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Final Mitigated Negative Declaration

Date:	September 9, 2015, amended on May 2, 2016; amendments to the PMND are shown as follows: deletions in ~~strikethrough~~; additions in double underline)
Case No.:	**2013.1761E**
Project Title:	**PG&E Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project** **San Mateo County**
Zoning:	Resource Management
Block/Lot:	Various
Project Sponsor:	Pacific Gas and Electric Company (PG&E) ~~Kristina Zaccardelli~~ Ryan Jolley
Lead Agency:	San Francisco Planning Department
Staff Contact:	Scott MacPherson – (415) 551-4525 smacpherson@sfwater.org

PROJECT DESCRIPTION:

Pacific Gas and Electric Company (PG&E) has requested a revocable license agreement for temporary work areas and a permanent easement~~s~~ from the City and County of San Francisco to construct its Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project. The proposed project would involve replacing a combined total of approximately 4.7 miles of existing underground natural gas pipeline across San Francisco Public Utilities Commission (SFPUC) Peninsula Watershed lands within unincorporated San Mateo County. PG&E initially proposed the project as described in a notification dated April 9, 2014, which covered only the Cañada Road segment of the project. The pipeline replacement would occur in the following three segments:

- The Cañada Road segment, which includes two sections, separated by the Pulgas Balancing Reservoir, that run along the east side of Cañada Road and west of Interstate 280 (I-280) from just south of State Route (SR) 92 to just north of Edgewood Road.
- The Bunker Hill segment, which begins at the Half Moon Bay Valve lot just west of Lexington Avenue and White Plains Court, then continues across Bunker Hill Drive and terminates just west of Laurel Hill Drive.
- The Crystal Springs segment, which runs parallel to I-280, north of the San Mateo Creek Canyon to a point north of Black Mountain Road and Hayne Road intersection.

This pipeline replacement is part of PG&E's company-wide pipeline modernization and safety program to improve the reliability and facilitate future maintenance of its large transmission pipelines. Specifically, the existing pipeline would be replaced with 24- and 30-inch-diameter pipe to facilitate future pipeline integrity testing using an automated in-line inspection tool called a "pig." Pipeline replacement would occur adjacent and parallel to the existing pipeline, offset approximately 5 feet from the existing line in the same corridor, with four exceptions: 1) approximately 0.37 mile of pipeline along the Cañada Road segment, which would be replaced in a new alignment to avoid impacting biological resources; 2) approximately 2,300 feet of trenchless (drilled) pipeline along the Bunker Hill segment, which would deviate approximately 42 feet from the existing pipeline to avoid a rare plant population; 3) an approximately 200-foot-long section of pipeline at the northern end of the Bunker Hill segment, which would avoid several constraints associated with existing electric transmission towers, an electric substation, and I-280; and 4) the Crystal Springs segment, which would be replaced in place. The new pipeline would be installed by a combination of cut-and-cover open trench construction, with each trench segment measuring approximately 4 to 6 feet wide and approximately 6.5 to 8 feet deep, and horizontal directional drilling (HDD) in certain locations. Once the new pipeline has been installed, the existing pipeline would be filled and abandoned in place. The construction period is expected to last approximately 15 months for all three segments and 5 to 7 months per segment.

The proposed project sites and surroundings consist of undeveloped rolling hills covered in oak woodland, grassland, chaparral, and mixed evergreen forest. The project area is zoned RM (Recreation Management) and is designated as Parks/Open Space in the San Mateo County General Plan. Existing land uses in the vicinity of the project include the Pulgas Balancing Reservoir, recreation and trails, utility corridors, roadways along all segments of the proposed project, and residential land uses adjacent to the Bunker Hill and Crystal Springs segments.

The proposed project route is entirely within SFPUC Watershed lands—used for water collection, storage, and quality protection—that are off limits to the public, except along hiking trails that were jointly established by the SFPUC, U.S. Department of the Interior, California Department of Transportation, and San Mateo County.

The Cañada Road segment, which consists of two pipeline replacement sections, is the southernmost segment of the project (see Figure 1: Project Overview Map Cañada Road Segment, in Appendix A). The southern section of the Cañada Road segment is approximately 0.9 mile long; it begins approximately 0.5

mile north of Edgewood Road and ends south of the Pulgas Balancing Reservoir. The northern section of the Cañada Road segment is approximately 1.5 miles long; it begins north of the Pulgas Balancing Reservoir and terminates at a point approximately 0.9 mile south of the intersection of Cañada Road and SR 92. The existing pipeline has a diameter of 22 inches and the replacement pipeline would be 24 inches in diameter. The majority of the pipeline replacement for both sections of the Cañada Road segment would be sited adjacent and parallel to the existing pipeline, offset by approximately 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 Cañada Road.

The Bunker Hill segment, which is located approximately 1.2 miles northwest of the Cañada Road segment, is located along the Pulgas Ridge, bordered by I-280 and Lower Crystal Springs Reservoir to the west (see Figure 2: Project Overview Map Bunker Hill Segment, in Appendix A). This segment, which is approximately 1.1 miles long, originates 0.2 mile north of the intersection of Lexington Avenue and Loop Road and terminates approximately 0.2 mile northwest of the intersection of Bunker Hill Drive and Highlands Fire Trail. The existing pipeline has a diameter of 22 inches, and it would be replaced with a 24-inch-diameter pipeline. The new pipeline would follow the existing route, but would be offset from the existing alignment by approximately 5 feet. To avoid trenching through Bunker Hill Drive, the pipeline would be installed under the road using HDD. In the trenchless section, the proposed alignment would depart from the existing pipeline approximately by 42 feet to avoid a rare plant population.

The Crystal Springs segment, which is located approximately 0.9 mile northwest of the Bunker Hill segment, is the northernmost portion of the project (see Figure 3: Project Overview Map Crystal Springs Segment, in Appendix A). This segment, which parallels I-280, begins north of San Mateo Creek Canyon and terminates at a point north of the Black Mountain Road and Hayne Road intersection. Approximately 1.2 miles of existing pipeline—with a diameter of 22 inches—would be replaced in place with approximately 5,270 feet of 24-inch-diameter pipeline and approximately 1,200 feet of 30-inch-diameter pipeline.

FINDING:

This project could not have a significant effect on the environment. This finding is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15064 (Determining Significant Effect), 15065 (Mandatory Findings of Significance), and 15070 (Decision to Prepare a Negative Declaration), and the reasons documented in the Initial Evaluation (Initial Study) for the project, which is attached.

Mitigation measures are included in this project to avoid potentially significant effects. See pages 320 to 348.

In the independent judgment of the Planning Department, there is no substantial evidence that the project could have a significant effect on the environment.

SARAH B. JONES
Environmental Review Officer

May 2, 2016
Date of Issuance of Final Mitigated Negative Declaration

INITIAL STUDY

Case No. 2013.1761E
PG&E Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

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Appendix A: Project Overview Maps
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ACRONYMS

µg/m3	micrograms per cubic meter
AB 32	Global Warming Solutions Act of 2006
ABAG	Association of Bay Area Governments
ADRP	archeological data recovery plan
AMP	Archeological Monitoring Program
BAAQMD	Bay Area Air Quality Management District
BAU	business as usual
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BMPs	best management practices
C-APE	CEQA Area of Potential Effects
CAA	federal Clean Air Act
Cal. A.D.	calibrated Anno Domini
Cal. B.P.	calibrated Before Present
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCSF	City and County of San Francisco
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CWA	Clean Water Act
cy	cubic yard
dB	decibel
dbA	A-weighted decibel
dbh	diameter at breast height
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
ERO	Environmental Review Officer
ESA	federal Endangered Species Act
FARR	Final Archeological Resources Report
FHWA	Federal Highway Administration

FTA	Federal Transit Administration
GHG	greenhouse gas
GWP	global warming potential
HCP	Habitat Conservation Plan
HDD	horizontal directional drilling
hp	horse power
HRSA	health risk screening assessment
I-280	Interstate 280
in/sec	inches per second
lbs.	pounds
L_{max}	maximum sound level
LUST	leaking underground storage tank
M	moment magnitude
MBTA	Migratory Bird Treaty Act
MLD	most likely descendent
MLV	mainline valve
mph	miles per hour
MRZ	mineral resource zone
MT	metric ton
N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NOx	oxides of nitrogen
NOAA Fisheries	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
NWIC	Northwest Information Center
OHP	California Office of Historic Preservation
PG&E	Pacific Gas and Electric Company
PIC	Planning Information Center
PIG	pipeline inspection gauge
PM_{10}	particulate matter with diameter equal to or less than 10 microns
$PM_{2.5}$	particulate matter with diameter equal to or less than 2.5 microns
PMND	preliminary mitigated negative declaration
POTW	publically owned treatment work
PPV	peak particle velocity
QACL	Qualified Archeological Consultants List
RCNM	Roadway Construction Noise Model
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SamTrans	San Mateo County Transit District
SBSA	South Bayside System Authority
SFBAAB	San Francisco Bay Area Air Basin
SFPUC	San Francisco Public Utilities Commission
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan

SR	State Route
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TCR	Tribal Cultural Resource
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
VdB	velocity level in decibels
VDECS	Verified Diesel Emission Control Strategies
WGCEP	Working Group for California Earthquake Probabilities

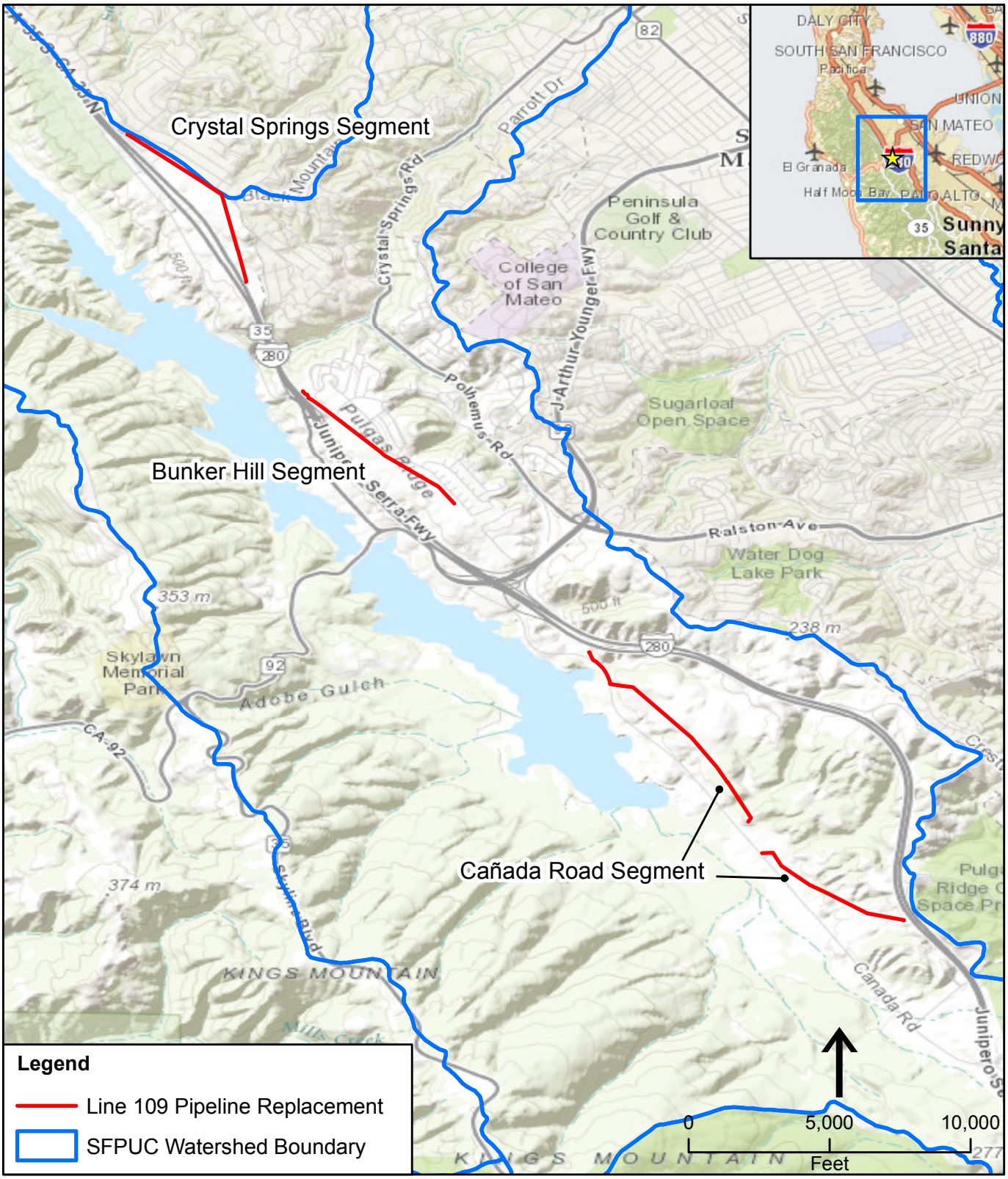
A. PROJECT DESCRIPTION

A.1. PROJECT OVERVIEW

Pacific Gas and Electric Company (PG&E) has requested a revocable license agreement for temporary work areas and a permanent easements from the City and County of San Francisco to construct its Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project (proposed project), which would involve replacing a combined total of approximately 4.7 miles of existing underground natural gas pipeline across San Francisco Public Utilities Commission (SFPUC) Watershed lands within unincorporated San Mateo County (see Figure 1: Regional Location; Figures 2A, 2B, and 2C: Parcel Maps; and Appendix A: Project Overview Maps). The pipeline replacement would occur in the following three segments, all of which are located on SFPUC Watershed lands:

- The Cañada Road segment, which includes two sections, separated by the Pulgas Balancing Reservoir, that run along the east side of Cañada Road and west of Interstate 280 (I-280) from just south of State Route (SR) 92 to just north of Edgewood Road
- The Bunker Hill segment, which begins at the Half Moon Bay Valve lot just west of Lexington Avenue and White Plains Court, then continues across Bunker Hill Drive and terminates just west of Laurel Hill Drive
- The Crystal Springs segment, which runs parallel to I-280, north of the San Mateo Creek Canyon to a point north of Black Mountain Road

The upgrades are necessary to conduct inspections in accordance with a U.S. Department of Transportation mandate concerning pipeline integrity (Code of Federal Regulations [CFR] 192, Subpart O). The California Public Utilities Commission (CPUC) has sole discretionary jurisdiction over the siting, design, construction, and operation of PG&E's natural gas pipeline facilities. However, because the SFPUC and San Francisco's Board of Supervisors own the land where the pipeline would be located and have the authority to grant easements to PG&E across SFPUC Peninsula Watershed lands within unincorporated San Mateo County, the City has discretionary authority over the easement, and the proposed project under environmental review includes PG&E's pipeline replacement project.



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 1
Regional Location

Legend

- Line 109 Cañada Road Pipeline Replacement
- Parcels

0 1,200 2,400

Feet

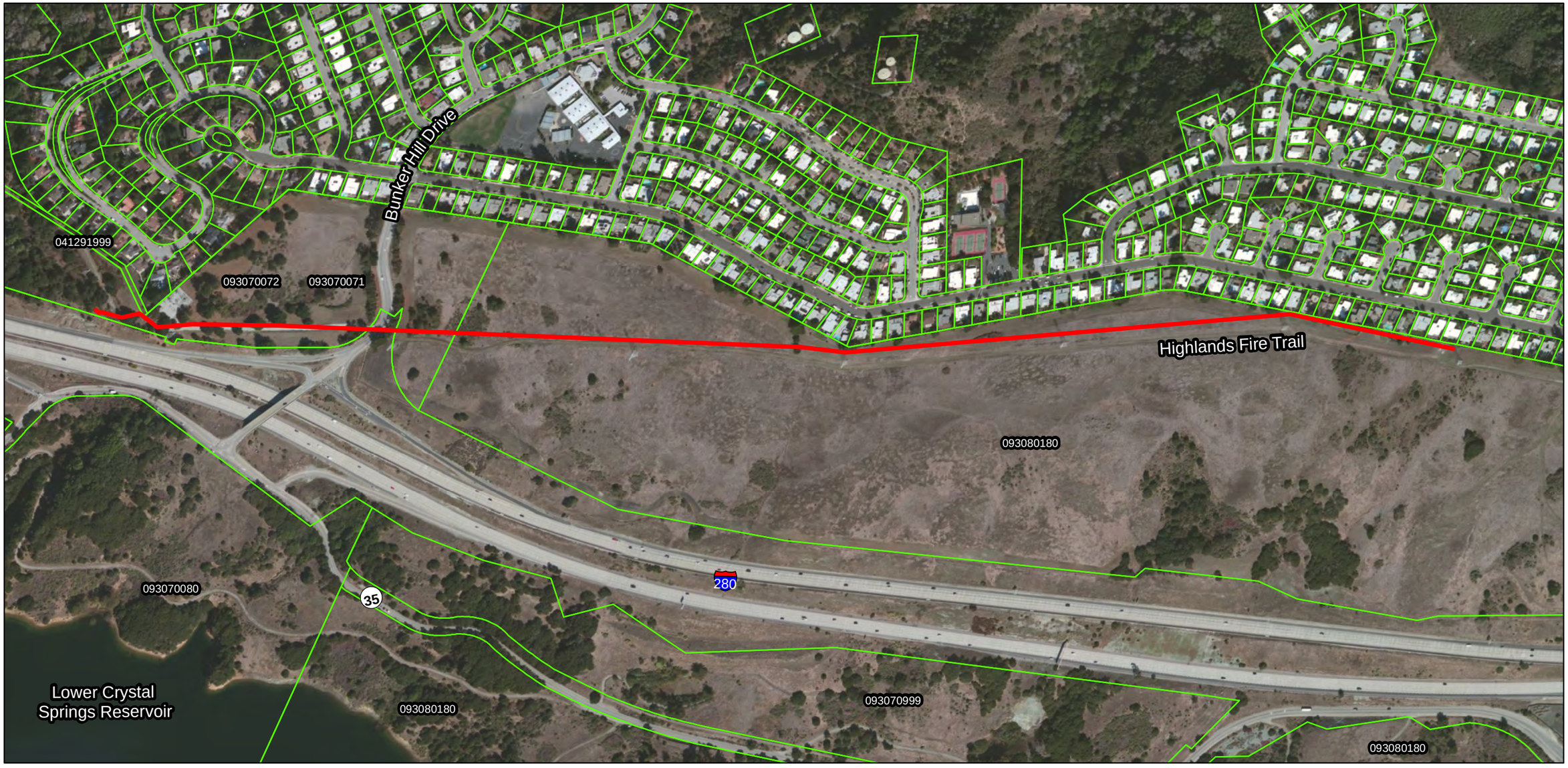
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2A

Parcel Map

Cañada Road Segment



Legend

- Line 109 Bunker Hill Pipeline Replacement
- Parcels

0 500 1,000
Feet

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2B
Parcel Map
Bunker Hill Segment

Legend

- Line 109 Crystal Springs Pipeline Replacement
- Parcels

0 500 1,000

Feet

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2C
Parcel Map
Crystal Springs Segment

PG&E is proposing to obtain approximately 11 acres of new permanent easement from the City and County of San Francisco (CCSF) to accommodate ongoing operation and maintenance activities, which would require approval by the SFPUC and Board of Supervisors, and approximately 38 acres of temporary work areas ~~easement~~ through the issuance of a revocable license from the CCSF, which would only require SFPUC approval (see Figure 1: Regional Location).

