkeley.edu/mammal/mammoth>. Accessed August 2014.
- Water Quality Control Plan for the San Francisco Bay Basin. 2013. Located online at: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf. Accessed August 2014.

- Wentworth, Carl M, Graham, S.E., Pike, R.J., Beukelman, G.S., Ramsey, D.W., and Barron, A.D. 1997. *Summary Distribution of Slides and Earth Flows in San Mateo County, California*. United States Geological Survey, Department of the Interior. Located online at: <http://pubs.usgs.gov/of/1997/of97-745/sm-sef.pdf>. Accessed August 2014.
- Witter, Keith, Knudsen, L., Sowers, J.M., Wentworth, C.M., Koehler, R.D., and Randolph, C.E. 2006. *Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Region, California*. United States Geologic Survey, in cooperation with the California Geologic Survey. Accessed August 2014.
- Wood, M.W. 1883. *History of Alameda County*. Published by M.W Wood.

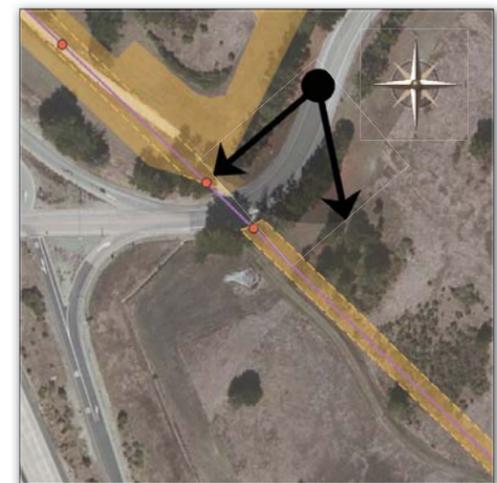
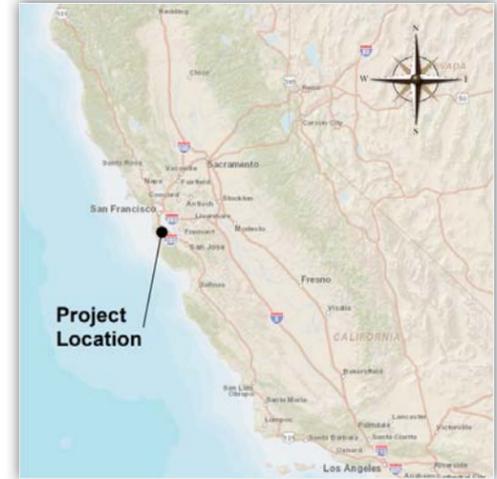
APPENDIX A
VISUAL SIMULATIONS



**Gas Line 109 Replacement Project
KOP 1**

Top: Photograph of existing condition. Bottom: Simulation of proposed condition.

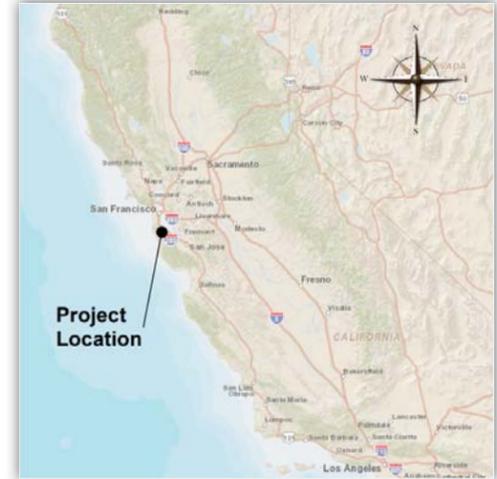
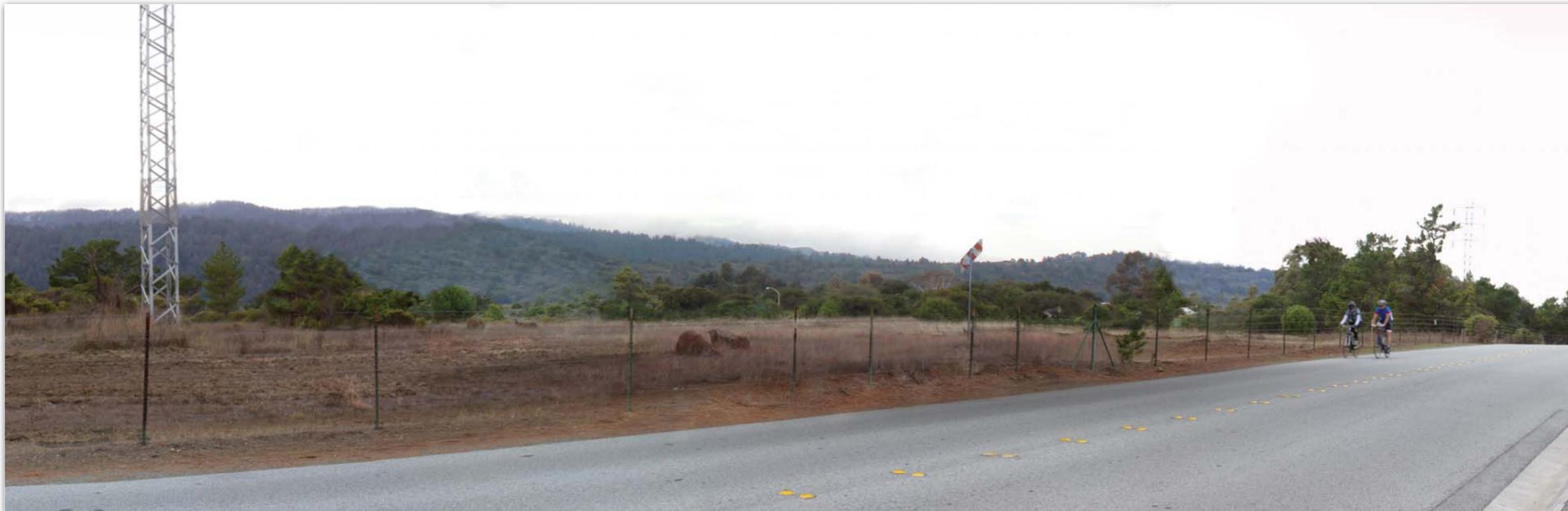
Photographed with a Canon Rebel Ti1, 18-55mm lens set to 33 mm. The selected camera settings limit distortion and approximate accurate detail, form, and field of view. Simulation should be held approximately nine inches from face when printed on 11x17 paper. If viewed digitally measure the width of the image in inches and divide by 1.4 to determine viewing distance.