The existing pipeline along all three segments consists of 22-inch-diameter pipeline, which would be replaced with 24-inch-diameter or 30-inch-diameter pipe to facilitate future pipeline integrity testing using an automated pipeline inspection gauge called a "pig." Pipeline replacement would occur primarily adjacent and parallel to the existing pipeline, offset approximately 5 feet from the existing line in the same corridor, with four exceptions: 1) approximately 0.37 mile of pipeline along the Cañada Road segment would be replaced in a new alignment to avoid impacting biological resources; 2) approximately 2,300 feet of trenchless (drilled) pipeline along the Bunker Hill segment, which would deviate approximately 42 feet from the existing pipeline to avoid a rare plant population; 3) an approximately 200-foot-long section of pipeline at the northern end of the Bunker Hill segment, which would avoid several constraints associated with existing electric transmission towers, an electric substation, and I-280; and 4) the Crystal Springs segment would be replaced in place.

A.2. PROJECT BACKGROUND AND PURPOSE

To comply with CFR 192, Subpart O, which specifies minimum requirements for gas transmission pipeline integrity management programs, PG&E is required to inspect Line 109 to ensure that it meets prescribed pipeline integrity standards. The proposed project would increase the reliability and integrity of the Line 109 natural gas transmission pipeline by replacing the existing pipeline with modern pipe and expanding the pipe diameter where necessary to allow for in-line inspection and maintenance of the gas transmission system.

A.3. PROJECT COMPONENTS

The proposed project consists of replacing three segments along Line 109—the Cañada Road segment, Bunker Hill segment, and Crystal Springs segment—which are described in further detail in the following paragraphs. A total of nine ephemeral streams and swales would be crossed by the proposed project (see Appendix A: Project Overview Maps); these streams and swales are also described by project component in the following sections.

A.3.1. Cañada Road Segment

The Cañada Road segment, which consists of two distinct sections (the northern section and southern section), totals approximately 2.4 linear miles. As shown in Figure 1: Regional Location, this segment is located east of Cañada Road, Upper Crystal Springs Reservoir, Pulgas Water Temple, and the historic Filoli Center. Pulgas Ridge Open Space Preserve is located across I-280, just east of the Cañada Road segment, and Edgewood County Park is located southeast of the proposed project area. The southern section of the Cañada Road segment, which is approximately 0.9 mile long, begins approximately 0.5 mile north of Edgewood Road and ends south of the Pulgas Balancing Reservoir. The northern section, which is approximately 1.5 miles long, begins north of the Pulgas Balancing Reservoir and roughly parallels Cañada Road for 1.2 miles, before terminating at a point approximately 0.9 mile south of the intersection of Cañada Road and SR 92.

The existing pipeline along both sections consists of 22-inch-diameter gas transmission pipeline, which would be replaced with new 24-inch-diameter pipeline. The existing pipeline would be abandoned in place. The majority of pipeline replacement for both sections would be sited adjacent and parallel to the existing pipeline, offset by approximately 5 feet; however, the northernmost approximately 0.37 mile (1,900 feet) of the northern section would consist of a new alignment, including approximately 1,000 feet along Cañada Road. As shown in Appendix A: Project Overview Maps, six ephemeral streams would be crossed by the Cañada Road segment, including:

- two ephemeral streams from stations[1] 15+50 to 16+50 and 41+50 to 41+75, which would be spanned aerially;
- three streams at stations 7+00, 26+50, and 98+75, which would be trenched through; and
- one stream from stations 63+50 to 77+75, where horizontal directional drilling (HDD) (described in more detail under Section A.4.1, Pipeline Replacement Procedure) would be implemented.

[1] Station numbering is a linear referencing system used for identifying the location of pipeline features and characteristics by measuring the distance from the start of the pipeline.

A.3.2. Bunker Hill Segment

As shown in Figure 1: Regional Location**,** the Bunker Hill segment is located east of Lower Crystal Springs Reservoir, I-280, and SR 35, and north of SR 92. The segment begins at the Half Moon Bay Valve lot just west of Lexington Avenue and White Plains Court, continues across Bunker Hill Drive, and terminates just west of Laurel Hill Drive. Highlands Elementary School, Highlands Recreation Center, and Highlands-Baywood Park are located east of the segment, and residential homes are located adjacent to the segment.

The Bunker Hill segment is approximately 1.1 miles long and consists of 22-inch-diameter gas transmission pipeline, which would be replaced with new 24-inch-diameter pipeline. The existing pipeline would be abandoned in place, and the new pipeline would be offset by approximately 5 feet. In the trenchless section, the proposed alignment would depart from the existing pipeline by approximately 42 feet between stations 55+00 and 59+00 (see Figure 2, Project Overview Map Bunker Hill Segment, in Appendix A). To avoid trenching through Bunker Hill Drive, the pipeline would be installed under the road using HDD.

A.3.3. Crystal Springs Segment

The Crystal Springs segment is located east of Lower Crystal Springs Reservoir, I-280, the California Department of Transportation (Caltrans) Crystal Springs Safety Roadside Rest Area, and Crystal Springs Golf Course. This segment, which runs parallel to I-280, begins north of San Mateo Creek Canyon and terminates at a point north of the Black Mountain Road and Hayne Road intersection. Residential communities and West Hillsborough Elementary School are located east of the Crystal Springs segment.

The Crystal Springs segment, which totals approximately 1.2 linear miles of existing 22-inch-diameter gas transmission pipeline, would be replaced with new 24- and 30-inch-diameter pipeline. As shown in Appendix A: Project Overview Maps, three swales would be crossed by the Crystal Springs segment. These three swales—which are located at stations 2+00, 39+75, and 54+50—would be trenched through. Jack-and-bore techniques may be used within the Crystal Springs segment, east of the Caltrans Crystal Springs Safety Roadside Rest Area near station 11+00, to avoid trenching through the access road. To avoid trenching through Hayne Road and Black Mountain Road north of Hayne Road, the pipeline would be installed under the road using jack-and-bore techniques.

A.4. CONSTRUCTION ACTIVITIES AND SCHEDULE

The gas pipeline would be replaced primarily by direct burial in an open trench. The 24- and 30-inch-diameter pipeline would be constructed within an 85-foot-wide temporary construction area primarily along or adjacent to the existing route. Appendix A: Project Overview Maps, depicts the proposed alignment and temporary construction areas. The total construction work area, including staging areas, access roads, and temporary work areas ~~easements~~, is approximately 60 acres.

A.4.1. Pipeline Replacement Procedure

Approximately 4.7 total linear miles of pipe would be installed to replace the existing 4.7 miles of pipe. Approximately 4.5 miles of the replacement pipeline would be installed through open trenching. In a typical pipeline replacement construction project, the pipeline would be constructed in a linear manner; however, for most of the proposed pipeline, only one phase of construction would occur at a time per segment.

In addition to open trenching, pipeline replacement along the proposed project route would require construction of two aboveground spans—totaling approximately 125 feet—across two streams, as well as HDD installation for 2,415 feet under an ephemeral stream and approximately 2,300 feet to cross under rare plant populations and continue under Bunker Hill Drive.

As part of the pipeline replacement work, electrolysis test stations—used to locate and assist in corrosion testing of the underground pipeline—and cathodic protection stations would be installed (see Appendix A: Project Overview Maps, for the locations of the stations). The test stations are composed of metal pipes that measure approximately 6 inches in diameter and rise approximately 4 feet from the ground surface.

The pipeline replacement procedure is further detailed in the following sections.

Site Preparation

Site preparation would be required within the 85-foot-wide temporary construction work areas ~~easement~~ along each of the pipeline segments and project work areas, with the exception of paved surfaces, which are assumed to be cleared and graded for construction. Site preparation activities would involve clearing and grading operations such as removing vegetation and debris, preparing an access road, and grading the work areas. Sheep Camp Trail is the only access road that would require preparation, which would include blading and potentially gravelling in steep sections. Along the Cañada Road segment,

approximately 490 trees and approximately 2,975 units of brush would be removed (a unit of brush is defined as an area 4 feet by 4 feet by 4 feet). 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 for construction. Up to approximately 60 acres of land would be cleared and graded for site preparation; of the 60 acres, approximately 38 acres would be within temporary construction work areas ~~easements~~ and up to approximately 2.6 acres would be used for trenching. 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 grow within 5 feet of the centerline of the pipe, for a 10-foot-wide area, to allow for pipeline inspection and root-free areas around the pipe for protection. The area between 5 feet and 10 feet from either side of the centerline of the pipe would be kept free of trees, but brush/shrubs would be allowed to grow back naturally in this area. Preparation would include stripping and salvaging topsoil from the entire construction corridor width and the staging areas. In topsoil areas with heavy weed infestations, the topsoil may not be reused. A site-specific Vegetation Restoration Plan would be developed in coordination with the SFPUC and appropriate resource agencies.

In addition, as part of site preparation, erosion and sediment control best management practices (BMPs) would be implemented prior to any soil disturbance, and would be maintained throughout the construction period to contain excavated material within the approved temporary use areas on an as-needed basis (see Section A.4.7, Best Management Practices). A project-specific Stormwater Pollution Prevention Plan (SWPPP) or amendment to an existing SWPPP would be prepared, as appropriate, for this type of linear underground project.

Trenching

Conventional track-mounted excavators and trenching equipment would be used to excavate the trench. The trench would be approximately 4 to 6 feet wide (wider where needed for soil stabilization) and approximately 6.5 to 8 feet deep. The flow of water downslope would be minimized by the placement of trench plugs spaced every 25 to 100 feet along the alignment. The trench plugs would minimize the voids in the soil to prevent water from being conveyed down the pipeline trench and altering the native hydrological conditions of the site.

The excavated subsoil would be stockpiled on site and maintained in a separate linear pile (windrow) from the topsoil, to be used as trench backfill following pipe installation. Native soil (approximately 6

cubic feet per lineal foot of new pipe) would be used for pipeline bedding. The bottom of the trench would be backfilled with native soil, typically to a depth of 12 inches, to form a pipe bed.

Work areas not within roadways would be fenced and trenches would be left open at night; however, the ends of the open trench would be ramped at an approximate 2-to-1 or 1-to-1 slope overnight to allow any wildlife that may have entered the trench to escape. Trenches would be inspected prior to resumption of work each morning to further ensure that no wildlife entrapment has occurred.

Stringing

Stringing operations involve transporting lengths of pipe (joints) to the site via truck, and positioning them along the trench with a crane or side boom, parallel to the centerline of the trench. Temporary gaps in the strung pipe would be maintained for access, as needed. Stringing would be done within the cleared temporary construction work spaces ~~easement~~. Pipeline segments would be delivered to the proposed project area via I-280 and stored within staging areas, which would be located within proposed temporary ~~easement~~ work space areas. Once the pipeline segments are assembled adjacent to the open trench, they would be welded together into longer spans. Welds would be tested to confirm that they adhere to U.S. Department of Transportation regulations and American Petroleum Institute 1104 specifications. After welding, a crew would coat the pipe with epoxy, in accordance with GS&S E-30 and E-35 standards. PG&E is bound by Code of Federal Regulations Title 49 Section 192 and General Order (GO) 112-E for the design and testing of all pipeline. Where PG&E has stricter written standards, PG&E standards would be followed. The CPUC requires PG&E to design the project to comply with all federal and state regulations. The entire pipeline would be electronically tested to confirm that it is properly coated for corrosion protection prior to lowering it into the trench. The coating would be repaired should it not pass the test.

Pipe Installation

As previously described, the trench bottom would be filled (typically to a depth of 12 inches) with native soil to provide bedding for the pipe. The new pipe, which would be 24- and 30-inch-diameter submerged arc-welded pipe, would then be placed in the trench. 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 potentially damaging debris, the pipe is properly placed, all bends conform to the trench, and the external coating is not damaged.

Backfilling

All soils excavated during trenching would be stockpiled on site and used as backfill in trenches or spread on temporary work areas following construction. Backfilling the trench involves placing the excavated subsoil back into the trench and re-spreading the topsoil to return the surface to its pre-activity grade. 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 native material would then be used to backfill the remaining void in the trench. The trench with the new pipeline would be backfilled to maintain a typical minimum of 4 to 5 feet of cover over the pipe. Stockpiled soil would be backfilled and/or spread on temporary work areas to restore them to the original grade. Spoils (excess soil) would be limited to what cannot be used on site and would primarily be related to the HDD locations. It is anticipated that the proposed project would generate approximately 1,022 cubic yards (cy) of spoils at the Cañada Road segment, 1,013 cy at the Bunker Hill segment, and 100 cy at the Crystal Springs segment, which would be hauled off site.

All disturbed sites would be restored to pre-activity grade, as feasible, with allowance for settling. The criteria for determining potential settling would be based on soil texture, coarse fragment content, and relative compaction. Backfill would be compacted to approximately 85 percent in unpaved and non-traffic areas and to approximately 95 percent in paved and traffic areas. A civil engineer would determine the exact compaction requirements for proper soil restoration during final design. Backfilling would be performed in accordance with federal regulations, specifically CFR 49, Section 192.[2]

Backfilling would typically occur within 72 hours of pipeline installation, and the trench would be visually inspected prior to backfilling to ensure that no wildlife has become entrapped.

Stream and Swale Crossings

The proposed project would cross a total of nine ephemeral streams and swales. As shown in Appendix A: Project Overview Maps, two streams would be crossed using an aerial span method, one stream would be crossed using HDD, and three ephemeral streams would be trenched through at the Cañada Road segment. Three swale crossings at the Crystal Springs segment would be completed using trenching. One ephemeral swale would be crossed using HDD at the Bunker Hill segment. The streams

[2] U.S. Government Printing Office. Electronic Code of Federal Regulations. http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title49/49cfr192_main_02.tpl. Accessed on March 5, 2015.

and swales crossed and the methods of construction are summarized in Table 1: Stream and Swale Crossings, and shown in Appendix A: Project Overview Maps. Up to 0.03 total acre at two additional ephemeral streams in the Cañada Road segment project area could be temporarily affected by trenching activities during construction. Four ephemeral streams would be avoided at the Cañada Road segment due to the design of the proposed project.

TABLE 1: STREAM AND SWALE CROSSINGS

Feature ID	Stream and Swale Type	Station[1]	Construction Method
Cañada Road			
Cañ-D2	Ephemeral Stream	98+75	Trenching
Cañ-D3	Ephemeral Stream	63+50 to 77+75	HDD
Cañ-D4	Ephemeral Stream	41+50 to 41+75	Aerial span
Cañ-D5	Ephemeral Stream	26+50	Trenching
Cañ-D6	Ephemeral Stream	15+50 to 16+50	Arial span
Cañ-D9	Ephemeral Stream	7+00	Trenching
Crystal Springs			
CS-D1	Ephemeral Swale	54+50	Trenching
CS-D2	Ephemeral Swale	39+75	Trenching
CS-D3	Ephemeral Swale	2+00	Trenching
Bunker Hill			
-	Ephemeral Swale	41+00 to 43+00	HDD

[1] Stations or station numbering is a linear referencing system used for identifying the location of pipeline features and characteristics by measuring distance from the start of the pipeline.

Aerial Spans. The two streams located at stations 41+50 to 41+75 and 15+50 to 16+50 (Cañ-D4 and Cañ-D6) (shown in Appendix A: Project Overview Maps) would be crossed with new aerial spans over the streams.[3] Construction at spanned streams would occur in uplands or riparian areas above the ordinary high water mark. See Appendix B: Drainage and Aerial Crossing Views, for the plan and profile views of the stream crossings.