**Gas Line 109 Replacement Project
KOP 2**

Top: Photograph of existing condition. Bottom: Simulation of proposed condition.

Photographed with a Canon Rebel Ti1, 18-55mm lens set to 33 mm. The selected camera settings limit distortion and approximate accurate detail, form, and field of view. Simulation should be held approximately nine inches from face when printed on 11x17 paper. If viewed digitally measure the width of the image in inches and divide by 1.4 to determine viewing distance.



**Gas Line 109 Replacement Project
KOP 3**

Top: Photograph of existing condition. Bottom: Simulation of proposed condition.

Photographed with a Canon Rebel Ti1, 18-55mm lens set to 33 mm. The selected camera settings limit distortion and approximate accurate detail, form, and field of view. Simulation should be held approximately nine inches from face when printed on 11x17 paper. If viewed digitally measure the width of the image in inches and divide by 1.4 to determine viewing distance.

APPENDIX B
SCOPING MATERIAL



PG&E LINE 109 GAS PIPELINE REPLACEMENT

Scoping Announcement – August 2014

INTRODUCTION

The Golden Gate National Recreation Area (GGNRA), a unit of the National Park Service (NPS), is initiating preparation of an Environmental Assessment (EA) pursuant to the National Environmental Policy Act for a Pacific Gas and Electric Company (PG&E) natural gas pipeline replacement project in the San Francisco Public Utilities Commission's (SFPUC) Peninsula Watershed (San Mateo County). The San Francisco Planning Department is preparing an Initial Study/Mitigated Negative Determination pursuant to California Environmental Quality Act (CEQA) for the same project and completed their public scoping on July 17, 2014. The NPS has two Scenic and Recreation easements over the entire area of the Peninsula Watershed (Watershed), including the area of the proposed project. As the easement holder, NPS has concurrence/approval authority for construction projects within the easements.

PURPOSE AND NEED

The project would enhance safety and improve operations of PG&E's natural gas transmission system including, pipeline modernization, valve automation, pipeline records integration, and interim safety enhancement measures. The project is required by the California Pipeline Safety Improvement Act of 2002, the 2011 California Public Utilities Commission Decision No. 11-06-017, following the 2010 San Bruno pipeline explosion, and under 49 CFR Part 192 - Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.



PROPOSED PROJECT

The three proposed segments for pipeline replacements include the following:

1. **Canada Road:** The Canada Road L-109 segment would consist of replacing the existing 20-inch diameter pipeline with two sections of 24-inch-diameter pipeline for a total length of approximately 2.4 miles. The southern section of the Canada Road segment is approximately 0.9 mile long, beginning 0.5 mile north of Edgewood Road, ending south of the Pulgas Water Balancing Reservoir. The northern section segment is 1.5 miles long, beginning north of the Pulgas Water Balancing Reservoir and ending at a point 0.9 mile south of the intersection of Canada Road and SR 92. Construction operations would include a combination of Jack and Bore (JB) and Horizontal Directional Drilling (HDD). The majority of the pipeline replacement for both sections would be sited adjacent and parallel to the existing pipeline, but offset by about 5 feet. However, the northernmost 1,900 feet (0.37 mile) of the 1.5-mile-long northern section would have a new alignment, including approximately 1,000 feet along Canada Road. Approximately 7.9 acres of the work would occur within the existing PG&E easement and approximately 18 acres within a Temporary Construction Easement (TCE). PG&E is also proposing an increased permanent easement to allow safe construction and future maintenance. The proposed easement expansion would be 30-40 feet wide between the existing and parallel L-109 and L-132 pipeline easements for a total of about six acres.

2. **Bunker Hill:** The Bunker Hill segment is located 1.2 miles northwest of the Canada Road segment along the Pulgas Ridge adjacent to 1-280 with Lower Crystal Springs Reservoir to the west. This segment would replace 1.1 miles of 22-30 inch pipeline with 24 inch pipeline. The pipe would be buried by HDD at a minimum of 4 feet deep. The new pipeline would follow the existing alignment, offset by about 5 feet. PG&E is proposing new permanent easements between the existing and parallel L-109 and L-132 pipeline easements, with a total expansion of approximately three acres.

3. **Crystal Springs:** The Crystal Springs segment is located 0.9 mile northwest of the Bunker Hill segment. This segment parallels 1-280 from north of Hayne Road to north of Lakeview Drive, beginning 0.2 mile north of where Crystal Springs Road crosses under 1-280, and terminating 0.1 mile west of the intersection of Ralston Avenue and Darrel Road. Approximately 1.2 miles of existing pipeline—with a diameter that ranges between 22 and 30 inches—would be replaced in place with 5,270 feet of 24-inch-diameter pipeline and 1,200 feet of 30-inch-diameter pipeline.



Scope of work common to each segment includes the following: Most of the gas pipeline would be installed in an open trench. The pipeline would be constructed within an 85-foot-wide temporary construction area along or adjacent to the existing alignment. To install the new pipeline, conventional track-mounted excavators and trenching equipment would excavate the new trench. Stringing operations would involve trucking lengths of pipe (joints) to the site and positioning them along the trench with a crane or side boom, parallel to the centerline of the trench. Once the pipeline segments are assembled, they would be welded together into long

strings. After welding, a crew would coat the pipe with epoxy in accordance with PG&E standards. The entire pipe would be electronically tested to confirm that it is properly coated for corrosion protection prior to lowering it into the trench, and the coating would be repaired should it not pass the test. The trench bottom would be filled with fine-grained material, such as sand—typically to a depth of 12 inches—to provide bedding for the pipe. Side boom tractors would lower the welded pipe segments into the trench. Before, during, and after installation of the pipeline, inspections would be conducted to ensure that the trench is of sufficient depth, the bottom is free of damaging debris, the pipe is properly placed, all bends conform to the trench, and that the external coating is not damaged. The trench would then be backfilled by replacing the excavated subsoil into the trench and regraded to its pre-construction grade. Areas where the project crosses ephemeral drainages, the pipeline would be installed using an aerial span method, a horizontal directional drilling (HDD) method, or through open trenching. The HDD method includes excavating a pit on each side of the drainage and pulling the pipeline through the bore hole.