Each span would be constructed by accessing the area from both sides of the stream. The area would be cleared and grubbed, with trees removed within the 85-foot-wide temporary construction work area ~~easement~~. Span one (over stream Cañ-D6) would be approximately 124 feet long. The work area to install the span would be approximately 50 feet long on either side of the stream (100 feet total), and would

[3] The high slopes of these streams make a jack-and-bore operation infeasible without major regrading and benching of the stream banks.

temporarily impact approximately 0.07 acre of riparian vegetation during construction. Span two (over stream Cañ-D4) would be approximately 60 feet long. The work area to install the span would be approximately 50 feet long on either side of the stream (100 feet total), and would temporarily impact approximately 0.16 acre of California Department of Fish and Wildlife (CDFW)-jurisdictional riparian vegetation during construction. PG&E would implement the SWPPP measures to protect the stream from construction activities. The project SWPPP would also include a spill response plan that would be followed in the event of a release. The SWPPP would include spill-response BMPs such as spill kit contents and locations, and provide direction regarding spill response.

Benching would be installed at each side of the stream where the exposed spans would rest. Once the benching is in place, the pre-welded and coated span would be hoisted into location from the north side of each stream. To allow for the crane to safely set up and hoist the new pipe, a flat, level surface measuring 50 feet by 50 feet would be graded on the side of the stream being used for hoisting. Once in place, the pipe would be welded to the new pipe that approaches the stream from both directions. The pipe welds would be inspected and coated for protection. Once the new pipe is installed and brought into service, the existing pipe span would be removed and the abandoned pipe would be capped below grade. All areas would be restored in compliance with the project SWPPP, which includes a site-specific Erosion Control and Grading Plan, and describes backfilling and re-establishing a vegetative cover in previously vegetated areas or implementing other equivalent stabilization measures. SWPPPs for linear utility projects (such as the proposed project) assume that the land would be returned to the original grade.

Horizontal Directional Drilling. The HDD method of construction would be used at two locations for the proposed project. Along the Cañada Road segment, HDD would be used to cross an ephemeral stream from station 63+50 to 77+75 (Cañ-D3). For the Bunker Hill segment, HDD would be used to avoid impacting sensitive biological resources located at station 27+00, and HDD would continue under Bunker Hill Drive to station 47+00. To install the new pipeline segments, two primary construction locations would be used, one on either side of the proposed HDD segments. The HDD process would be accomplished with an angled drill from the ground surface. The laid-out pipe segments would be strung out within the temporary work area prior to drilling. Each HDD location would include an entry bore pit and an exit pit. The bore pits would measure approximately 10 feet by 20 feet, with a depth of approximately 10 feet. A small-diameter pilot hole would be dug through the pipeline alignment. The pipeline then would be pulled through the bore hole by the drilling machine.

Other equipment needed for the HDD operation would be located in staging areas next to the bore pits. The work areas would be approximately 200 feet by 300 feet for both the Cañada Road and Bunker Hill segments. These areas would contain the drilling machine, bore hole, a small crane, water truck, and excavator. The drilling machine, which is self-leveling, would be brought in on a semi-truck. The HDD bore would be approximately 2,415 feet long for the Cañada Road segment and 2,300 feet long for the Bunker Hill segment, with a minimum of approximately 30 feet of clearance under the stream bed for the Cañada Road segment.

Once the pilot bore is complete for the Cañada Road segment of HDD, 2,415 feet of new pipe would be laid out on the ground adjacent to the Cañada Road entry bore pit within the temporary work area. For the Bunker Hill segment of HDD, once the pilot bore is complete, 2,300 feet of the new pipe would be laid out on the ground at the Bunker Hill entry bore pit. The laid-out pipeline at each location would then be pulled through the bore hole by the drilling machine in the exit pit. Once the new pipe is installed and brought into service, the existing Line 109 pipe segment would be removed and the abandoned pipe would be capped below grade.

PG&E would prepare and implement a plan for dewatering during construction activities. Sustained trench dewatering would follow PG&E groundwater dewatering guidance, which would specify containment/settling, screening, filtration, and associated flow rates appropriate to the excavation groundwater yield. To ensure that the work area is dry, excavation water encountered during construction would be pumped into proximal storage and settling tanks. Where practical, accumulated groundwater would be beneficially reused under the Construction General Permit for construction purposes (including active dust control and backfill slurry mix) within the temporary construction work areas ~~easement~~ at the project site. If excessive water is encountered and the associated quality meets applicable waste discharge requirements, it may be discharged into nearby sanitary sewer inlets under permit with the associated agency. In the event that none of the other options are feasible because of weather, timing, the volume of groundwater encountered, or other unforeseen factors, water may need to be trucked off site for disposal at a PG&E-authorized facility. The drilling mud, which would be contained in the pit, would be filtered and processed on site during the bore operations and reused to cool the cutting head, lubricate the bore piping, and stabilize the bore hole. Excess drilling mud would be stored in appropriate containers for hauling and off-site disposal in an appropriate location. All areas would be restored in accordance with the project SWPPP, which includes a site-specific Erosion Control and Grading Plan.

Hydrostatic Testing

Hydrostatic testing, the industry standard for testing gas pipelines, is a method of verifying the maximum operating pressure and ensuring the integrity of a pipeline. Following installation of the new Line 109 pipeline segments, hydrostatic testing would be completed to verify that the pipeline is safe to operate at its designed maximum allowable operating pressure. The following subsections describe the hydrostatic testing process.

Filling. Water is used as the test medium during the hydrostatic test. Test water would be taken from the closest local water source, trucked in, and stored in aboveground storage tanks throughout the filling process.

Performing Hydrostatic Test. Once the pipeline segment is filled to the appropriate level and is ready for testing, the water would be slowly pressurized to the appropriate test pressure. At the end of the test, the pipeline would be emptied of water into storage tanks or trucks, and the water would be disposed of to an appropriate facility or sanitary sewer per discharge permit requirements .

Drying. Once the pipe segment is emptied of water, it is dried using a pig or compressed air.

Venting

The venting process would be implemented to release pressurized natural gas from the pipeline prior to the tie-in. To perform the venting, mainline valves (MLVs) would be closed at Edgewood and Ralston stations (at Edgewood Crossover Station and at Ralston, east of I-280 and south of SR 92) to isolate the pipeline sections for clearance. An existing 6-inch stack at MLV 24.59, Edgewood Crossover Station, would be used during the Cañada Road segment venting process. MLV V-27.93, at Ralston Avenue Valve lot, and MLV V-30.77, at Crystal Springs Valve lot, would be used for the Bunker Hill segment venting process. MLV V-27.93, at Ralston Avenue Valve lot, and MLV 35.77, at Larkspur Valve lot, would be used for the Crystal Springs segment venting process. The contractor may use compressors at the valve lots to conduct this process. The venting process begins with crew closing an MLV in a valve lot. After the MLV is closed, the system is drafted down to a lower pressure by typical use from the distribution line. Once pressure is reduced from drafting, the "blow down" or vent valves are opened, and gas is vented directly to the air. All venting would be performed in accordance with CFR Title 49 and GO 112-E standards.

Tie-In

After the pipe has been constructed, the new 24- or 30-inch-diameter pipeline would be tied in to the existing line. Before the pipe is ready to be put into service, the entire pipeline section would be purged with nitrogen, followed by natural gas, to test permeability. Following this test, valves at the Ralston, Edgewood Crossover, and Larkspur stations would be re-opened and the pipe would be pressurized.

Existing Span Removal

To minimize disturbance, the majority of the retired pipe would be cleaned, capped, and left in place, with the exception of the existing aboveground spans and the Crystal Springs underground pipeline segment. The ends of the existing spans would be cut off below the surface and capped, and the surface would be restored.

PG&E would remove the existing aboveground span located at milepost 27.05 (approximately 5,000 feet south of SR 92 and 100 feet east of Cañada Road). The area would be accessed via an SFPUC Peninsula Watershed gate on the east side of Cañada Road that leads to an existing access road that would be the only entry to the span-removal site. All work for the removal would take place in the staging areas shown in Appendix A: Project Overview Maps.

Two cranes, one excavator, two welding trucks, and a flatbed trailer would be required to remove the span. PG&E would access the northern end of the span from the access road on the east side of the existing bridge in the existing easement. PG&E would remove trees and bush/shrubs, and trim additional trees and brush/shrubs to allow for an excavator and welding trucks to access the location where the pipe would become exposed, and to access the existing concrete support. The southern end of the span would be accessed from the access road on the west side of the existing bridge, where the area was cleared in 2013 for a leak repair along the Line 109 span. PG&E would install temporary scaffolding to support the pipe and provide access up the hill to the upper location of the span. No trees would be removed for the work at the southern end of the span.

PG&E would stage one crane north of the existing bridge and one crane south of the existing bridge; the cranes would not be staged on the bridge. The cranes would provide support while the pipe is cut at both ends of the span. The pipe would be lowered to the ground in the easement. It would then be cut into smaller pieces and hoisted into the flatbed trailer that would remove it from the site.

PG&E would hand dig around the existing pipe to expose the pipe a minimum of 2 feet back into the bank from where it is currently exposed. The abandoned pipe would be cut and capped below grade, and re-buried. The site would be restored to existing conditions.

A.4.2. Site Restoration

Following the pipeline replacement, hydrostatic testing, and deactivation of the existing Line 109 pipeline, the permanent easement, temporary use areas, and all access roads would be restored to match pre-construction grades, including removal of the new access road and returning improved access roads to pre-construction grades. Prior to restoration, details about restoration activities would be provided by the SFPUC Natural Resources and Lands Management Division access permit terms. All construction material and debris would be removed and disposed of at approved facilities, such as appropriately permitted landfills. All work areas would be graded and restored to match pre-construction contours. For areas that contain sensitive habitat, PG&E would develop a post-construction Vegetation Restoration Plan in coordination with the SFPUC and resource agencies. The Vegetation Restoration Plan would consist of a variety of elements, which could include a discussion of locations and depth of topsoil segregation, seed collection and locally collected native seed mix to be used, erosion-control methods, and monitoring requirements.

A.4.3. Access

Construction traffic would be restricted to the approved haul-and-access roads shown in Appendix A, Project Overview Maps. Primary access to the Cañada Road segment would be from Cañada 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 I-280 off-ramp to Edgewood Road. Additional access would be obtained along SFPUC access roads, including one road that provides access to Edgewood Crossover Station approximately 0.75 mile north of Edgewood Road off of Cañada Road, near the Pulgas Balancing Reservoir, and a route along Sheep Camp Trail. To bring the pipeline down along the edge of Cañada Road, a new construction access road, which is shown in Appendix A: Project Overview Maps, would be established approximately 1 mile south of the SR 92/Cañada Road intersection. The traffic on Cañada Road at the 1,000-foot-long section would be limited to one lane of traffic and one bike lane Monday through Saturday, from 7 a.m. to 5:30 p.m., and no work would be performed on Sundays. Traffic direction would be flagged and altered based

on queuing times. Sheep Camp Trail would be closed to public use for approximately 7 months. The trail would be closed from Cañada Road to the Scenic Overlook access gate. No alternative routes to this portion of Sheep Camp Trail exist.

Primary access to the Bunker Hill segment would be through two access points. The southern access would be from a gate near Lexington Avenue and Allegheny Way, and the northern access would be from a gate on the north side of Bunker Hill Drive. No new access roads would be created for this segment.

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

A.4.4. Temporary Work Areas

In addition to the 85-foot-wide temporary construction work area ~~easement~~, 15 additional temporary work areas—totaling approximately 38 acres—would be cleared and graded for equipment staging and temporary storage of equipment and materials during construction through the issuance of a revocable license. The locations of these areas are shown in Appendix A: Project Overview Maps, within the proposed ~~temporary easement~~ revocable license areas.

For the Cañada Road segment, a total of approximately 19 acres would be utilized as temporary work areas, including:

- One work area at the Edgewood Crossover Station, at the southeastern end of the segment near I-280 between stations 15+00 and 20+00
- Three work areas adjacent to the Pulgas Balancing Reservoir adjacent to Cañada Road
- One work area near station 40+00
- One work area at the northwestern end of the segment, adjacent to Cañada Road
- Two work areas at the northwestern end of the segment, near I-280

For the Bunker Hill segment, a total of approximately 7 acres would be utilized as temporary work areas, including:

- One work area at the Half Moon Bay tap, near the southern end of the site
- One work area just north of Bunker Hill Drive

- One work area at the northern terminus of the segment

For the Crystal Springs segment, a total of approximately 11 acres would be utilized as temporary work areas, including:

- One work area at the southern end of the segment, near the Windemere Road gate
- One work area near the existing valve lot, near the Caltrans Crystal Springs Safety Roadside Rest Area gate
- One work area at the far northern part of the segment, north of Black Mountain Road
- One work area west of I-280, near the northern terminus of the segment

These areas would be restored to pre-construction contours once construction has been completed. Topsoil would be salvaged and stockpiled separately for redistribution over the staging areas following project completion, except in areas where non-natives dominate the vegetation. PG&E would develop habitat protection measures in coordination with SFPUC and the appropriate resource agencies to restore disturbed areas.

A.4.5. Schedule

Construction of the proposed project is anticipated to occur from April 2016 through July 2017; an estimated construction schedule is provided in Table 2: Estimated Construction Schedule. Daily construction activities would typically occur between the hours of 7 a.m. and 5:30 p.m., Monday through Saturday, and would be within the hours allowed by San Mateo County Code of Ordinances Chapter 4.88.360. HDD work is not anticipated to occur at night. However, in the case of an emergency condition (e.g., if the drill gets stuck or drilling goes slower than expected), 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 without stopping. No work would be performed on Sundays, including work along Cañada Road during the county's Bicycle Sundays. Cañada Road is a Recreational Bicycle Route between SR 92 and Woodside Road, and the roadway is closed to motorized traffic every Sunday, allowing for recreational activities such as bicycling.[4]

[4] San Mateo County Parks Department. 2014. Bicycle Sunday. http://parks.smcgov.org/bicycle-sunday. Accessed on March 5, 2015.

TABLE 2: ESTIMATED CONSTRUCTION SCHEDULE

Construction Phase	Construction Period	Approximate Number of Days
Bunker Hill Segment		
Pre-Construction	Month 1	2
Establish Construction ROW	Month 1	8
Horizontal Directional Bore	Month 1 – Month 2	25
Excavation	Month 2	14
Pipe Installation	Month 2 – Month 3	19
Backfill	Month 3	12
Testing	Month 3 – Month 4	25
ROW Grading and Final Activities	Month 4 – Month 5	41
Cañada Road Segment		
Pre-Construction	Month 4	2
Establish Construction ROW	Month 4	20
Horizontal Directional Bore	Month 4 – Month 5	25
Excavation	Month 6 – Month 7	34
Pipe Installation	Month 7 – Month 8	43
Backfill	Month 8 – Month 9	25
Testing	Month 9 – Month 10	28
ROW Grading and Final Activities	Month 10 – Month 11	33
Crystal Springs Segment		
Pre-Construction	Month 9	2
Establish Construction ROW	Month 9 – Month 10	19
Jack and Bore	Month 10 – Month 11	29
Excavation	Month 11 – Month 12	42
Pipe Installation	Month 12 – Month 13	29
Backfill	Month 13 – Month 14	21
Testing	Month 14	22
ROW Grading and Final Activities	Month 14 – Month 15	33

A.4.6. Construction Personnel and Equipment

Construction contractors would prepare the proposed project areas, deliver and install facilities, and complete final cleanup and restoration of the proposed project sites. The number of crewmembers on site each day during construction would vary depending on work activities; however, the maximum number of crewmembers would be approximately 53 per day for up to a 7-month period at the Cañada Road segment.

Construction equipment to be used is summarized in Table 3: Construction Equipment Summary. It is estimated that each of the proposed project segments would generate up to 10 daily round-trip passenger

vehicle trips (assuming vans or carpooling of workers) and 10 daily round-trip truck trips, on average. As shown in Table 2, construction of the Bunker Hill and Cañada Road segments would overlap for a total of approximately 60 days, and in the following year, construction of the Cañada Road and Crystal Springs segments would also overlap for a total of approximately 60 days. PG&E estimates 12 daily passenger vehicle round-trips and 12 daily truck round-trips during this time. As part of the PG&E construction contract documents for the proposed project, workers engaged in construction activities would be required to carpool. A construction yard located off of Paul Scannell Drive would be the primary carpool meeting location, and the Caltrans laydown yard adjacent to the Edgewood Crossover Station would also be used.

TABLE 3: CONSTRUCTION EQUIPMENT SUMMARY

Construction Phase/Activity	Type of Equipment	U.S. Environmental Protection Agency Engine Tier	Estimated Maximum Quantity (Per Segment)
Pre-Construction: Drug testing/safety orientation/PG&E onboarding/OQ exams/mobilize	Light Duty Truck	n/a (gasoline engine)	4
	Heavy Duty Truck	4	11
	Tractor Trailer	4	1
	Boom Truck	4	1
Establish Construction ROW: Clear, grub, and grade; install BMPs	Light Duty Truck	n/a (gasoline engine)	4
	Heavy Duty Truck	4	1
	Water Truck	4	2
	Back Hoe	4i	1
	Grader	3	1
	Bulldozer	4	2
	Compressor	3	1
Directional Bore: Horizontal directional bore	Light Duty Truck	n/a (gasoline engine)	4
	Heavy Duty Truck	4	1
	Track Hoe	3	1
	Side Boom	4i	2
	Welding Rig	4	2
	Compressor	3	1
	Directional Bore Machine	3	1
Excavation: Excavate pipe trench	Light Duty Truck	n/a (gasoline engine)	10
	Heavy Duty Truck	4	2
	Water Truck	4	2
	Track Hoe	3	2
	Bulldozer	4	1
	Boom Truck	4	1
	Generator	3	1

Construction Phase/Activity	Type of Equipment	U.S. Environmental Protection Agency Engine Tier	Estimated Maximum Quantity (Per Segment)
Pipe Installation: String pipe, weld, coat, lower in, shade	Light Duty Truck	n/a (gasoline engine)	10
	Heavy Duty Truck	4	2
	Water Truck	4	2
	Side Boom	4i	4
	Boom Truck	4	1
	Welding Rig	4	6
	Compressor	3	1
	Sand Blaster	n/a (gasoline engine)	1
	Generator	3	1
Backfill: Backfill trench	Light Duty Truck	n/a (gasoline engine)	10
	Heavy Duty Truck	4	2
	Water Truck	4	2
	Track Hoe	3	1
	Bulldozer	4	1
	Generator	3	1
Testing: Tie-in, hydrostatic testing, pipe cleaning	Light Duty Truck	n/a (gasoline engine)	3
	Heavy Duty Truck	4	1
	Water Truck	4	4
	Track Hoe	3	1
	Side Boom	4i	1
	Welding Rig	4	3
	Compressor	3	2
ROW Grading and Final Activities: Zinc ribbon, grading, stabilization	Light Duty Truck	n/a (gasoline engine)	3
	Heavy Duty Truck	4	1
	Water Truck	4	3
	Grader	3	1
	Bulldozer	4	1
	Trencher	3	1

A.4.7. Best Management Practices

Construction crews working on the proposed project would implement the following routinely used relevant BMPs to ensure crew and public safety, and to avoid or further minimize potential project-related impacts:

Health and Safety Plan. An on-site Health and Safety Plan, including emergency access and evacuation procedures, would be maintained on site and implemented during construction.

Litter and Trash Management. During project activities, all trash would be contained and removed from the project sites on a weekly basis. Construction waste would be recycled, to the maximum extent possible, during construction. All trash and construction-related debris would be removed from the work areas following the end of construction.

Prohibited Activities. Trash dumping, firearms, open fires, and pets would be prohibited at all work locations. Smoking is prohibited on SFPUC lands.

Dewatering Plan. A Dewatering Plan would be developed and implemented for dewatering activities during construction, and would include PG&E groundwater dewatering guidance, which would specify containment/settling, screening, filtration, and associated flow rates appropriate to the excavation groundwater yield.

Stormwater Pollution Prevention Plan. A SWPPP would be developed and implemented that would specify BMPs designed to prevent or minimize construction materials and sediment in stormwater runoff. Additionally, the SWPPP would include a Spill Response Plan. The SWPPP would be subject to review and approval by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Potential BMPs that may be included in the SWPPP, as dictated by ground conditions, include:

- installation of sediment-control BMPs, including fiber rolls, water bars, silt fence, gravel bag berms, and protection of existing vegetation (e.g., fencing or flagging), or other sediment-containment methods placed upslope of work areas to control stormwater run-on and/or downslope of work areas before the start of earth-disturbing activities;
- protection of drain inlets from receiving polluted stormwater through the use of filters such as fabrics, gravel bags, or fiber rolls;
- protection of stockpiles of soil, construction materials, and construction debris with plastic sheeting and fiber roll berms prior to storm events;
- placement of sediment and erosion-control BMPs, such as fiber rolls, gravel bag berms, plastic or geotextile sheeting, soil binders, rolled erosion-control products, gravel, or mulch on disturbed slopes prior to storm events;
- application of tackifier to exposed surfaces and stockpiles to bond soil and enhance growth of seed;

- construction of a stabilized construction entrance/exit to prevent tracking dirt onto public roadways (e.g., steel rumble plates);
- implementation of vehicle and equipment storage, maintenance, and refueling BMPs to prevent or minimize pollutants in stormwater runoff, including prohibition of overnight parking of mobile equipment within 100 feet of wetlands, culverts, or streams and swales, and use of oil pans under stationary vehicles;
- positioning of stationary equipment (e.g., pumps, generators) within a secondary containment vessel when being used or stored within 100 feet of wetlands, culverts, or streams and swales; and
- implementation of good housekeeping BMPs related to storage and use of construction materials and management of wastes.

Vehicle Maintenance. All equipment would be maintained so that no leaks of automotive fluids (e.g., fuels, solvents, or oils) would occur, and all refueling and maintenance of vehicles and other construction equipment would be restricted to designated staging areas located at least 100 feet from any down-gradient aquatic habitat.

Construction Management Plan. Construction management contact information would be included in the project Construction Management Plan(s), and as part of that plan, would be posted at each primary access point—including at the access points along Cañada Road to the existing and (one) new SFPUC access roads, at the north and south gates for the Bunker Hill segment, and at the Caltrans Crystal Springs Safety Roadside Rest Area gate and Hayne Road gate for the Crystal Springs segment—for the public to call with questions.

Sheep Camp Trail Closure. PG&E would notify the County of San Mateo Parks Department regarding the anticipated weeks/months of construction for the Cañada Road segment, and the closure of Sheep Camp Trail during those times, for potential posting on the San Mateo Parks Department website. PG&E would also post this construction information on its website. PG&E would note the closure dates on a sign at the trailhead and a second sign located a safe distance from the construction area.

Work Zone Barriers. PG&E would implement BMPs for work zone barriers, including, but not limited to the installation of appropriate barriers between work zones and transportation facilities, posting of adequate signage, and establishment of adequate on-site parking and staging areas.

Worker Carpooling. As part of the PG&E construction contract documents for the proposed project, workers engaged in construction activities would be required to carpool.

A.5. OPERATION AND MAINTENANCE

PG&E is proposing to acquire approximately 11 acres of new permanent easement to accommodate ongoing operation and maintenance activities; however, the pipeline replacement would require no change to existing operation and maintenance activities.

A.6. REQUIRED ACTIONS AND APPROVALS

The proposed project would require the following agency actions, approvals, and permits for the Cañada Road segment:

- U.S. Army Corps of Engineers Clean Water Act (CWA) Section 404 Nationwide Permit 12: Utility Line Activities
- U.S. Fish and Wildlife Service federal Endangered Species Act Section 7 Consultation
- CDFW California Fish and Game Code Section 1602 Lake or Streambed Alteration Agreement
- San Francisco RWQCB CWA Section 401 Water Quality Certification
- State Water Resources Control Board CWA Section 402 Permits National Pollutant Discharge Elimination System Program – General Construction Storm Water Permit
- CCSF and SFPUC Environmental Review, Revocable License Agreement for Temporary Workspace, and Permanent Easement Approval; the easement approval by the SFPUC would be considered the City's approval of the project
- U.S. Department of the Interior, Golden Gate National Recreation Area Scenic Easement and Scenic and Recreation Easement concurrence

The proposed project would require the following agency actions, approvals, and permits for the Bunker Hill and Crystal Springs segments:

- State Water Resources Control Board CWA Section 402 Permits National Pollutant Discharge Elimination System Program – General Construction Storm Water Permit

- CCSF and SFPUC Environmental Review, Revocable License Agreement for Temporary Workspace, and Permanent Easement Approval; the revocable license and easement approval by the SFPUC would be considered the City's approval of the project
- U.S. Department of the Interior, Golden Gate National Recreation Area Scenic Easement and Scenic and Recreation Easement concurrence

B. PROJECT SETTING

B.1. REGIONAL AND LOCAL SETTING

The PG&E Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project (proposed project) is located in unincorporated San Mateo County within undeveloped land that supports grassland, coastal scrub, riparian vegetation, and some areas of non-native grassland. The topography across the project area includes gradually sloping hillsides that drop into scattered ephemeral streams and swales. The pipeline route crosses San Francisco Public Utilities Commission (SFPUC) Peninsula Watershed lands and is located east of the Upper Crystal Springs Reservoir. These lands are used for water collection, storage, and quality protection, and are off-limits to the public, except along hiking trails that were jointly established by the SFPUC, U.S. Department of the Interior, California Department of Transportation, and San Mateo County.

As described in Section A, Project Description, the Cañada Road segment would begin approximately 0.5 mile north of Edgewood Road, west of Interstate 280 (I-280), and end south of the intersection of State Route (SR) 92 and I-280, between the east side of Cañada Road and west side of I-280. The Bunker Hill segment is located east of Lower Crystal Springs Reservoir, I-280, and SR 35/Skyline Boulevard, and north of SR 92. This segment begins at the Half Moon Bay Valve lot just west of Lexington Avenue and White Plains Court, continues across Bunker Hill Drive, and terminates just west of Laurel Hill Drive. Highlands Elementary School, Highlands Recreation Center, and Highlands-Baywood Park are located east of the segment, and residential homes are located adjacent to the segment. The Crystal Springs segment is located east of Lower Crystal Springs Reservoir, I-280, the California Department of Transportation (Caltrans) Crystal Springs Safety Roadside Rest Area, and Crystal Springs Golf Course. This segment, which runs parallel to I-280, begins north of San Mateo Creek Canyon and terminates at a point north of the Black Mountain Road and Hayne Road intersection. Residential communities and West Hillsborough Elementary School are located east of the Crystal Springs segment.

B.2. OTHER PROJECTS IN THE VICINITY

Past, present, and reasonably foreseeable future projects occurring in the vicinity of the proposed project sites could result in cumulative impacts in combination with proposed project impacts. These projects have been identified by the local planning agencies in the project vicinity, including San Mateo County

and surrounding cities. A complete list of potential cumulative projects in the proposed project vicinity is presented in Table 4: Past, Present, and Reasonably Foreseeable Actions.

These projects include numerous proposals for residential developments in urban areas of San Mateo County, as well as the cities of Belmont, Redwood City, and San Carlos. A few projects are proposed in the SFPUC Peninsula Watershed lands surrounding the proposed project sites. The discussion of potential cumulative impacts is included in the individual environmental resource area sub-sections within Section E, Evaluation of Environmental Effects.

TABLE 4: PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Project	Anticipated Schedule Information	Location/Impacted Area	Brief Description	Distance from Project Site (approximate)
City of San Mateo				
Kingridge Sewer Line	The project is expected to be completed during the summer of 2015, dependent on environmental permits.	Along Kingridge Drive.	The project proposes to rehabilitate the sanitary sewer line in Kingridge Canyon. Construction involves the stabilization of the pipe's foundation within Kingridge Canyon.	1.9 miles east of the Bunker Hill segment
Redwood City				
2014-2015 Water Main Replacement Project	Project construction is anticipated to run from August 2015 to December 2015.	The project is located at 623 Southdale Way.	The project involves water main replacement to improve potable water distribution.	2 miles southeast of the Cañada Road segment
State Route (SR) 92: State Route 92 Uphill Slow Vehicle Lane/Safety Improvements	The California Department of Transportation (Caltrans) work schedule is currently unknown.	In San Mateo County on SR 92 from SR 35 (south) (K.P. 8.0, P.M. 5.0) to Interstate 280 (K.P. R11.7, P.M. R7.3). The total length of the project is 3.4 kilometers (2.1 miles).	Caltrans is proposing to provide an uphill slow vehicle lane, a median barrier, a grade separation structure, and to upgrade the existing facility to current design standards in response to the safety and operational problems incurred as a result of the traffic queues formed by slow-moving vehicles. In addition, an access road for the San Francisco Water Department and a turbid/clean water collection system are included as part of the project.	0.3 mile southwest of the Bunker Hill segment
Line 109 Edgewood Gas Transmission Line Replacement Project	Work schedule is currently unknown.	Along the Line 109 alignment, approximately 1.3 miles south of the Cañada Road segment.	PG&E will replace a segment of the underground Line 109 pipeline primarily adjacent to the existing gas transmission line. The pipeline will be underground once it is replaced, and the right-of-way will be restored to allow for pipeline operations. Where special-status species habitat is removed, it will either be restored or compensation will be provided.	1.3 miles south of the Cañada Road segment
City of San Carlos				
Winding Way Lots-Annexation Proposal	Work schedule is currently unknown.	On Winding Way.	The Winding Way project involves the annexation of 3.41 acres of unincorporated San Mateo County land to the City of San Carlos and subsequent development of this land for single family residential use, as anticipated under the City of San Carlos General Plan.	1.8 miles northeast of the Cañada Road segment

Project	Anticipated Schedule Information	Location/Impacted Area	Brief Description	Distance from Project Site (approximate)
Highlands Park – Lower Athletic Field	Work schedule is currently unknown.	Highlands Park.	Conversion of the surface of the 3.44-acre Lower Athletic Field in Highlands Park from the existing natural turf to synthetic turf.	1.9 miles northeast of the Cañada Road segment
City of Belmont				
Crystal Springs Uplands School	The project is currently in the process of creating an Initial Study for a Mitigated Negative Declaration.	6-8, and 10 Davis Drive Belmont, CA 94002.	The proposed project involves the demolition and replacement of office space to build a private middle school.	1.3 miles north of the Cañada Road segment
City of Menlo Park				
Line 109 Sharon Heights	Replacement of existing gas transmission pipeline completed in 2014	Along the Line 109 alignment from Sharon Heights Golf Club in Menlo Park to an area east of I-280 and south of Woodside Road in Woodside.	PG&E replaced an approximately 1.29-mile segment of the underground Line 109 pipeline primarily adjacent to the existing gas transmission line. The right-of-way will be restored to allow for pipeline operations. No special status species habitat was removed.	5.5 miles southeast of the Cañada Road segment
Line 109 San Francisquito Creek	Replacement of existing gas transmission pipeline completed in 2014	Near San Francisquito Creek and Stanford University Golf Course in Menlo Park.	PG&E replaced an approximately 0.27-mile segment of the underground Line 109 pipeline primarily adjacent to the existing gas transmission line. The right-of-way will be restored to allow for pipeline operations. No special status species habitat was removed.	7.2 miles southeast of the Cañada Road segment
San Mateo County				
Crystal Springs Valve Station Upgrade	Completed 2013	On SFPUC watershed lands on Buri Buri Ridge east of I-280 and north of Highway 92.	This PG&E project involved the replacement of existing valves, installation of new SCADA (supervisory control and data acquisition) equipment, pressure transmitters, over-pressure protection, in-line inspection facilities, and fencing.	Adjacent to the Crystal Springs segment
Edgewood Valve Station Upgrade	Completed 2013	On SFPUC watershed lands near I-280 and Edgewood Road.	This PG&E project involved the replacement of existing valves, installation of new SCADA equipment, pressure transmitters, over-pressure protection, in-line inspection facilities, and fencing.	Adjacent to Cañada Road segment
Half Moon Bay Valve Automation Project	Completed 2012	On SFPUC watershed lands east of I-280 and north of Ralston Avenue.	This PG&E project involved the replacement of existing valves, installation of new SCADA equipment, pressure transmitters, over-pressure protection, in-line inspection facilities, and fencing.	Adjacent to Bunker Hill segment

Project	Anticipated Schedule Information	Location/Impacted Area	Brief Description	Distance from Project Site (approximate)
Line 109 4B Replacement	Completed 2012	On SFPUC watershed lands at Pulgas Ridge east of I-280 and between Highway 92 and Trousdale Drive in Burlingame.	This PG&E project involved the replacement of an approximately 2,500-foot long section of 22-inch diameter pipeline with a 30-inch diameter pipeline of the same length, installation of cathodic corrosion protection equipment, and line markers to identify the pipeline route.	Adjacent to Bunker Hill Segment, directly south of the Half Moon Bay Valve lot
Line 109 4D Replacement	Completed 2012	On SFPUC watershed lands west of Highway 280, adjacent to Golf Course Drive in the Crystal Springs Golf Course.	This PG&E project involved the replacement of an approximately 0.67-mile long section of 22-inch diameter pipeline with a 24-inch diameter pipeline of the same length, installation of cathodic protection monitoring facilities, and line markers to identify the pipeline route.	0.7 mile north of the Crystal Springs Segment
San Andreas Station In-Line Upgrade	Completed 2012	PG&E San Andreas Valve lot Near Hwy. 35 (Skyline Blvd.) and the San Andreas Trail.	This PG&E project involved the retrofit of the existing PG&E Line 132 gas pipeline at the San Andreas Station located on the SFPUC's Peninsula Watershed near Skyline Boulevard to facilitate in-line inspection and maintenance.	5.6 miles north of the Crystal Springs Segment
Larkspur Valve Automation Project	Completed 2011	South of Larkspur Drive adjacent to the city of Millbrae.	This PG&E project involved the installation of three automated shut off valves and five manually operated valves on PG&E underground gas transmission Lines 109 and 132, plus new crosstie piping between the transmission lines.	4.1 miles north of the Crystal Springs Segment
Crystal Springs Dam Bridge Replacement Project	Construction is anticipated to begin in the fall 2015 pending the bid process and is expected to take 2 years to complete.	Along Skyline Bridge and Lower Crystal Springs Dam.	This project will construct a new bridge on top of the Lower Crystal Springs Dam. The design for the bridge has been completed, but construction has not started.	0.6 mile south of the Crystal Springs segment
Line 109 San Mateo Creek Pipeline Replacement Project	Construction is expected to begin in 2017, is expected to take 1 year, and be completed in 2018.	On SFPUC property in San Mateo County.	Pacific Gas and Electric Company (PG&E) will replace a segment of underground gas transmission Line 109 offset from the existing gas transmission line in the existing corridor. The pipeline will be underground once it is replaced, and the right-of-way will be restored to allow for pipeline operations.	North of the Bunker Hill segment; would begin where the Bunker Hill segment ends along the pipeline

Project	Anticipated Schedule Information	Location/Impacted Area	Brief Description	Distance from Project Site (approximate)
Line 109 Farm Hill Boulevard	Replacement of existing gas transmission pipeline completed in 2014	Along the Line 109 alignment from Woodside Road to Emerald Hills Golf Course in Woodside/Redwood City.	PG&E replaced an approximately 1.64-mile segment of the underground gas transmission Line 109 pipeline primarily adjacent to the existing gas transmission line. The right-of-way will be restored to allow for pipeline operations. The project impacted serpentine grassland, danthonia prairie, and Marin western flax.	2.5 miles southeast of the Cañada Road segment

C. COMPATABILITY WITH EXISTING ZONING AND PLANS

	Applicable	*Not Applicable*
Discuss any variances, special authorizations, or changes proposed to the Planning Code or Zoning Map, if applicable.	☐	☒
Discuss any conflicts with any adopted plans and goals of the City or Region, if applicable.	☒	☐
Discuss any approvals and/or permits from City departments other than the Planning Department or the Department of Building Inspection, or from Regional, State, or Federal Agencies.	☒	☐

This section includes a discussion of the compatibility of the Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project (proposed project) with current, applicable land use plans from various federal, state, and local agencies.