During construction, the main access to the Canada Road segment would be from Canada Road along existing SFPUC access roads and one new access point near the northern end of the segment. The southernmost access would be via the access gate at the Edgewood Crossover Station just off of the southbound 1-280 off-ramp to Edgewood Road. Additional access would be obtained along SFPUC access roads, access roads near the water balancing reservoir, and along the Sheep Camp Trail/SFPUC access road. A new temporary construction access road (measuring approximately 670 feet long) would be built about 1 mile south of the SR 92/Canada Road intersection. The access points for the Bunker Hill segment would be a gate near Lexington Avenue and Allegheny Way, and a gate on the north side of Bunker Hill Drive. Access to the Crystal Springs segment would be via Windemere Road and the Caltrans rest stop off 1-280. Additional access points include a gate off of Black Mountain Road, approximately 200 feet north of Hayne Road. No new access roads would be created for the Bunker Hill or Crystal Springs segments. Temporary lane closures would be required for pipeline installation and occasional access. The County of San Mateo would review and approve the traffic control plans prepared for the project.

ENVIRONMENTAL REVIEW

The EA will be prepared in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), the 2006 NPS Management Policies, and the NPS Director's Order No. 12: Conservation Planning, Environmental Impact Analysis, and Decision-Making. This assessment will evaluate the potential effects of the project on the environment, including effects on natural resources, cultural resources, visitor use and experience. Mitigation measures will be identified to avoid or reduce any adverse environmental effects from this project. The EA is expected to be released for public review by late September or early October, 2014.

SCOPING COMMENTS

The primary goal of scoping is to determine the range of issues and alternatives to be addressed regarding the proposed project. You are invited to submit scoping comments that consider the following:

- Alternative approaches and ideas for accomplishing project goals;
- The range of issues that need to be considered;

- Other potential projects that might affect or be affected by this project;
- Effects that should be considered and why; and
- Information on resources within or adjacent to this area that your agency has jurisdiction

SUBMITTING COMMENTS

The public is invited to submit comments on this proposed project to the NPS from Thursday, August 14 through Friday, August 29, 2014. Interested individuals, organizations, and agencies should submit comments online at: <http://parkplanning.nps.gov/pgpipeline>, or by mail to:

Superintendent
Golden Gate National Recreation Area
Attn: PL-109 Project
Fort Mason, Building 201
San Francisco, CA 94123

As noted above, the San Francisco Planning Department is preparing an Initial Study/Mitigated Negative Determination pursuant to CEQA for the same project. Comments submitted to the SF Planning Department will also be considered by the NPS in its preparation of an EA as required by NEPA, so it will not be necessary to resubmit comments to the NPS that were originally submitted to SF Planning.

For more information or to be added to the mailing list, e-mail: goga_planning@nps.gov, or call 415-561-4700.

SCOPING ISSUES SUMMARY FOR L-109 PIPELINE REPLACEMENT PROJECT EA		
ISSUE OF CONCERN	EA Section Number	Source
<i>Air Quality</i>		
Effects of dust generated by pipeline construction and operational activities.	3.7	Neighboring Resident
<i>Biological Resources</i>		
Effects on rare plant species and rare communities. Impacts to serpentine soils and habitat associated with rare species occurrences. Impacts to rare and sensitive biological resources within Edgewood Park and Preserve.	3.3	California Native Plant Society (CNPS) – Santa Clara Valley Chapter, Friends of Edgewood (FoE), Committee for Green Foothills (CGF)
<i>Land Use</i>		
Route of pipeline replacement in proximity to residential area.	3.2	Highlands Community Association (HCA)
<i>Visitor Health and Safety</i>		
Safety of the local residents during construction and operation of the L-109 pipeline. Fire prevention protocols in high fire hazard severity zone. Emergency measures, plans, and services in the event of a fire.	3.13	HCA
<i>Visitor Use and Experience, Soundscapes, Visual and Scenic Resources</i>		
Effects of construction on public events scheduled at the Filoli Estate	3.6, 3.10, 3.5	Filoli Estate

APPENDIX C

BIOLOGICAL RESOURCES TABLES

FEDERAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR WITHIN THREE MILES OF THE PROJECT

Common Name (Scientific Name)	Segment¹	Status²	Habitat	Potential to Occur
<i>Invertebrates</i>				
Bay checkerspot butterfly (<i>Euphydryas editha bayensis</i>)	BH, CR, CS	FT	Native grasslands on serpentine outcrops in San Mateo and Santa Clara counties. Primary larval host plant is dwarf plantain (<i>Plantago erecta</i>). Also uses purple owl's clover (<i>Castilleja densiflora</i>) and exserted paintbrush (<i>C. exserta</i>).	<i>Bunker Hill</i> : Not expected. Work is located within an area that historically supported BCB; however the species is considered extirpated in this area. Portions of this segment support serpentine grassland habitat, plus larval and adult food plant species, and is located in the Pulgas Ridge Critical Habitat unit, but flight surveys performed in 2014 indicated that the BCB did not utilize the proposed work areas (ECS 2014). <i>Cañada Road and Crystal Springs</i> : None. Suitable habitat is absent from the segment.
Mission blue butterfly (<i>Aricia icarioides missionensis</i>)	BH, CR, CS	FE	Utilizes three host plants: <i>Lupinus albifrons</i> var. <i>collinus</i> ; <i>L. formosus</i> var. <i>formosus</i> ; and less frequently, <i>L. variicolor</i> . Uses a variety of nectar plant species found in grassland and coastal scrub communities.	<i>Bunker Hill</i> : None. No suitable habitat is present in the work area. <i>Cañada Road</i> : Very Low. Suitable larval food plants are absent from the segment. <i>Crystal Springs</i> : Low. Suitable host plants are absent from the proposed Project area. The nearest potential larval host plants are present just outside of the work area, located on the west side of I-280.
Myrtle's silverspot (<i>Speyeria zerene myrtleae</i>)	BH	FE	Restricted to coastal terrace prairie, coastal bluff scrub, and associated nonnative grassland habitats in western Marin and southwestern Sonoma counties. Completely dependent on host plant <i>Viola adunca</i> .	<i>Bunker Hill, Cañada Road, Crystal Springs</i> : None. No suitable habitat present. Outside of current known distribution.

FEDERAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR WITHIN THREE MILES OF THE PROJECT

Common Name (<i>Scientific Name</i>)	Segment ¹	Status ²	Habitat	Potential to Occur
<i>Amphibians and Reptiles</i>				
California red-legged frog (<i>Rana draytonii</i>)	BH, CR	FT	Requires slow-moving or still water for juvenile development. Occurs in freshwater marshes, stock ponds, and riparian habitats. May aestivate in rodent burrows or cracks during dry periods.	<p><i>Bunker Hill:</i> Very low during dry season. Nearest suitable aquatic habitat is ~0.25 mile from the proposed Project north of Bunker Hill. Lower potential south of Bunker Hill Road due to major barriers. Low in wet season due to the absence of other aquatic habitats within or near the proposed Project.</p> <p><i>Cañada Road:</i> High. Suitable non-breeding habitat is present in the streams crossing the segment. Potential dispersal habitat within upland areas. Breeding records occur nearby.</p> <p><i>Crystal Springs:</i> Very low potential for this species to occur in this segment. There is limited existing hydrologic connection between the site and occupied habitat for the species to the west of I-280, and movement corridors would be limited.</p>
San Francisco garter snake (<i>Thamnophis sirtalis tetrataenia</i>)	BH, CR	FE	Densely vegetated ponds near open hillsides; aquatic habitats with shallow water edges are essential. Upland habitat, south or west facing slopes with suitable sites for basking, and rodent burrows or thick mats of grass for shelter and hibernacula.	<p><i>Bunker Hill:</i> Very low. Suitable aquatic habitat in pool below dam and San Mateo Creek is located ~0.25 mile from Proposed Project activities.</p> <p><i>Cañada Road:</i> High. Suitable aquatic habitat present near proposed Project area. Suitable upland habitat within segment. Occurrence records are present nearby.</p> <p><i>Crystal Springs:</i> Very low. There is limited existing hydrologic connection between the site and occupied habitat for the species to the west of I-280.</p>

FEDERAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR WITHIN THREE MILES OF THE PROJECT

Common Name (Scientific Name)	Segment¹	Status²	Habitat	Potential to Occur
<i>Birds</i>				
California clapper rail (<i>Rallus longirostris obsoletus</i>)	BH, CR	FE	Salt marshes and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay. Associated with pickleweed (<i>Salicornia</i> spp.).	<i>Bunker Hill, Cañada, Crystal Springs:</i> None. No salt marsh habitat present.
¹ BH = Bunker Hill segment CR = Cañada Road segment CS = Crystal Springs segment ² Status codes are defined as follows: FE = Listed as endangered under the ESA FT = Listed as threatened under the ESA				

FEDERAL STATUS PLANTS CONSIDERED

Common Name (<i>Scientific Name</i>)	USFWS Status	Flowering Period	Habitat Preferences	Occurrence Potential
<i>Cañada Road Segment</i>				
San Mateo thornmint (<i>Acanthomintha duttonii</i>)	E	April–June	Restricted to serpentine soils of chaparral and foothill and valley grasslands. 150–1,000 feet.	Not present. Known only from a limited area of serpentine soils in SMT; nearest occurrences to proposed Project are an extirpated site at Menlo Country Club and one extant population at Edgewood Park. Obispo clay soils are absent, as are the deep, moist black soils where species is found.
Crystal Springs fountain thistle (<i>Cirsium fontinale</i> var. <i>fontinale</i>)	E	May–August	Serpentine seeps. 300–600 feet.	Not present. Known only from SMT; nearest records are on Pulgas Ridge to the north and Stulsaft Park to the south. Serpentine seep habitat not present in proposed Project area.
Marin western flax, Marin dwarf flax (<i>Hesperolinon congestum</i>)	T	April–July	Serpentine barrens and serpentine grasslands, usually on sparsely-vegetated sites.	Not present. Ranges from SMT to MRN; nearest records are at Edgewood Park to the south and Pulgas Ridge to the north. Suitable habitat not present in proposed Project area.
<i>Bunker Hill Segment</i>				
San Mateo thornmint (<i>Acanthomintha duttonii</i>)	E	April–June	Restricted to serpentine soils of chaparral and foothill and valley grasslands. 150–1,000 feet.	Not present. Known only from a limited area of serpentine soils in SMT; nearest occurrences to proposed Project are an extant population at Edgewood Park and a reintroduction site on Pulgas Ridge about 0.2 miles from proposed Project area (CNDDDB Occ. 7). Deeply cracked, moist black clay soils were present south of Bunker Hill Drive but species was not observed there. Potentially suitable habitat was not present in the currently-defined work area.
Crystal Springs fountain thistle (<i>Cirsium fontinale</i> var. <i>fontinale</i>)	E	May–August	Serpentine seeps. 300–600 feet.	Not present. Known only from SMT; CNDDDB Occ. 1 is an extensive population from several sites on Pulgas Ridge not far from the proposed Project area. Species was not observed in the proposed Project area and suitable seep habitat not present.

FEDERAL STATUS PLANTS CONSIDERED

Common Name (Scientific Name)	USFWS Status	Flowering Period	Habitat Preferences	Occurrence Potential
San Mateo woolly sunflower (<i>Eriophyllum lanatum</i>)	E	May–June	Cismontane woodland; often on roadcuts; shady spots and slopes in oak woodland, often on serpentine alluvium. 150-500 feet.	Not present. Known only from SMT, and primarily from the San Mateo Creek watershed. Nearest population is a discontinuous string of colonies along Crystal Springs Road in San Mateo Creek canyon (CNDDDB Occ. 1). Although observed there in 2013, this species was not found in the proposed Project area and suitable habitat was not present.
Marin western flax, Marin dwarf flax (<i>Hesperolinon congestum</i>)	T	April–July	Serpentine barrens and grasslands, usually on sparsely vegetated sites. 100–800 feet.	Observed. Ranges from SMT to MRN; nearest records are multiple population on southern Pulgas Ridge (CNDDDB Occ. 3) and San Mateo Creek canyon (CNDDDB Occ. 2). Observed at several location within and near the proposed Project area.
White-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	E	March–June	Chaparral, coastal scrub, coastal prairie; vernal moist swales on fine- textured soils formed from marine sediments. 50–330 feet.	Low. Known historically from SCR to MRN; only known remaining locality is at "The Triangle", just south of proposed Project area. Other historical locations are from Edgewood Park, Crystal Springs area. Potentially suitable habitat present, but species not found in proposed Project area.
<i>Crystal Springs Segment</i>				
San Mateo thornmint (<i>Acanthomintha duttonii</i>)	E	April–June	Restricted to serpentine soils of chaparral and foothill and valley grasslands. 150–1,000 feet.	Not present. Known only from a limited area of serpentine soils in SMT; nearest occurrences to proposed Project are an extant population at Edgewood Park and a reintroduction site on Pulgas Ridge. Species was not observed in survey area.
San Mateo woolly sunflower (<i>Eriophyllum lanatum</i>)	E	May–June	Cismontane woodland; often on roadcuts; shady spots and slopes in oak woodland, often on serpentine alluvium. 150-500 feet.	Not present. Known only from SMT, and San Mateo Creek watershed. Nearest population is a discontinuous string of colonies along Crystal Springs Road in San Mateo Creek canyon. Species was not observed in survey area.
Marin western flax, Marin dwarf flax (<i>Hesperolinon congestum</i>)	T	April–July	Serpentine barrens and grasslands, usually on sparsely vegetated sites. 100-800 feet.	Observed. Ranges from SMT to MRN; nearest records are on southern Buri Buri Ridge and Pulgas Ridge to the south. Species was observed at several locations within and near proposed Project area.