The proposed project would be located entirely within property owned by the San Francisco Public Utilities Commission (SFPUC) in unincorporated San Mateo County, and would not change or conflict with the zoning provisions of San Mateo County or the City and County of San Francisco (CCSF). Although the CCSF's land use plans and policies are primarily applicable to projects within the jurisdictional boundaries of San Francisco, the SFPUC is guided by the San Francisco City Charter, along with other city plans and policies, as described in the following paragraphs. The proposed project is within the discretionary jurisdiction of the California Public Utilities Commission, and is not subject to local discretionary zoning or permitting requirements. However, the proposed project would require a new easement through the SFPUC watershed, which would require approval from the SFPUC and the San Francisco Board of Supervisors. Because the proposed project is not subject to local zoning or permitting, these issues are not further discussed in detail in this document.

While PG&E's pipeline replacement project is subject to state and federal regulations, and neither the CCSF nor the County of San Mateo have approval authority over the pipeline, San Francisco does have the authority to grant PG&E easements across approximately 4.7 miles of SFPUC Peninsula Watershed lands within unincorporated San Mateo County. Therefore, conformity with local plans and polices, including the elements of the San Francisco or San Mateo County general plans, is discussed for the purposes of CEQA review.

C.1. CITY AND COUNTY OF SAN FRANCISCO PLANS AND POLICIES

C.1.1. Extraterritorial Lands

Under the San Francisco City Charter,[5] the SFPUC has authority over the management, use, and control of extraterritorial lands; that is, properties outside of the city that the CCSF owns or leases, or over which it holds easements. Although the San Francisco General Plan and Sustainability Plan were developed for lands within the jurisdictional boundaries of San Francisco, their underlying goals apply to SFPUC projects on extraterritorial lands. The Peninsula Watershed Management Plan specifically applies to CCSF-owned extraterritorial lands in Alameda, Santa Clara, and San Mateo counties.

C.1.2. San Francisco General Plan

The general plan is composed of objectives and policies that guide land use decisions and provide the framework for development in the city. All land use documents—such as the Planning Code, area-specific plans, and redevelopment plans—must be consistent with the general plan. The charter approved by the voters in November 1995 requires the Planning Commission to recommend amendments to the general plan to the Board of Supervisors for approval. This approval changes the general plan's status from an advisory to a mandatory document and underscores the importance of referrals establishing consistency with the general plan before actions by the Board of Supervisors on a variety of actions.[6]

As the SFPUC and Board of Supervisors decide whether to approve or disapprove the easements for the proposed project, decision makers will consider the compatibility of the proposed project with general plan policies that do not relate to physical environmental issues. Any potential conflicts identified as part of the approval process would not alter the physical environmental effects of the proposed project. However, there are no conflicts between the proposed project and policies that relate to physical environmental issues discussed in this Initial Study. The general plan elements that may be relevant to the proposed project are briefly described in the following paragraphs.

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[5] Section 8B.121 of the City Charter provides that "… the Public Utilities Commission shall have exclusive charge of the construction, management, supervision, maintenance, extension, expansion, operation, use and control of all water, clean water and energy supplies and utilities of the City as well as the real, personal and financial assets, that are under the Commission's jurisdiction or assigned to the Commission under Section 4.132."

[6] CCSF. San Francisco General Plan. http://www.sf-planning.org/ftp/General_Plan/index.htm. Accessed on January 28, 2014.

Air Quality Element. This element promotes the goal of clean air planning through objectives and policies aimed at adherence to air quality regulations, advocating alternatives to the private automobile, and minimizing particulate matter emissions from road and construction sites.

Community Safety Element. This element serves as a guide for decisions related to economic growth and change in San Francisco. The three goals of the element—continued economic vitality, social equity (with respect to employment opportunities), and environmental quality—address general citywide objectives as well as for each of the major sectors of San Francisco's economy.

Environmental Protection Element. This element addresses the impact of urbanization on the natural environment. The element promotes the protection of plant and animal life and freshwater sources; it also speaks to the responsibility of San Francisco to provide a permanent, clean-water supply to meet present and future needs, and to maintain an adequate water distribution system.

Recreation and Open Space Element. This element contains objectives and policies related to maintaining, creating, and enhancing recreational and open space resources.

The proposed project involves replacing an existing gas pipeline that is located within an established utility corridor, offset approximately 5 feet from the existing line in the same corridor, with four exceptions: 1) approximately 0.37 mile of pipeline along the Cañada Road segment would be replaced in a new alignment to avoid impacting biological resources; 2) approximately 2,300 feet of trenchless (drilled) pipeline along the Bunker Hill segment, which would deviate approximately 42 feet from the existing pipeline to avoid a rare plant population; 3) an approximately 200-foot-long section of pipeline at the northern end of the Bunker Hill segment, which would avoid several constraints associated with existing electric transmission towers, an electric substation, and Interstate 290 (I-280); and 4) the Crystal Springs segment would be replaced in place. Construction of the proposed project would result in criteria air pollutant emissions through the use of construction equipment and the creation of dust. However, PG&E would implement site-specific construction best management practices to control emissions, and implementation of an Emissions Minimization Construction Plan (Mitigation Measure M-AQ-1, Dust Control) would reduce construction-related air quality impacts to a less-than-significant level. Therefore, the proposed project would be compatible with the Air Quality Element. Because the proposed project involves replacing the existing Line 109 natural gas pipeline with a new pipeline to facilitate the use of an automated in-line inspection tool to detect for anomalies, pipeline safety would be enhanced, and the

proposed project would be consistent with the objectives of the Community Safety Element. The replacement pipeline would also be within the existing utility corridor, with the exception of approximately 0.37 mile (1,900 feet), of the northern section of the Cañada Road segment that would require new alignment and would be primarily installed below grade; therefore, the project would not degrade the existing character of the area. Biological and water impacts are addressed and mitigated to less-than-significant levels (see E.13, Biological Resources, and E.15, Hydrology and Water Quality). Thus, the proposed project would not conflict with the Environmental Protection Element. Temporary closures of recreational trails and facilities would be short term and confined to the construction duration; therefore, the proposed project would not contribute long-term effects and would meet the objectives and policies of the Recreation and Open Space Element. Because the proposed project would not result in changes to the general plan and is consistent with land use plans, the proposed project would not conflict with any general plan objectives or policies.

C.2. ACCOUNTABLE PLANNING INITIATIVE

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the Planning Code to establish eight priority policies. These policies, and the sections of this environmental evaluation addressing the environmental issues associated with the policies, are: (1) preservation and enhancement of neighborhood-serving retail uses, (2) protection of neighborhood character (see Initial Study Checklist criterion E.1[c], Land Use and Land Use Planning), (3) preservation and enhancement of affordable housing (see Initial Study Checklist criterion E.3[b], Population and Housing), (4) discouragement of commuter automobiles (see Initial Study Checklist criteria E.5[a], E.5[b], and E.5[f], Transportation and Circulation), (5) protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership (see Initial Study Checklist criterion E.1[c], Land Use and Land Use Planning), (6) maximization of earthquake preparedness (see Initial Study Checklist criteria E.14[a-d], Geology and Soils), (7) landmark and historic building preservation (see Initial Study Checklist criterion E.4[a], Cultural Resources), and (8) protection of open space (see Initial Study Checklist criteria E.9[a] and E.9[b], Wind and Shadow, and Initial Study Checklist criteria E.10[a] and E.10[b], Recreation). The City is required to find that the proposed project or legislation is consistent with the priority policies. It must do this before issuing a permit for any project that requires an initial study under the California Environmental Quality Act (CEQA); before issuing a permit for any demolition, conversion, or change of use; and before taking any action that requires a finding of consistency with the general plan.

The proposed project involves replacing an existing natural gas pipeline, which would not alter or affect neighborhood-serving retail uses, and therefore, the proposed project would be consistent with priority policy number one (1). Implementation of the proposed project would not change the existing character of the area, as it would be located on undeveloped SFPUC lands, and would not include any structures. Construction-related impacts would be temporary, and would only be visible during construction, and therefore, as shown in the evaluation in Section E.1[c], Land Use and Land Use Planning, the proposed project would be consistent with priority policy number two (2). The proposed project would not include any structures for human occupancy, and would be located on undeveloped SFPUC land. As such, the evaluation in Section E.3[b], Population and Housing, demonstrates why the proposed project would be consistent with priority policy number three (3). As the proposed project is located on undeveloped SFPUC land and would not include construction of new public roadways, it would not promote increased commuter automobile usage or conflict with any transportation and circulation policies or programs, and therefore, the proposed project would be consistent with priority policy number four (4), as evaluated in Section E.5[a, b, and f], Transportation and Circulation. The SFPUC land on which the proposed project is located is undeveloped and used as a utility corridor. No commercial or residential development would result from construction of the proposed project, and the existing character of the area would not be altered; therefore, the proposed project would be consistent with priority policy number five (5), as evaluated in Section E.1[c], Land Use and Land Use Planning. As described in Section E.14, Geology and Soils, the proposed project is located in a seismically active area; however, it is not located within an Alquist-Priolo Earthquake Fault Zone. Replacement of the existing pipeline is necessary to facilitate the use of an automated in-line inspection tool that would detect anomalies within the pipeline, thus greatly enhancing its integrity and safety. The pipeline would be designed and constructed in accordance with all applicable regulations regarding pipeline design and safety, and would be constructed to withstand seismic events described in Section E.14, Geology and Soils. Any previously identified areas of unstable soils would be avoided through the use of aerial spans or horizontal directional drilling techniques. Finally, the proposed project would not include any structures for human occupancy, and thus, would not expose people or structures to adverse effects. Therefore, as evaluated in Section E.14[a–d], Geology and Soils, the proposed project would be consistent with priority policy number six (6). The utility corridor in which the proposed project is located has been historically undeveloped land, and a Northwest Information Center record search did not identify any known historical resources within 0.25 mile of the proposed project alignment; therefore, the evaluation in Section E.4[a], Cultural Resources, demonstrates that the proposed project is consistent with priority

policy number seven (7). The proposed project would not include any aboveground structures that would affect wind or create shadows, which would affect outdoor recreation and/or public areas. Furthermore, as the pipeline would be located within the existing utility corridor, implementation of the proposed project would not increase the use of parks and recreational facilities, or contribute to the degradation of recreational facilities and resources. Construction of the proposed project would require the temporary closure of a portion of Sheep Camp Trail; however, this closure would be short term and temporary, and would not contribute to long-term effects. Therefore, Sections E.9[a and b], Wind and Shadow, and E.10[a and b], Recreation, establish how the proposed project would be consistent with priority policy number eight (8). The consistency of the proposed project with the environmental topics associated with the priority policies is discussed in detail in Section E, Evaluation of Environmental Effects.

C.3. SAN MATEO COUNTY GENERAL PLAN

The San Mateo County General Plan is composed of objectives and policies that guide land use decisions and provide the framework for development in the county. All land use documents, such as the Planning Code, area-specific plans, and redevelopment plans, must be consistent with the general plan. When decisions are being made to either approve or disapprove a project, decision makers must consider the compatibility of the proposed project with the general plan policies that do not relate to physical environmental issues. Any conflicts between the proposed project and policies that relate to physical environmental issues are discussed in Section E, Evaluation of Environmental Effects, of this Initial Study. San Mateo County General Plan policies and goals that relate to the proposed project may include:

- **General Land Use Goal 7.3: Infrastructure**. Distribute land uses where public services and facilities exist or can be feasibly provided (e.g., sewer and water systems) in order to achieve maximum efficiency.
- **Rural Land Use Goal 9.4: Land Use Objectives for the Rural Lands**. Distribute land uses where public services and facilities exist or can be feasibly provided (e.g., sewer and water systems) in order to achieve maximum efficiency.
- **Park and Recreation Resources Goal 6.18: Regulation of Encroachment**. Regulate the encroachment into park and recreation facilities by non-park uses. When encroachment is deemed necessary, minimize adverse impacts by considering the following measures:

a. Use the Creative Road Design Guide (San Mateo County Planning Division, 1978) where appropriate to minimize environmental effects when improving roadways or building new ones in or through park and recreation resources.
b. Discourage the use of park and recreation facilities as access routes for private users. Where such access is deemed necessary, develop these routes in accordance with standards established by the Parks and Recreation Division.
c. Require restoration or other mitigation measures for damaged parkland.

- **Visual Quality Goal 4.3: Protection of Vegetation**. Minimize the removal of visually significant trees and vegetation to accommodate structural development.

- **Visual Quality Goal 4.21: Utility Structures**. Minimize the adverse visual quality of utility structures, including roads, roadway and building signs, overhead wires, utility poles, T.V. antennae, distributed energy resources, solar water heaters, and satellite dishes.

- **Visual Quality Goal 4.21: Public Utilities**. Encourage the placement of new and existing public utility lines underground.

- **Visual Quality Goal 4.64: Utilities in State Scenic Corridors**.

  a. Install new distribution lines underground.
  b. Install existing overhead distribution lines underground where they are required to be relocated in conjunction with street improvements, new utility construction, etc.
  c. Consider exceptions where it is not physically practical due to topographic features; however, utilities should not be substantially visible from any public road or developed public trail.

- **Visual Quality Goal 4.65: Utilities in County Scenic Corridors.**

  a. Install new distribution lines underground.
  b. Consider exceptions for certain circumstances, including, but not limited to, financial hardship, topographic conditions or land use conflicts.

Any potential conflicts identified as part of the approval process would not alter the physical environmental effects of the proposed project. Pipeline replacement would occur adjacent and parallel to the existing pipeline, offset approximately 5 feet from the existing line in the same corridor, with four exceptions: 1) approximately 0.37 mile of pipeline along the Cañada Road segment would be replaced in

a new alignment to avoid impacting biological resources; 2) approximately 2,000 feet of trenchless (drilled) pipeline along the Bunker Hill segment, which would deviate approximately 42 feet from the existing pipeline to avoid a rare plant population; 3) an approximately 200-foot-long section of pipeline at the northern end of the Bunker Hill segment, which would avoid several constraints associated with existing electric transmission towers, an electric substation, and I-280; and 4) the Crystal Springs segment would be replaced in place. The proposed project involves replacing an existing gas pipeline that is located within an established utility corridor, with the exception of approximately 0.37 mile (1,900 feet) of the northern section of the Cañada Road segment that would require a new alignment. This utility corridor is located in an uninhabited, relatively undeveloped area of unincorporated San Mateo County. The proposed project would include minimal aboveground structures (metering stations and two short aerial spans) that would not be visible from roadways or recreational trails, and construction of the proposed project would be consistent with Visual Quality Goal 4.21. With the exception of aerial spans necessary to avoid sensitive habitats and soils, the new pipeline would be installed entirely below grade, consistent with Visual Quality Goals 4.21, 4.64, and 4.65. Temporary work areas and access routes would be oriented to minimize the removal of trees and vegetation, and a Vegetation Restoration Plan would be implemented post-construction to restore the area as close to pre-construction conditions as possible; therefore, the proposed project would be consistent with Visual Quality Goal 4.3. Finally, the proposed project is located within an existing utility corridor with existing transmission infrastructure. While temporary closures would be necessary on a small portion of Sheep Camp Trail during proposed project construction, closures would be short term and implementation of the project would not encroach on recreational facilities, thereby maintaining consistency with Park and Recreation Resources Goal 6.18. Because the proposed project would not result in changes to the general plan and is consistent with land use, park and recreation, and visual quality goals, the proposed project would not conflict with any general plan objectives or policies.

C.4. REGIONAL PLANS

In addition to local general plans and related documents, regional environmental, transportation, and land use plans and policies consider the growth and development of the nine-county San Francisco Bay Area. Some of these plans and policy documents are advisory, and some include specific goals and provisions that must be adhered to when evaluating a project under CEQA.

These regional plans include:

- **Bay Area Air Quality Management District (BAAQMD), Bay Area 2010 Clean Air Plan.**[7] This comprehensive document updates the Bay Area 2005 Ozone Strategy, in accordance with the requirements of the California Clean Air Act, to implement feasible measures to reduce ozone and provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases throughout the region.