FEDERAL STATUS PLANTS CONSIDERED

Common Name (Scientific Name)	USFWS Status	Flowering Period	Habitat Preferences	Occurrence Potential
White-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	E	March–June	Chaparral, coastal scrub, coastal prairie; vernal moist swales on fine-textured soils formed from marine sediments. 50–330 feet.	Not present. Known historically from SCR to MRN; only known remaining locality is at "The Triangle", just south of proposed Project area. Other historical locations are from Edgewood Park, Crystal Springs area. Potentially suitable habitat present, but species not found in proposed Project area.

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.

COUNTY CODES:

ALA--Alameda; ALP--Alpine; AMA--Amador; BUT--Butte; CAL--Calaveras; COL--Colusa; CCA--Contra Costa; DNT--Del Norte; ELD--El Dorado; FRE--Fresno; GLE--Glenn; HUM--Humboldt; IMP--Imperial; INY--Inyo; KRN--Kern; KNG--Kings; LAK--Lake; LAS--Lassen; LAX--Los Angeles; MAD--Madera; MRN--Marin; MPA--Mariposa; MEN--Mendocino; MER--Merced; MOD--Modoc; MNO--Mono; MRY--Monterey; NAP--Napa; NEV--Nevada; ORA--Orange; PLA--Placer; PLU--Plumas; RIV--Riverside; SAC--Sacramento; SBT--San Benito; SBD--San Bernardino; SDG--San Diego; SFO--San Francisco; SJQ--San Joaquin; SLO--San Luis Obispo; SMT--San Mateo; SBA--Santa Barbara; SCL--Santa Clara; SCR--Santa Cruz; SHA--Shasta; SIE--Sierra; SIS--Siskiyou; SOL--Solano; SON--Sonoma; STA--Stanislaus; SUT--Sutter; TEH--Tehama; TRI--Trinity; TUL--Tulare; TUO--Tuolumne; VEN--Ventura; YOL--Yolo; YUB--Yuba

SOURCES:

CDFW 2013; CNPS, 2013; Consortium of California Herbaria, 2013; Calflora, 2013

APPENDIX D

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
<i>Air Quality</i>	
AQ-1: Construction Emissions Minimization Plan	<p>Prior to construction, PG&E shall submit a Construction Emissions Minimization Plan to the Environmental Review Officer (ERO) for review and approval by an Environmental Planning Air Quality Specialist. The plan shall detail project compliance with the following requirements:</p> <ul style="list-style-type: none"> • All on-road and off-road construction equipment engine tiers shall be consistent with the United States Environmental Protection Agency (USEPA) engine tiers provided in the Construction Equipment Summary. Documentation of equipment tiers for in-use equipment shall be maintained on site as part of the plan. • Construction equipment shall be equipped with CARB-approved Level III Verified Diesel Emission Control Strategies (VDECS). Documentation of VDECS for in-use Tier III equipment shall be maintained on site as part of the plan. To accomplish this, diesel particulate filters (DPF) will be used.
AQ-2: Dust Control	<p>For the Cañada Road segment and any other areas not already subject to the Asbestos Air Toxic Control Measure, PG&E shall post one or more publicly visible signs with the telephone number and person to contact at PG&E with complaints related to excessive dust or vehicle idling. This person shall respond to complaints and, if necessary, take corrective action within 48 hours. The telephone number and person to contact at the BAAQMD's Compliance and Enforcement Division shall also be provided on the sign(s) in the event that the complainant also wishes to contact the applicable air district.</p> <p>In addition, to limit dust, criteria pollutants, and precursor emissions associated with project construction, the following BAAQMD-recommended Basic Construction Measures shall be required for the Cañada Road segment and any other areas not already subject to the Asbestos Air Toxic Control Measure:</p> <ul style="list-style-type: none"> • Water all active construction areas with exposed soil surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads that have not been stabilized with soil binder, mulch, gravel, vegetation or other cover) sufficiently to prevent dust from becoming airborne. Reclaimed water should be used whenever possible. • All haul trucks transporting soil, sand, or other loose material offsite shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • Vehicle speeds on unpaved areas shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times for construction equipment (including vehicles) shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes, except for situations allowed under California's

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
	<p>commercial vehicle idling regulations. California’s Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.</p> <ul style="list-style-type: none"> All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
<i>Biological Resources</i>	
BR-1: CRLF, Cañada Road Segment	<ul style="list-style-type: none"> Prior to the start of any ground disturbing activities within the Cañada Road segment in habitat for CRLF, vegetation will be hand cleared to a height that allows for visual inspection of the ground. Ground-level vegetation including downed logs and duff that may provide cover for CRLF s and SFGS will be removed using hand tools (including weed eaters and chain saws) under the supervision of a qualified biologist. No vegetation cut in habitat will be stored on site; it will be off-hauled daily. Following vegetation removal, rodent burrows and other potential subterranean retreats within the proposed Project excavation area, and areas where work could result in the crushing of burrows in project impact areas identified to be potential habitat for CRLF and SFGS will be inspected for the presence of CRLF and SFGS. After inspection, a qualified biologist will excavate burrows and other potential subterranean retreats in these identified areas by hand unless otherwise directed by the USFWS. Wildlife species fencing may be appropriate for particular areas of species habitat within the Cañada Road segment. Each morning prior to the start of work, a biologist will inspect the planned work areas for that day to ensure that no listed species are present in the segment work area. If ground disturbing activities occur during the wet season (October 15 to April 15), it will be monitored on-site by a qualified biologist who will have the authority to halt work when it is safe to do so in coordination with the construction manager if a CRLF is in harm’s way. The frog will be allowed to move out of the way on its own volition or as otherwise approved by USFWS The actions above may be refined slightly as part of a Section 7 consultation with USFWS.
BR-2: SFGS Cañada Road Segment	<ul style="list-style-type: none"> Prior to the start of any ground disturbing activities within the Cañada Road segment in habitat for SFGS, ground-level vegetation including downed logs and duff that may provide cover for CRLF s and SFGS will be removed using hand tools (including weed eaters and chain saws) under the supervision of a qualified biologist. No cut vegetation will be stored on site; it will be off-hauled daily. Following vegetation removal, rodent burrows and other potential subterranean retreats within the proposed Project excavation area, access roads, and areas where work will impact areas identified to be potential habitat for CRLF and SFGS will be inspected for the presence of CRLF s and SFGSs. After inspection, a qualified biologist will excavate burrows and other potential subterranean retreats in these identified areas by hand unless otherwise directed by the USFWS.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
	<ul style="list-style-type: none"> • Each morning prior to the start of work, a biologist will inspect the work area to ensure that no listed species are present in the segment work area. • Only biologists approved by the USFWS shall participate in the capture, handling, or relocation of listed species. • A qualified biologist will be present on days when ground disturbing work or vehicle access is occurring in habitat in this segment unless otherwise instructed by the resource agency with jurisdiction over the species. The biologist will have the authority to halt work when it is safe to do so in coordination with the construction manager if an SFGS is in harm's way. The snake will be allowed to move out of the way on its own volition unless otherwise approved by USFWS. • Temporary wildlife exclusion fencing shall be installed within San Francisco garter snake habitat—as determined by the PG&E biologist—along the edge of the Cañada Road segment construction work areas and access roads. • Before moving vehicles and equipment operators at the Cañada Road segment shall check beneath these vehicles/equipment and notify the biological monitor if any reptile or amphibian is observed.
BR-3: Marin Western Flax, Bunker Hill and Cañada Road Segments	<ul style="list-style-type: none"> • A qualified biologist shall flag the Marin Western Flax populations with highly-visible flagging prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities. On the Bunker Hill Segment a population will be avoided through use of HDD boring underneath the population. On Crystal Springs, the populations will either be avoided through fencing, bored under, or otherwise as approved by the resource agencies. Marin western flax will be avoided to the greatest extent practicable. • Before vehicles are brought onto work sites, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving in areas with sensitive plants. • Proposed Project activities will minimize foot traffic and disturbance to the amount required to perform work safely.
BR-4: White-rayed Pentachaeta, Bunker Hill and Cañada Road Segments	<ul style="list-style-type: none"> • A qualified biologist shall flag work areas and access routes with highly-visible flagging prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities. • Before vehicles are brought onto access roads, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving through the sensitive plant areas. • Prior to workers walking to work sites, all workers shall be required to inspect boots, tools, and clothing and will be required to remove weeds, seeds, and soil. • Proposed Project activities will minimize foot traffic and disturbance to the extent practicable.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
<p>BR-5: Crystal Springs Fountain Thistle, Crystal Springs Segment</p>	<ul style="list-style-type: none"> • A qualified biologist shall place signage near the fountain thistle populations. High-visible flagging or exclusion fencing may be applicable. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging, and work activities. Work areas and access routes will be designed to avoid Crystal Springs fountain thistle to the greatest extent practicable. • Crystal Springs fountain thistle mitigation areas will either be fenced off as avoidance areas or training and signage will be placed to ensure no impacts to these areas at the direction of the PG&E biologist. • Proposed Project activities will minimize foot traffic and disturbance to the amount required to perform work safely. • Before vehicles are brought onto work areas, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. • Proposed Project activities will minimize foot traffic and disturbance to the extent practicable.
<p>BR-6: MBB, Crystal Springs Segment</p>	<ul style="list-style-type: none"> • A qualified biologist shall flag work areas with highly-visible flagging or exclusion fencing prior to work. Only approved work areas and access will be used by all vehicles, equipment, and personnel for staging and work activities. Work areas and access routes will be designed to avoid MBB host plants shall to the maximum extent practicable • If a qualified biologist observes emergent or flighted MBBs within the work area, the project’s PG&E Biologist will be notified. • Before vehicles are brought onto access roads in MBB suitable habitat, they shall be cleaned of weeds, seeds, and soil. This can be accomplished via hand wash, power spray, dry brushing, compressed air, hand picking, etc. Vehicles parked in areas with invasive weeds will also be cleaned before driving through MBB suitable habitat. • Prior to walking to work sites in MBB suitable habitat, all workers shall be required to inspect boots, tools, and clothing and will be required to remove weeds, seeds, and soil. • Topsoil shall be segregated during excavation and placed back on the surface upon completion of work to maintain the seed-bank of dormant host plant species seeds in the soil unless the area contains a high proportion of non-native species in which case the topsoil will be placed in the trench to prevent the spread of weeds.
<p>BR-7: Training for All Segments</p>	<ul style="list-style-type: none"> • Before work commences, environmental awareness training shall be conducted, and the PG&E tailboards shall include information related to CRLF, SFGS, BCB, MBB, Marin Western flax, Crystal Springs fountain thistle, riparian resources, and protected birds pursuant to the MBTA.
<p>BR-8: General for All Segments</p>	<ul style="list-style-type: none"> • Vehicles and equipment shall use pavement, existing roads, and previously disturbed areas to the extent practicable or as submitted as part of the proposed Project area. • Where safe to do so vehicles should not exceed 15 miles per hour on un-surfaced roads such as ROW access roads. • PG&E will comply with the SWPPP obtained for the proposed Project regarding restoration and erosion control.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
	<ul style="list-style-type: none"> • The disturbance or removal of vegetation within the work area shall not exceed the minimum necessary to complete operations safely. • All food scraps, wrappers, and other containers and garbage from the work area must be disposed of in closed trash containers. If full, the containers shall be removed from the site. • Smoking is prohibited on SFPUC lands. • Erosion-control materials that do not pose an entrapment hazard to reptiles and amphibians shall be used. Plastic monofilament netting (e.g., matting, fiber rolls, wattles, silt fence backing) shall not be used.
BR-9: Riparian Areas for All Segments	<ul style="list-style-type: none"> • Foot access only in riparian zone unless otherwise allowed through applicable CDFW permits. • No work will be conducted within the wetted active channel otherwise agreed to by the resource agency with jurisdiction over the area. • Trees will be felled away from the bed, bank, and channel. • Rope and lower large limbs to avoid limbs and personnel from entering the bed, bank, and channel to the extent possible. • Cleared or pruned vegetation and woody debris (including chips) shall be disposed of in a manner to ensure that it does not enter surface water or a watercourse. Diverting water, discharging chips to the streambed, or removing or excavating soil are prohibited without a specific permit. • Vehicles, tools and heavy equipment must be refueled at least 100 feet away from riparian areas. The fueling operator must stay with the fueling operation at all times. Do not top off tanks. Vehicles and heavy equipment will be checked daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life.
BR-10: Federal Status Species for All Segments	<ul style="list-style-type: none"> • No plastic monofilament will be used for erosion control (e.g. matting, fiber rolls, wattles, silt fence backing, etc.). Appropriate materials include burlap, coconut fiber, or as identified in the general and site-specific SWPPP. • All excavated, steep-walled holes or trenches more than two feet deep will be covered at the end of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earthen fill or wooden planks at no more than a 3:1 slope. • If feasible, open ended pipes left on site overnight are to be capped at the ends to prevent wildlife from entering them. These materials will be checked prior to moving. • If a federal status species is observed in the work area, work shall stop immediately and the biological monitor shall be mobilized to the location. No federal status wildlife or plant species shall be touched, picked up, harassed, and/or removed from the site by anyone unless otherwise authorized by the applicable resource agencies. • If a federal status wildlife species is killed or injured as a result of proposed Project activities, the incident must be reported immediately to a supervisor and the PG&E representative for appropriate management and PG&E will report the incident to the appropriate resource agencies responsible for the species.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
BR-11: Nesting Birds for All Segments	<ul style="list-style-type: none"> • If work is scheduled to occur during the avian nesting season (February 15- September 1), nest detection surveys will be conducted no more than 15 days prior to initial work activities at designated construction areas to determine nesting status in the area. Nest surveys will be accomplished by ground surveys and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 30 days during this time. Nest surveys will follow standard biological survey methods, and survey efforts will be tailored by Project location, with visits planned at appropriate timeframes/intervals to detect nesting activity. In addition, biologists monitoring construction will conduct nest surveys and/or nest monitoring in areas adjacent to ongoing construction as directed to do so by the PG&E biologist. If nests are found, the Project biologist will establish an appropriate buffer to be in compliance with the Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. PG&E will apply standardized species-specific no activity buffers developed as part of PG&E's avian management program. Active nests will be monitored and exclusion buffer sizes adjusted if the monitoring biologist determines this is necessary based on disturbance behavior exhibited by nesting birds in proximity to proposed Project construction. To prevent encroachment, the established buffer(s) will be clearly marked for avoidance. The established buffer(s) will remain in effect until the young have fledged or the nest is no longer active (containing eggs or young) as confirmed by the biologist
BR-12: Pre-construction Tree Surveys and Tree Removal	<ul style="list-style-type: none"> • A qualified arborist would conduct a preconstruction tree survey of the oak woodland areas, recording diameter at breast height (DBH) information and identifying each tree to species. Any tree removal, pruning, or work within the drip line of trees, other than in paved areas, must be reviewed and approved by a PG&E-approved arborist or their designee. A PG&E-approved arborist will be required to conduct all tree trimming and removal. • Tree removal is to be conducted outside of the bird nesting season to the extent possible. If this is not feasible, a qualified biologist will perform a preconstruction survey for active nests prior to tree removal. If an active nest of a special-status or Migratory Bird Treaty Act (MBTA) protected species is observed in the tree, the tree would not be removed until the bird has finished nesting. • Additional measures (such as root pruning, monitoring, stump grinding) may be required by the arborist. Tree removal and pruning will follow GGNRA Sudden Oak Death (SOD) sanitation measures including disinfecting of tools and equipment and worker education.
BR-13: Mission Blue Butterfly, Crystal Springs Segment	<ul style="list-style-type: none"> • Not more than two weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, a qualified biologist shall survey grassland habitat in the project area for Mission blue butterfly and its larval host plant. Host plants identified within the project boundaries shall be fenced or flagged and avoided during construction. • Temporary fencing shall be installed around the workspace perimeter, and for 100 feet along Golf Course Drive on each side of the workspace, to prevent equipment parking off the road. The fencing shall remain in place until the completion of construction adjacent to the lupine patches.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
	<ul style="list-style-type: none"> All workers shall receive educational awareness training about Mission blue butterfly, its food plants, and its habitat.
BR-14: Invasive Species Control	<ul style="list-style-type: none"> An Invasive Weed Control Plan would be prepared that would include measures to reduce the potential introduction or spread of noxious weeds. Coordination with GGNRA and SFPUC and applicable resource agencies regarding invasive plant species would be conducted prior to construction. All equipment arriving onsite must be clean and free of soils and plant material. BMPs would include tire wash requirements for equipment arriving onsite that has been driven off-road prior to arriving on the project site. Equipment arriving on-site will be inspected by the biological monitor for mud or soil that could harbor invasive weed seed.
<i>Cultural Resources</i>	
CR-1: Ground Disturbing Activities	<ul style="list-style-type: none"> If the applicant revises the location of ground-disturbing activities that affect areas beyond those surveyed for this EA, those areas will be subjected to a cultural resources inventory to ensure that any newly identified sites are not subject to ground-disturbing activities.
CR-2: Unanticipated Discoveries	<ul style="list-style-type: none"> The applicant shall inform and train all construction personnel on identification of cultural resources and the procedures to follow in the event of an unanticipated discovery.
CR-3: Potentially Significant Prehistoric or Historic Resources	<ul style="list-style-type: none"> The applicant will minimize or avoid impacts to any potentially significant prehistoric and historic resources that might be discovered during construction by implementing standard protocols that include ceasing all work within 50 feet of the discovery, protecting the discovery from further impacts, and immediately contacting a PG&E Cultural Resources Specialist. This requirement is described in Section II of the PA.
CR-4: Human Remains	<ul style="list-style-type: none"> If human remains are discovered, work in the immediate vicinity will stop immediately and a PG&E Cultural Resources Specialist and GGNRA Heritage Specialist will be contacted. The location of the discovery will be secured to prevent further impacts and the location will be kept confidential. The Cultural Resources Specialist will evaluate the discovery and will contact the San Mateo County Coroner upon verifying that the remains are human. If the coroner determines the remains are Native American, the NAHC shall be contacted and the remains will be left in situ and protected until a decision is made on their final disposition. This requirement is codified in 36 CFR 800.13 (Post Review Discoveries).
<i>Geology, Mineral Resources, and Soils</i>	
GMS-1: Reduce Impacts to Paleontological Resources Discovered during Construction.	<ul style="list-style-type: none"> If unanticipated paleontological resources are discovered during ground-disturbing activities, excavations in the immediate vicinity of the find shall be temporarily halted until the discovery is examined by a qualified paleontologist in accordance with Society of Vertebrate Paleontology standards (SVP 1995a). If the find is determined to be significant, PG&E shall determine the appropriate avoidance measures or other appropriate mitigation in consultation with a qualified paleontologist and the Lead Agency. Significant paleontological finds shall be curated according to current professional standards.