- **The Association of Bay Area Governments (ABAG), Projections 2013.**[8] This is an advisory policy document that includes population and employment forecasts to assist in the development of local and regional plans and policy documents.

- **Metropolitan Transportation Commission, Transportation 2035 Plan for the San Francisco Bay Area.**[9] This policy document, adopted by the nine Bay Area counties, outlines transportation projects for highway, transit, rail, and related uses through 2035.

- **San Francisco Bay Regional Water Quality Control Board (RWQCB), Water Quality Control Plan for the San Francisco Bay Basin.**[10] This is the RWQCB's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater, and includes programs of implementation to achieve water quality objectives.

- **Water Enterprise Environmental Stewardship Policy.**[11] This policy established the long-term management direction for CCSF-owned lands and natural resources affected by operation of the SFPUC water system within the Tuolumne River, Alameda Creek, and Peninsula watersheds.

The proposed project would not conflict with the Bay Area 2010 Clean Air Plan (see Section E.7, Air Quality). No population or permanent employment demand would increase as a result of the proposed

7 BAAQMD. 2010. Bay Area 2010 Clean Air Plan. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Plans/2010%20Clean%20Air%20Plan/CAP%20Volume%20I%20%20Appendices.ashx?la=en. Accessed on March 15, 2014.

8 ABAG. Projections 2013. http://www.abag.ca.gov/planning/housing/projections13.html /. Accessed on May 21, 2014.

9 Metropolitan Transportation Commission. 2009. Transportation 2035 Plan for the San Francisco Bay Area. http://www.mtc.ca.gov/planning/2035_plan/. Accessed on April 18, 2014.

10 San Francisco Bay RWQCB. 2015. Water Quality Control Plan for the San Francisco Bay Basin. http://www.swrcb.ca.gov/rwqcb2/basin_planning.shtml. Accessed on April 18, 2014.

11 San Francisco Water Power Sewer. 2013. Water Enterprise Environmental Stewardship Policy. http://www.sfwater.org/index.aspx?page=181. Accessed on July 1, 2014.

project, and the project would not conflict with ABAG (see Section E.3, Population and Housing). The proposed project would also not conflict with the Metropolitan Transportation Commission Transportation 2035 Plan. Construction of the proposed project would result in a less-than-significant impact on traffic due to the short duration of construction and the low number of vehicle trips associated with construction (see Section E.5, Transportation and Circulation). The proposed project would not conflict with any of these regional plans or policies.

C.5. CONSERVATION PLANS

C.5.1. Peninsula Watershed Management Plan

The SFPUC adopted the Peninsula Watershed Management Plan in 2001, and the SFPUC adopted the Water Enterprise Environmental Stewardship Policy in 2006. The SFPUC operates and maintains the 23,000-acre SFPUC Peninsula Watershed for water collection and storage. The watershed lands are operated in accordance with the policies and actions specified in the Final Peninsula Watershed Management Plan.[12] The plan provides "a comprehensive set of goals, policies, and management actions which integrate all watershed resources and reflect the unique qualities of the watershed."

The Peninsula Watershed Management Plan was reviewed for land use policies relevant to the project. Chapter 4, Goals and Policies, of the plan contains the following applicable policies:

- **Policy WA2:** Prohibit the construction of new trails and unsupervised access to existing roads and trails not addressed in this Plan.
- **Policy WA6:** Restrict new utility lines proposed on the watershed for the transmission of or communications to existing utility corridors, and require that new power lines be buried, where feasible. All proposed alignments would undergo a scenic impact analysis.
- **Policy WA22:** Proposals for new facilities, structures, roads, trails, projects and leases, or improvements to existing facilities shall be:
    - Limited to essential public services and not attractions unto themselves, but incidental to the primary purposes of the watershed (water quality protection and water supply), or to its

[12] City of San Francisco Planning Department. 2001. Peninsula Watershed Management Plan Final Environmental Impact Report. January.

enjoyment and conservation in its natural condition, or to the education/interpretation of watershed values.

- Designed, sited, constructed, and maintained to blend with the natural landscape and conform to the goals and policies set forth in this plan.
- Design and site new facilities, structures, roads, and trails to minimize, wherever possible, grading and the visibility of cut banks and fill slopes.

- **Policy WA24:** Requires that all proposed development involving and grading of land include the submittal of a grading plan to the SFPUC to retain the existing topography where feasible, minimize grading, minimize the impacts on scenic, ecological, and cultural resources, and minimize off-site soil loss from erosion.
- **Policy WA26:** All maintenance, operation, and construction activities shall incorporate Best Management Practices (BMPs), as applicable.

The proposed project would involve the replacement of an underground natural gas pipeline located within an existing utility corridor. No new trails would be constructed as part of the proposed project, and therefore, the proposed project would be consistent with policies WA2 and WA6. The replacement of the natural gas pipeline is necessary to ensure the reliability of this essential public service, and to facilitate the use of an in-line inspection tool to detect anomalies within the pipeline, greatly enhancing pipeline safety. All grading activities would be conducted in compliance with the project Stormwater Pollution Prevention Plan, which includes a site-specific Erosion Control and Grading Plan, and affected areas would be returned to pre-activity grade; therefore, the proposed project would be consistent with policies WA22 and WA 24. Finally, the BMPs described in Section A.4.7 would be implemented, as practicable, to reduce potential adverse environmental effects to a less-than-significant level, in accordance with policy WA26. Therefore, the proposed project would not conflict with the Peninsula Watershed Management Plan.

C.5.2. U.S. Department of the Interior, Golden Gate National Recreation Area—Scenic Easement and Scenic and Recreation Easement

With the relocation of I-280 to its current alignment, a Scenic Easement (19,000 acres) and a Scenic and Recreation Easement (4,000 acres) were developed under a four-party agreement between San Mateo County, the SFPUC, U.S. Department of the Interior, and California Department of Transportation. The

easements were developed to preserve the open space and water quality of the SFPUC Peninsula Watershed.

The SFPUC is permitted to conduct any activity on its lands as long as it is consistent with the terms of its easement; CCSF's reserved rights; and the collection, storage, and transmission of water. The Scenic and Recreation Easement allows for a Scenic Highway (SR 35/Skyline Boulevard) and trails for hiking. The easement states the following:

- The land would be preserved in its present natural state and would not be used for any purpose other than for the collection, storage and transmission of water and protection of water quality, and other purposes which would be compatible with said use and preserving said land as open-space land.
- No structures would be erected upon said land except such structures as may be directly related to and compatible with the aforesaid uses. No trailer would 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, would be subject to the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.
- No signs, billboards, or advertisements excepting directional signs and identification signs in connection with permitted uses, would be displayed or placed upon the land.
- Except as required to accomplish the improvements hereinafter permitted or as otherwise permitted to the Grantor hereunder, the general topography of the landscape would be maintained in its present condition and no substantial excavation or topographic changes would be made without the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.
- Except as required to accomplish the purposes and uses herein permitted to Grantor, there would 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 to be designated by the Secretary of the Interior.

The proposed project would replace an existing underground pipeline within a 4,000-acre Scenic and Recreation Easement, and the existing pipeline is in accordance with the provisions of this easement. The

proposed project would not conflict with the collection and transmission of water from the project area. Because the proposed project would not interfere with collection of water, involves the replacement of an existing pipeline, the general character of open space of the project area would be maintained upon completion of the proposed project, and would only proceed with concurrence from the Golden Gate National Recreation Area, it is considered compatible. Therefore, the proposed project would not conflict with any of these conservation plans or policies.

D. SUMMARY OF ENVIRONMENTAL EFFECTS

The project could potentially affect the environmental factors checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

☒ Land Use	☒ Air Quality	☒ Biological Resources
☒ Aesthetics	☐ Greenhouse Gas Emissions	☒ Geology and Soils
☐ Population and Housing	☐ Wind and Shadow	☒ Hydrology and Water Quality
☒ Cultural Resources	☐ Recreation	☒ Hazards/Hazardous Materials
☐ Transportation and Circulation	☐ Utilities and Service Systems	☐ Mineral/Energy Resources
☒ Noise	☐ Public Services	☐ Agricultural and Forest Resources
		☒ Mandatory Findings of Significance

D.1. SENATE BILL 743 AND PUBLIC RESOURCES CODE SECTION 21099

CEQA Section 21099(b)(1) requires that the State Office of Planning and Research (OPR) develop revisions to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts of projects that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." CEQA Section 21099(b)(2) states that upon certification of the revised guidelines for determining transportation impacts pursuant to Section 21099(b)(1), automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment under CEQA.

In January 2016, OPR published for public review and comment a Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA recommending that transportation impacts for projects be measured using a vehicle miles traveled (VMT) metric. On March 3, 2016, in anticipation of the future certification of the revised CEQA Guidelines, the San Francisco Planning Commission adopted OPR's recommendation to use the VMT metric instead of automobile delay to evaluate the transportation impacts of projects (Resolution 19579). (Note: the VMT metric does not apply to the analysis of impacts on non-automobile modes of travel such as riding transit, walking and bicycling.) Accordingly, this PMND does not contain a discussion of automobile delay impacts.

OPR's proposed transportation impact guidelines provides screening criteria to identify types, characteristics, or locations of land use projects that would not exceed these VMT thresholds of significance. OPR recommends that if a project or land use proposed as part of the project meets the

below screening criterion, then VMT impacts are presumed to be less than significant and a detailed VMT analysis is not required. This screening criterion and how it is applied is described below:

- **Small Projects.** OPR recommends that lead agencies may generally assume that a project would not have significant VMT impacts if the project would either: (1) generate fewer trips than the level for studying consistency with the applicable congestion management program or (2) where the applicable congestion management program does not provide such a level, fewer than 100 vehicle trips per day.

The San Mateo County Congestion Management Program threshold is 100 net peak period trips a day. As the proposed project would not generate this number of trips (construction would generate approximately 10 round trip passenger vehicle trips per day, and operation of the project would generate zero net trips), the proposed project meets the Small Projects screening criterion listed above and does not require VMT analysis.

Therefore, VMT impacts are presumed to be less than significant and a detailed VMT analysis is not required in Section E.5, Transportation and Circulation.

E. EVALUATION OF ENVIRONMENTAL EFFECTS

All items on the Initial Study Checklist that have been checked "Less Than Significant Impact," "No Impact," or "Not Applicable" indicate that, upon evaluation, staff has determined that the proposed project could not have a significant adverse environmental effect relating to that issue. For items that have been checked "Less than Significant with Mitigation Incorporated," staff has determined that the PG&E Gas Transmission Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project (proposed project) would not have a significant adverse environmental effect provided that the project sponsor implements the mitigation measures presented in Section F of this Initial Study. A discussion is included for most issues checked "Less than Significant with Mitigation Incorporated," "Less than Significant Impact," "No Impact," or "Not Applicable." For all of the items without discussion, the conclusions regarding potential significant adverse environmental effects are based on field observation, staff experience and expertise on similar projects, and/or standard reference material available within the Planning Department, such as the Department's Transportation Impact Analysis Guidelines for Environmental Review, or the California Natural Diversity Database (CNDDB) and maps,

published by the California Department of Fish and Wildlife (CDFW). For each checklist item, the evaluation has considered the impacts of the project both individually and cumulatively.

The proposed project would require no change to existing operation and maintenance activities. Thus, impacts resulting from operation of the proposed project would not change from existing conditions and no net increase in operation-related impacts would occur. Therefore, the impact analysis is limited to temporary and short-term impacts associated with the pipeline replacement and associated construction activities.

E.1. LAND USE AND LAND USE PLANNING

Topics:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
E.1.	**LAND USE AND LAND USE PLANNING—Would the project:**					
a)	Physically divide an established community?	☐	☐	☐	☒	☐
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	☐
c)	Have a substantial impact upon the existing character of the vicinity?	☐	☒	☐	☐	☐

The proposed project segments are located on relatively undeveloped parcels within unincorporated San Mateo County, on property owned by the San Francisco Public Utilities Commission (SFPUC). The proposed project runs parallel to Interstate 280 (I-280) north of San Mateo Creek for approximately 4.4 miles, and extends south until terminating at Edgewood Road and I-280. The proposed project includes three discontinuous segments of pipeline—the Cañada Road, Bunker Hill, and Crystal Springs segments. The three project segments are located entirely within SFPUC Watershed lands that are generally composed of gentle hills covered in oak woodland, grassland, and mixed evergreen forest, surrounding reservoirs. The land uses in the vicinity are described by segment as follows:

- **Cañada Road Segment.** The nearest land uses to the Cañada Road segment are SFPUC facilities, including the Pulgas Balancing Reservoir, Pulgas Water Temple, a watershed keeper's residence, and Pulgas Pump Station. The Pulgas Water Temple—a historic structure commemorating the completion of the Hetch Hetchy Water System—and the Filoli Estate—a country house set on 16 acres of gardens surrounded by a 654-acre estate that is owned by the National Trust for Historic Preservation—are

located west of the Cañada Road segment. Hallmark Park, Pulgas Ridge Open Space Preserve, and Edgewood County Park are located east of the Cañada Road segment. Cañada Road is located west, I-280 is located east, and Edgewood Road is located south of the segment. Cañada Road and Edgewood Road are County Scenic Corridors, and the neighboring section of I-280 is a State Scenic Highway.[13] The Cañada Road segment crosses Sheep Camp Trail, a hiking trail that runs from nearby Belmont to Crystal Springs Regional Trail, approximately 0.25 mile east of Cañada Road (See Figure 5: Recreation, in Section E.10, Recreation). Sheep Camp Trail is bounded by barbed-wire fence to prevent intrusion onto the SFPUC Watershed lands. Cañada Road is a Recreational Bicycle Route between State Route (SR) 92 and Woodside Road, and the roadway is closed to motorized traffic every Sunday, allowing for activities such as jogging, bicycling, hiking, roller-skating, and walking.[14]

- **Bunker Hill Segment.** I-280 and SR 35/Skyline Boulevard are located west and SR 92 is located south of the Bunker Hill segment, and Crystal Springs Reservoir is located west of I-280. The junction of the highways and the transition to Cañada Road and SR 92 are located south of the Bunker Hill segment. This segment is adjacent to Highlands Fire Trail to the northeast, with residences located approximately 0.01 mile to 0.1 mile away, where the alignment abuts residential yards.

- **Crystal Springs Segment.** The Crystal Springs segment runs parallel to I-280, north of the San Mateo Creek Canyon. The California Department of Transportation (Caltrans) Crystal Springs Safety Roadside Rest Area—which includes a statue of Father Junipero Serra—is located west of the segment, along I-280. The northern section of the proposed Crystal Springs segment runs roughly parallel to Black Mountain Road and residences approximately 0.1 mile across the street, while the southern section abuts and runs parallel to residential backyards approximately 0.01 mile away, along Wedgewood Drive and Lakeview Drive.

The residential land uses nearest to the proposed project are adjacent to the Bunker Hill and Crystal Springs segments, ranging from approximately 0.01 mile to 0.1 mile away from both of these segments, where the project abuts residential rear yards. The nearest school to the Cañada Road segment is Benjamin Fox Elementary School, which is located approximately 0.75 mile northeast of this segment, east

[13] County of San Mateo. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

[14] San Mateo County Parks Department. 2014. Bicycle Sunday. http://parks.smcgov.org/bicycle-sunday. Accessed on March 5, 2015.

of I-280 in Belmont. The nearest school to the Bunker Hill segment is the Highlands Elementary School, located approximately 0.15 mile northeast of this segment. The nearest school to the Crystal Springs segment is West Hillsborough Elementary School, located approximately 0.15 mile northeast of this segment. Some maintenance and fire trails are located within the SFPUC Peninsula Watershed; however, due to the sensitive nature of the watershed, it has been protected from development and urbanization.

Water district storage and transmission projects (such as pipelines) on SFPUC-owned land, including Pacific Gas and Electric Company's (PG&E) gas pipeline, are exempt from county zoning regulations.[15] All three segments of the proposed project are zoned RM (Resource Management), and the San Mateo County General Plan designates them as Parks/Open Space.[16] Nearby land uses include residential, governmental, recreation, and other utility installations.

Impact LU-1: The project would not physically divide an established community. (No Impact)

The proposed project involves replacing an existing gas pipeline, located primarily within an established utility corridor, on SFPUC Watershed lands that are not developed with residential communities. The proposed project would only slightly modify the pre-existing easement boundaries to accommodate the replacement pipeline, and would remain entirely within undeveloped SFPUC Watershed lands; thus, project construction would not create a physical barrier (division) for any existing communities or neighborhoods, nor would it result in new development that would physically divide an existing neighborhood. Although residential development is present east of the proposed project, open space—with no development or community present—is located to the west. As such, the proposed project would not physically divide an established community and there would be no impact.

[15] County of San Mateo. 2014. Personal communication between Pete Choi of TRC and Lisa Aozasa, Deputy Director, Planning and Building Department.

[16] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

Impact LU-2: The project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. (No Impact)

The proposed project would not result in significant changes to the surrounding land uses, as it is located primarily within an existing utility corridor. Construction would be temporary and short term, and would not result in a significant physical change to the existing environment. Furthermore, the proposed project involves replacing an existing pipeline; therefore, there would be no change to existing land use or zoning designations, nor would there be a conflict with established planning or regulatory policies, or existing scenic easements (refer also to discussion under Section C, Compatibility with Existing Zoning and Plans). There would be no impact.