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
<i>Soundscapes</i>	
S-1: Install Sound Barrier Wall	<ul style="list-style-type: none"> • A 20-foot-high sound barrier—consisting of transportable wall with acoustical absorptive fiber fill or foam panel inserts—shall be used during daytime and nighttime construction activities to shield HDD equipment from nearby noise-sensitive uses at the Bunker Hill entry and exit locations, such that daytime and nighttime noise levels at nearby sensitive receptors are reduced. This sound barrier wall shall be long enough to block the line-of-sight between the noise-generating equipment and receptors. • Although all HDD activities are expected to occur during the daytime hours, there is a possibility that the work may be required to extend into the evening/nighttime hours. PG&E’s Mitigation Measure to Install Sound Barrier Wall would reduce the daytime and nighttime noise levels at nearby residences as much as feasible. However, even with a 20-foot-high barrier wall in place, the noise level to some of the nearest residences would remain above the nighttime exterior threshold. Therefore, PG&E would also implement a Mitigation Measures to Notify Nearby Residents of HDD Activities, which would include notification of residents both two weeks and one day prior to the daytime and nighttime HDD work, and a Mitigation Measure to Temporarily Relocate Nearby Residents from Nighttime HDD Activities, in which PG&E would offer to relocate homeowners with special medical conditions to a nearby hotel during the potential one night of HDD work.
S-2: Notify Nearby Residents of HDD Activities	<ul style="list-style-type: none"> • PG&E shall notify residents that may experience sound levels above 70 dBA during daytime drilling and above 50 dBA during nighttime drilling at the Bunker Hill segment—based on modeling results—in writing two weeks prior and again one day prior to daytime and potential nighttime HDD activities.
S-3: Temporarily Relocate Nearby Residents from Nighttime HDD Activities	<ul style="list-style-type: none"> • For the limited locations where PG&E is unable to mitigate noise through resident notification, PG&E shall, on a case-by-case basis when there are special circumstances, such as those residents with verified special medical conditions, offer to temporarily relocate residents to a nearby hotel for the one night of potential HDD activities.
<i>Visitor Use and Experience</i>	
VUE-1: Reduce Noise, Dust, and Traffic-Related Impacts During Previously Scheduled Special Events	<ul style="list-style-type: none"> • PG&E would provide notice to the public of the construction timeframe and potential construction-related impacts. PG&E would prepare a Traffic Control and Safety Plan to minimize potential impacts.
VUE-2: Reduce Road Debris for Bicycle Sunday Events	<ul style="list-style-type: none"> • PG&E would provide street sweeping with water sweepers as necessary to clear excess debris from roadways prior to each Bicycle Sunday Event during the construction period. No construction work would be permitted on Sundays.
VUE-3:	<ul style="list-style-type: none"> • PG&E would provide street sweeping with water sweepers as necessary to clear excess debris from roadways. Construction equipment and vehicles entering and exiting the project site along Cañada Road will be cautious of