Impact LU-3: The project would have a substantial impact upon the existing character of the project vicinity. (Less than Significant with Mitigation)

The existing land use character would remain unchanged by the proposed project, notwithstanding the temporary construction-related impacts described in Sections E.2, Aesthetics, E.6, Noise, E.7, Air Quality, and E.5, Transportation. As detailed in Sections A, Project Description, and E.2, Aesthetics, the replacement pipeline would be installed underground, and any aboveground changes to the site (i.e., staging areas, access roads, and construction equipment) would be temporary and only visible during construction. The proposed project would include minimal aboveground structures (metering stations and two short aerial spans) that would not be visible from roadways or recreational trails. During construction of the replacement pipeline, temporary impacts from clearing and grading, staging materials, and the presence of conventional construction equipment may occur from publicly accessible locations such as Cañada Road—a county-designated scenic corridor and Recreational Bicycle Route—and the Crystal Springs segment of the Crystal Springs Regional Trail; from portions of public roads, including Bunker Hill Drive, Black Mountain Road, and Hayne Road; and from residences along Lexington Avenue and Black Mountain Road.

Along the Cañada Road segment, approximately 490 trees and approximately 2,975 units of brush would be removed. Coast live oak woodlands are fairly dense on slopes between Cañada Road and I-280, and most of the woodlands are east of the project area. Within the project area, a large stretch of oak woodland occurs north of the Pulgas Balancing Reservoir, with smaller patches on slopes adjacent to the various streams that are crossed. The northern portion of the segment would closely parallel an

approximately 1,000-foot-long stretch of Cañada Road and the Crystal Springs segment of the Crystal Springs Regional Trail. The removal of approximately 18 trees would be visible to users of Cañada Road, the Cañada Road bicycle lane, and the Crystal Springs trail segment; however, the tree removal would be screened from motorists on I-280 south by a berm with intervening vegetation. Along the rest of the Cañada Road segment, a substantial number of trees would be removed; however, the alignment is not visible from the road because intervening hills and vegetation obstruct the view.

Along the Bunker Hill segment, seven trees currently screen the view of the existing access road and pipeline route from the beginning of the on-ramp to I-280 north and from motorists driving east on Bunker Hill Drive. These trees would be removed, resulting in a direct view to the pipeline route from both directions on Bunker Hill Drive and from the northbound I-280 on-ramp and off-ramp, resulting in a long-term visual change in the view from those areas. However, the area behind these trees is open space with grassland, shrubs, and trees; therefore, the character of the viewshed would remain essentially unchanged. Tree removal at the Crystal Springs segment would be noticeable only in the foreground from the back side of residences along Lakeview Drive, and the removal of trees in the foreground view would open up a largely open panoramic view of the hills on the SFPUC Watershed lands to the west.

Construction of the proposed project would be short term (approximately 15 months for all three segments) and temporary. The pipeline route and staging areas along all three segments would be restored to original grade post construction, and PG&E would develop a Vegetation Restoration Plan in coordination with the SFPUC and the appropriate resource agencies. Implementation of Mitigation Measure M-BI-1f, Habitat Protection Measures, along with Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, would reduce the long-term impacts from tree removal to a less-than-significant level.

Impact C-LU-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity of project sites, would not result in significant cumulative impacts related to land use. (Less than Significant)

The proposed project vicinity is generally characterized as rural or semi-rural and residential, and the surrounding land uses primarily include utility infrastructure and related buildings, general open space, and residential. As shown in Table 4: Past, Present, and Reasonably Foreseeable Actions, eight other projects are located within 1 mile of the proposed project. This includes the State Route 92: State Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project, located approximately 0.3 mile southwest of the

Bunker Hill segment; Crystal Springs Dam Bridge Replacement Project, located approximately 0.6 mile south of the Crystal Springs segment; Line 109 San Mateo Creek Pipeline Replacement Project, which would begin at the northern terminus of the Bunker Hill segment; and five completed PG&E utility projects, including two pipeline projects. None of these projects propose to introduce or affect any residences, and project completion would not affect the character of the area. Because the proposed project would involve short-term, temporary changes to an existing utility corridor and would not substantially alter the existing character of the project area, and because no projects in the vicinity would affect the character of the proposed project areas, there would be no significant cumulative impacts related to land use.

E.2. AESTHETICS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.2.	**AESTHETICS—Would the project:**					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment which contribute to a scenic public setting?	☐	☐	☒	☐	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area or which would substantially impact other people or properties?	☐	☒	☐	☐	☐

The proposed project is located on undeveloped land in unincorporated San Mateo County. As shown in Figure 1: Regional Location, the proposed project is composed of three discontinuous segments (Cañada Road, Bunker Hill, and Crystal Springs), and is entirely within SFPUC Watershed lands that are used for water collection, storage, and quality protection, and are off-limits to the public, except along hiking trails.[17] To preserve the open space and water quality of the watershed, a Scenic Easement (19,000 acres) and a Scenic and Recreation Easement (4,000 acres) were developed under a four-party agreement between San Mateo County, the SFPUC, U.S. Department of the Interior (Golden Gate National Recreation Area), and Caltrans. The SFPUC is permitted to conduct any activity on its lands as long as it is consistent with the terms of the easement, the City and County of San Francisco's reserved rights, and the collection, storage, and transmission of water. The Scenic and Recreation Easement allows for a Scenic Highway (SR 35/Skyline Boulevard) and trails for hiking. Refer to Section C, Compatibility with Existing Zoning and Plans, for details regarding restrictions within the easements.

The general visual character of the project sites and surroundings is relatively undeveloped rolling hills covered in oak woodland, grassland, and mixed evergreen forest, with several visually sensitive features. Cañada Road (a designated county scenic corridor),[18] Upper Crystal Springs Reservoir, Pulgas Water

[17] SFPUC. 2013. Peninsula. http://www.sfwater.org/index.aspx?page=199. Accessed on April 8, 2014.
[18] County of San Mateo. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on April 8, 2014.

Temple, and the historic Filoli Estate are located just west of the Cañada Road segment of the proposed project route. I-280 (a designated state scenic highway),[19] Hallmark Park, Pulgas Ridge Open Space Preserve, and Edgewood County Park are located just east of the Cañada Road segment. Edgewood Road (a designated county scenic corridor)[20] is located just south of the proposed project route.

I-280 and SR 35/Skyline Boulevard are located west and SR 92 is south of the proposed Bunker Hill segment, and Crystal Springs Reservoir is located west of I-280. The junction of the highways and the transition to Cañada Road and SR 92 are located south of the proposed Bunker Hill segment. The Bunker Hill segment parallels the Highlands Fire Trail, which is within a protected area in the SFPUC Peninsula Watershed and within 0.2 mile of residential uses. The Caltrans Crystal Springs Safety Roadside Rest Area, which includes a statue of Father Junipero Serra, is located west of the project site, along I-280. Residential uses are located east of the Crystal Springs segment.

E.2.1. Existing Views of the Project Site

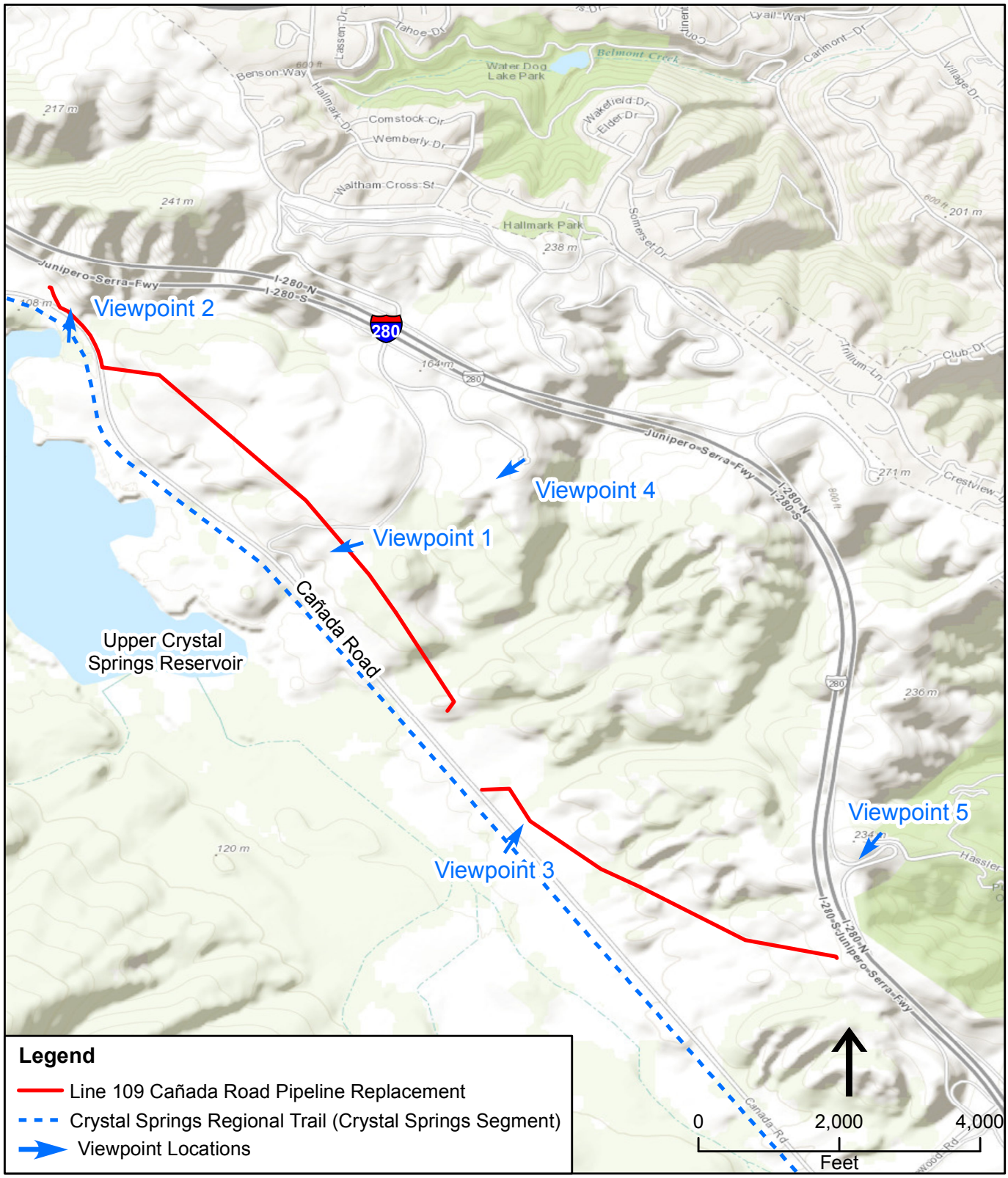
The analysis of visual impacts focuses on the nature and magnitude of changes to the visual character of Cañada Road, I-280, the watershed, and surrounding residential areas as a result of the proposed project. A visit to the project segments and surrounding areas allowed an analysis of existing views of the site. Figures 3a through 3c: Viewpoint Locations, present the locations of the key photographic viewpoints of the project site used for the analysis, and Figures 4a through 4j: Viewpoint Photographs, show photographs of the project sites from each viewpoint. The viewpoints and the sensitivity level of viewers are described in the following paragraphs.

E.2.2. Viewpoint 1—Sheep Camp Trail

The proposed replacement pipeline crosses Sheep Camp Trail at a 90-degree angle, approximately 0.25 mile east of Cañada Road (see Viewpoint 1 in Figure 4a: Viewpoint Photographs, and Figure 3a: Viewpoint Locations).

[19] Caltrans. 2011. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/scenic_highways. Accessed on March 3, 2015.

[20] County of San Mateo. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

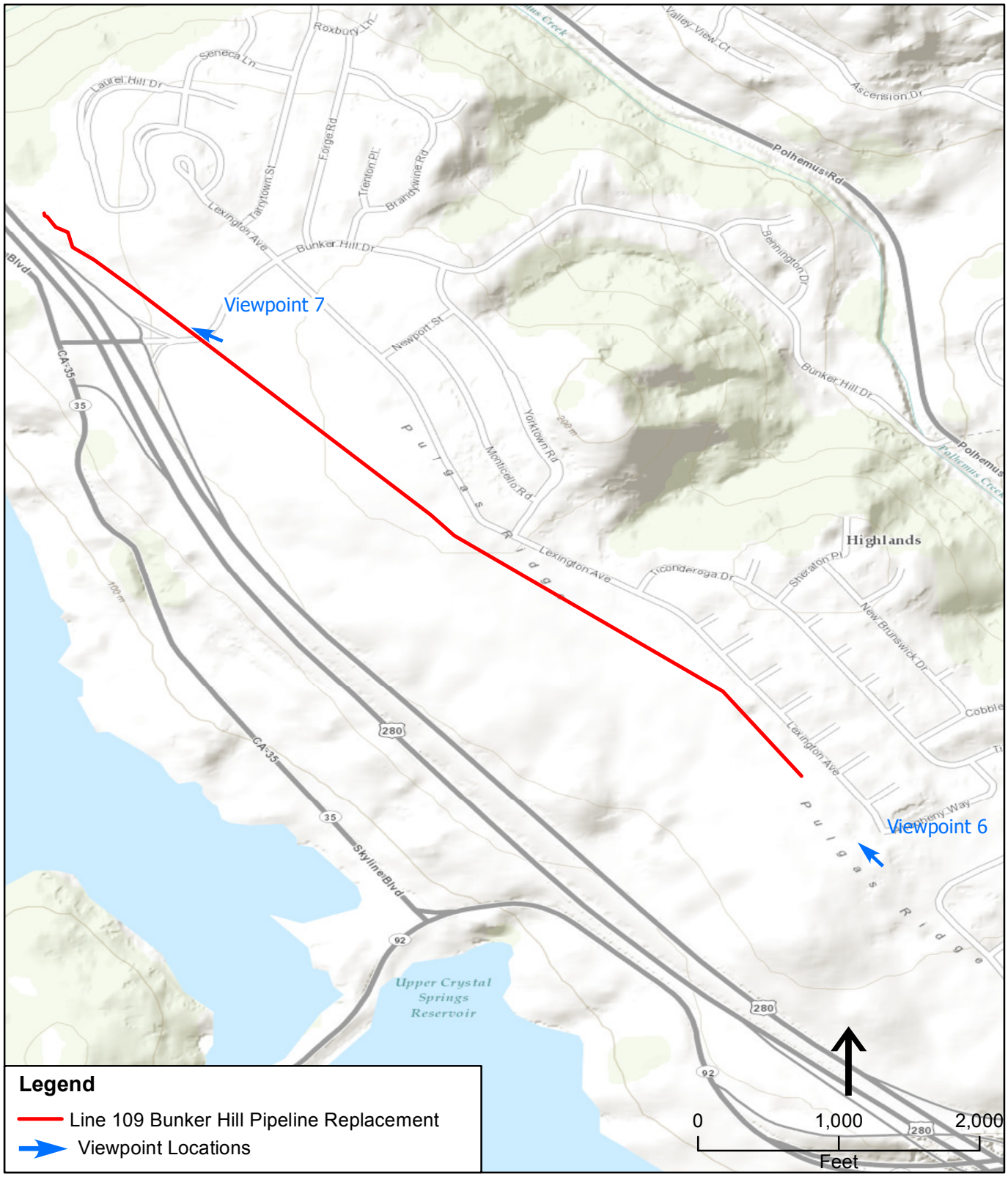


Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 3A

Viewpoint Locations
Cañada Road Segment

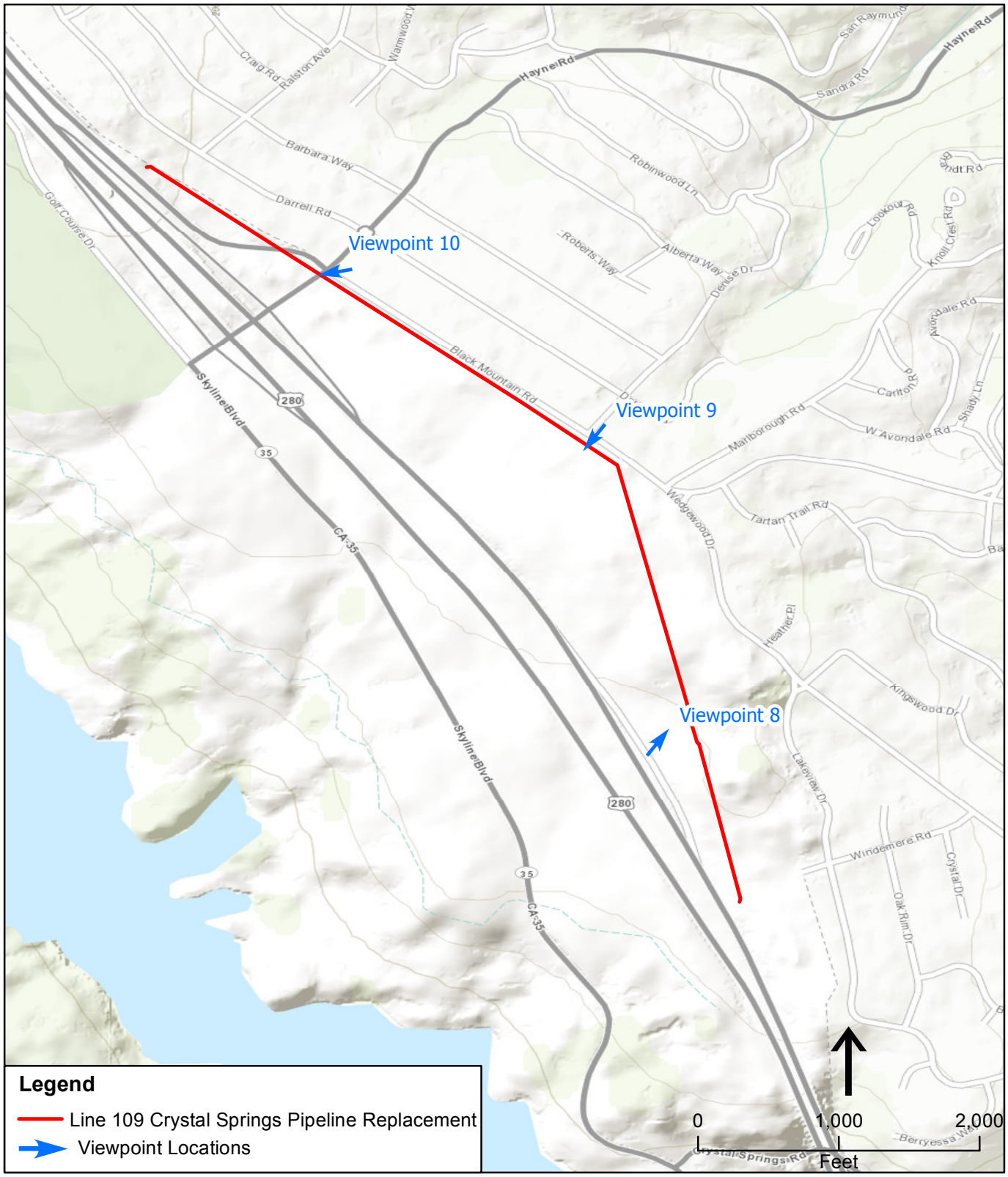


Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 3B

Viewpoint Locations
Bunker Hill Segment



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 3C

Viewpoint Locations
Crystal Springs Segment

View from Sheep Camp Trail westbound, approximately 250 feet east of centerline of proposed project route.