SUMMARY OF IMPACT MINIMIZATION AND MITIGATION MEASURES

Identifier	Description
Reduce Road Debris and Other Potential Construction Equipment Traffic Related Hazards	bicyclists and other recreationists, and use adequate traffic control measures to alert recreationists of their presence. As part of a Traffic Control and Safety Plan, traffic on Cañada Road along the project route may be restricted and PG&E would install temporary road signs to encourage motorists and other users to share the road.
<i>Visual Resources</i>	
VR-1: Best Management Practices	<ul style="list-style-type: none"> • Limited clearing of vegetation in temporary work areas, particularly large oak trees • Brush hogging/mowing of vegetation in temporary work areas • Overland travel where possible rather than grading of temporary access routes • Irregular graded edges rather than straight lines • Organically shaped work spaces rather than straight lines and sharp corners
VR-2: Proposed action, 4B and 4D replacement, future projects	<ul style="list-style-type: none"> • Blend facilities into the landscape by using context sensitive paint to screen these facilities • Carefully plan vegetation clearing within temporary work zones to either side of the permanent ROW to mimic natural patterns, and, where necessary, request additional temporary disturbance to clear additional vegetation as appropriate
VR-3: Crystal Springs valve lot	<ul style="list-style-type: none"> • Use vegetation to screen facilities from the Caltrans rest stop
VR-4: Edgewood valve lot	<ul style="list-style-type: none"> • Use context sensitive paint/materials
VR-5: Half Moon Bay valve lot	<ul style="list-style-type: none"> • Use context sensitive paint/materials to limit visibility from residences
<i>Water Resources</i>	
WR-1: Hazardous Substance Control	<ul style="list-style-type: none"> • PG&E will develop and implement general Project-wide hazardous substance control and emergency response measures included in the SWPPP. Additionally, care shall be exercised to minimize, contain, and properly dispose of paint flakes generated during removal and dismantling of equipment coated with lead-based paint.