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4a
Viewpoint 1. View From Sheep Camp Trail

View from Cañada Road and Crystal Springs Regional Trail looking north toward the proposed project route along the east side of Cañada Road.

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4b
Viewpoint 2. View Along Cañada Road
and Crystal Springs Regional Trail

View from Cañada Road at the Filoli Center turn off.

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4c
Viewpoint 3. View Along Cañada Road
at Turn Off to Filoli Center

View from scenic vista point along I-280 accessible from the southbound side of the freeway.

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4d

Viewpoint 4. View From I-280 (Southbound)
Vista Point

View from scenic vista point along I-280 accessible from the northbound side of the freeway.

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4e
Viewpoint 5. View From I-280 (Northbound)
Vista Point

View from end of Lexington Avenue, looking northwest at existing access road.

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Figure 4f

Viewpoint 6. View of the Southern Access Point to the Bunker Hill Segment

View from south side of Bunker Hill Drive, looking northwest at Highlands Fire Trail and I-280 Northbound onramp.

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Figure 4g
Viewpoint 7. View of Highlands Fire Trail and Bunker Hill Drive Intersection

View from Caltrans Crystal Springs Roadside Safety Area, looking northeast toward Crystal Springs pipeline route.

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Figure 4h

Viewpoint 8. View of Crystal Springs Segment, Access Road, and Staging Area

View from southeast corner of Denise Drive, looking southwest toward Black Mountain Road and Crystal Springs pipeline route.

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Figure 4i
Viewpoint 9. View of Denise Drive and Black Mountain Road Intersection

View from east corner of Hayne Road, looking west toward Black Mountain Road and Crystal Springs pipeline route.

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Figure 4j
Viewpoint 10. View of Hayne Road and Black Mountain Road Intersection

Sheep Camp Trail is a 1-mile-long hiking trail that connects the Crystal Springs segment of Crystal Springs Regional Trail with trails in the City of Belmont, passing under I-280.[21] Viewpoint 1 shows a west-facing view from the trail, just east of the current pipeline alignment; the existing pipeline crossing is located beneath the red and white markers. Sheep Camp Trail is flanked on both sides by a barbed wire fence to prevent access to SFPUC Watershed lands. The lattice steel transmission line towers adjacent to the existing pipeline are visible from this location, as indicated by conductors at the top of the view. Sheep Camp Trail is the only visually sensitive feature crossed by the pipeline route. This viewpoint represents a moderate to high visual quality. Recreational viewers represented by this viewpoint are considered to have a high sensitivity level.

E.2.3. Viewpoint 2—Cañada Road and Crystal Springs Regional Trail

The northern portion of the Cañada Road segment would closely parallel an approximately 1,000-foot-long stretch of Cañada Road and the Crystal Springs segment of Crystal Springs Regional Trail, as shown in Figure 3a: Viewpoint Locations. Viewpoint 2 (refer to Figure 4b:Viewpoint Photographs) captures a view of this stretch from the west side of Cañada Road, a few feet from the Crystal Springs trail segment. Cañada Road is a county-designated scenic corridor and is a designated Class II bicycle lane.[22]

Every Sunday, Cañada Road is closed to motorized traffic to allow for activities such as jogging, bicycling, hiking, roller-skating, and walking.[23] The Crystal Springs segment of the Crystal Springs Regional Trail runs along the westerly right-of-way of Cañada Road, across the street from the proposed project, and is mostly removed from the roadway. The Crystal Springs trail segment is available for use by hikers, joggers, and equestrians, but not bicyclists.[24] Views to the east from the Crystal Springs trail segment in this location are represented in Viewpoint 2. Views to the west from this location are of the Upper Crystal Springs Reservoir and surrounding watershed hillsides and vegetation. Project

[21] San Mateo County. 2001. San Mateo County 2001 Trails Plan. http://www.co.sanmateo.ca.us/Attachments/parks/Files/Parks%20Planning/Master%20Plans/Trails%20Master%20Plan.pdf. Accessed on April 17, 2014.

[22] City/County Association of Governments of San Mateo County. 2011. San Mateo County Comprehensive Bicycle and Pedestrian Plan. https://performance.smcgov.org/Livable-Community/San-Mateo-County-Comprehensive-Bicycle-and-Pedestr/r4g3-aghc. Accessed on March 3, 2015.

[23] San Mateo County Parks Department. 2014. Bicycle Sunday. http://parks.smcgov.org/bicycle-sunday. Accessed on March 5, 2015.

[24] San Mateo County Parks Department. 2014. Crystal Springs Segment. http://parks.smcgov.org/crystal-springs-segment. Accessed on March 3, 2015.

construction would be visible to users of Cañada Road, the Cañada Road bicycle lane, and the Crystal Springs trail segment. Overall, visual quality in this view is moderate to high, and viewers are considered to have high sensitivity.

E.2.4. Viewpoint 3—Cañada Road at Filoli Estate Driveway

Along the remainder of Cañada Road, the pipeline route is located a minimum of 150 feet from the road, but is not visible from the road because intervening hills and vegetation obstruct the view. Viewpoint 3 in Figure 4c: Viewpoint Photographs, shows the view from Cañada Road toward the portion of the project route 150 feet from the edge of the pavement, near the turn off for Filoli Estate. The existing and replacement pipeline routes are not visible from this portion of the road due to the intervening vegetation. Filoli Estate, a public attraction located on the west side of Cañada Road (refer to Figure 3a: Viewpoint Locations), is a country house set on 16 acres of formal gardens surrounded by a 654-acre estate that is now owned by the National Trust for Historic Preservation.[25] Filoli Estate is set back from Cañada Road. Hills and vegetation would obstruct any views of the project area from Filoli Estate, and even at the point where it meets Cañada Road (refer to Viewpoint 5c), the project route would not be visible. This viewpoint from Cañada Road represents a moderate to high visual quality, and viewers are considered to have a high sensitivity level.

E.2.5. Viewpoints 4 and 5—Scenic Vista Points off Interstate 280

The pipeline route is not visible from I-280 (a designated state scenic highway) due to distance, topography, and intervening vegetation. The southern terminus of the Cañada Road segment is approximately 100 feet from the southbound (west) side of I-280, but is not visible from this portion of I-280 because of a 10- to 35-foot berm and the rapidly sloping terrain just west of the freeway. These factors prevent visibility of all foreground landscape from this portion of I-280. The northern terminus of the Cañada Road segment is approximately 350 feet from I-280, and views of the route are obstructed by a small berm and by vegetation.

[25] Filoli. 2014. http://www.filoli.org/. Accessed on March 3, 2015.

As shown in Figure 3a: Viewpoint Locations, two scenic vista points are located along I-280 within the project area—one accessible from the southbound side of the freeway and one from the northbound. The vista point on the southbound (west) side of I-280 is located approximately 0.4 mile from the route at its closest point. Viewpoint 4 in Figure 4d: Viewpoint Photographs, shows the view from this vista point, looking toward the west. In this view, the lattice steel transmission towers indicate the approximate location of the pipeline route, but the route is not visible due to vegetation and topography. Although PG&E would remove approximately 863 trees and trim additional trees and shrubs along the pipeline route, a clearing or break in vegetation in this area is not likely to be visible from the scenic vista points due to the intervening topography. If any portion of the clearing were visible, given that the area consists of oak woodland interspersed with grassland, it would likely attract less attention than the existing transmission towers and be similar to existing road networks visible in the area.

The vista point on the northbound (east) side of I-280 is on the westernmost ridgeline of the Pulgas Ridge Open Space Preserve and is approximately 0.3 mile from the route at its closest point. Viewpoint 5 in Figure 4e: Viewpoint Photographs, shows the view from this point to the southwest, toward the pipeline route. I-280 is visible in the foreground, and Filoli Estate is visible in the center right side of the view. The transmission towers that mark the approximate route are barely visible due to distance and topography; the ground surface that contains the existing pipeline is intermittently visible, but the replacement pipeline route is not distinguishable. Approximately 200 trees would be removed in the southern section of the Cañada Road segment. If any portion of the clearing were visible, given that the area consists of oak woodland interspersed with grassland, it would likely attract less attention than the existing transmission towers and be similar to existing road networks visible in the area. Visual quality is high at these scenic viewpoints, and viewers represented by these viewpoints are considered to have a high sensitivity level.

E.2.6. Viewpoint 6—Southern Access to Bunker Hill Segment

As shown in Figure 3b: Viewpoint Locations, a gate off of Lexington Avenue and Allegheny Way would provide access to the southern portion of the Bunker Hill segment (before the horizontal directional drilling [HDD] would occur), along the Highlands Fire Trail. Viewpoint 6 on Figure 4f: Viewpoint Photographs, shows the gate on the left side of the photograph, facing northwest, and the existing Highlands Fire Trail, which is within a protected area of the watershed and is fenced off from the public. The paved road in the foreground is an extension of Lexington Avenue; however, there is also a gate (not

shown) off the right side of Figure 4f: Viewpoint Photographs, that is sometimes locked to the public, and the existing and replacement pipeline routes are not visible from Lexington Avenue or Allegheny Way. The primary viewers from this viewpoint would be homeowners along Lexington Avenue. The Bunker Hill pipeline route segment is visible from the backyards of the residences. The fenceline of the residential backyards is visible in the right middleground in Figure 4f: Viewpoint Photographs, and a pipeline marker in the right middleground shows the close proximity of the pipeline route to the residential fenceline, which ranges from between approximately 12 feet and 600 feet. Three staging areas located along the pipeline route would be in clear view of the residential backyards. Additionally, because the existing fire trail would be used as an access road, construction equipment would travel the road during construction and would be visible to residences. This viewpoint from the southern access point and the backyards of residences is of high visual quality, and viewers represented by these viewpoints are considered to have a high sensitivity level.

E.2.7. Viewpoint 7—Bunker Hill Drive at Highlands Fire Trail

As shown in Figure 3c: Viewpoint Locations, the Bunker Hill segment of the pipeline route crosses Bunker Hill Drive at the Highlands Fire Trail. Viewpoint 7 in Figure 4g: Viewpoint Photographs, shows the pipeline route along the access road north of Bunker Hill Drive. The gate would be used to access the portion of the Bunker Hill segment north of Bunker Hill Drive. The proposed pipeline route is visible to motorists traveling on Bunker Hill Drive. Seven trees (left of the gate in Figure 4g: Viewpoint Photographs) currently screen the view of the existing access road and pipeline route from the beginning of the on-ramp to I-280 north and from motorists driving east on Bunker Hill Drive; however, these trees would be removed, resulting in a direct view to the pipeline route from both directions on Bunker Hill Drive and from the northbound I-280 on-ramp and off-ramp. This viewpoint from Bunker Hill Drive represents a moderate to high visual quality, and viewers are considered to have a moderate sensitivity level.

E.2.8. Viewpoint 8—Caltrans Crystal Springs Safety Roadside Rest Area

The Crystal Springs segment of the pipeline route passes east of, and behind, the Caltrans Crystal Springs Safety Roadside Rest Area, which is well known on the Peninsula for a large statue of Junipero Serra. Viewpoint 8 in Figure 4h: Viewpoint Photographs, shows the view to the east from the parking lot beside the rest area. The pipeline route is closer than the transmission lines, and would be visible from the rest

stop parking lot. Access to the Crystal Springs segment of the proposed project would be via a gate at the northern end of the parking lot and an existing access road that bisects the photograph in the middleground of Figure 4h: Viewpoint Photographs, where the topography is generally flat. The access road is clearly visible from the rest stop. Additionally, the clear area in the foreground and between the trees would be used as a staging area for construction equipment. Motorists that stop at the rest area would have a clear view of the pipeline route, access road, and staging area. Overall, visual quality in this view is moderate to high, and viewers are considered to have a low to moderate sensitivity.

E.2.9. Viewpoint 9—Intersection of Black Mountain Road and Denise Drive

A portion of the Crystal Springs segment of the pipeline route parallels the west side of Black Mountain Road for approximately 0.4 mile, and residences are located across the street on the east side of the road. The intersection of Black Mountain Road and Denise Drive is located in the approximate middle of the Crystal Springs segment. Viewpoint 9 in Figure 4i: Viewpoint Photographs, is a view of the pipeline route, looking south from in front of a residence at the corner of Black Mountain Road and Denise Drive. The pipeline route is closer than the transmission line and is closer to the road than the majority of the vegetation; therefore, the project would be visible from the residences along Black Mountain Road. This viewpoint from residences along Black Mountain Road is of high visual quality, and viewers represented by these viewpoints are considered to have a high sensitivity level.

E.2.10. Viewpoint 10—Intersection of Black Mountain Road and Hayne Road

The Crystal Springs segment crosses the intersection of Black Mountain Road and Hayne Road along the west side of Black Mountain Road. Viewpoint 10 in Figure 4j: Viewpoint Photographs, shows the intersection looking west from the southeast corner, in front of a residence. The I-280 overpass is located in the background. Hayne Road provides access to I-280. The Crystal Springs segment would cross Hayne Road in the middleground of Figure 4j: Viewpoint Photographs, just past the intersection. Pipeline markers for the existing pipeline are visible in front of the vegetation in the right side of the figure. PG&E would bore under Hayne Road using jack and bore. The pipeline route would be visible to passing motorists and to residences along the east side of Black Mountain Road. Overall, visual quality in this view is moderate to high, and viewers are considered to have a moderate sensitivity.

E.2.11. Other Potential Views of the Project Area

Pulgas Water Temple

The Pulgas Water Temple, which is located on the west side of Cañada Road (see Figure 3a: Viewpoint Locations), is a Beaux Arts-style temple that was built in 1934 to commemorate the completion of the engineering system that brought Hetch Hetchy water from the Sierra Nevada Mountains to the San Francisco Bay Area.[26] The pipeline route would not be visible from this location, as the water temple site is situated on the valley floor and is surrounded by trees, and therefore, does not offer long-distance views. In addition, although the Pulgas Water Temple is located close to Cañada Road, it is located along a stretch in which the pipeline would not be replaced.

SR-35/Skyline Boulevard

SR 35/Skyline Boulevard is a state-designated scenic highway[27] along the ridgeline of the Santa Cruz Mountains, 2 to 2.5 miles west of the Cañada Road segment. The proposed project areas are not visible from SR 35/Skyline Boulevard due to distance, topography, and the trees and shrubs that line SR 35/Skyline Boulevard. A state-eligible scenic highway along SR 92 begins 0.75 mile west of the Cañada Road segment, at the intersection of SR 92 and I-280.[28] This area is not visible from SR 92 due to intervening hilly topography.

Other Parks and Preserves

Three parks and preserves—Hallmark Park, Pulgas Open Space Preserve, and Edgewood County Park—are located east of I-280. All three of these recreational areas are too far from the proposed pipeline routes to be visible, given the topography and vegetation. Though the closest part of the Pulgas Open Space Preserve is located just 0.1 mile from the southern end of the Cañada Road segment, the preserve has no trails in that area. The closest trail within the preserve, Hassler Trail, comes within 150 feet east of Viewpoint 5 in Figure 4e: Viewpoint Photographs, but the proposed pipeline route is not visible from this location. Hallmark Park and Edgewood County Park are even farther from the pipeline route, and given the vegetation and topography in the area, the proposed project would not be visible from these parks.

[26] SFPUC. 2013. Pulgas Water Temple. http://www.sfwater.org/index.aspx?page=93. Accessed on March 3, 2015.
[27] Caltrans. 2011. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/scenic_highways. Accessed on March 3, 2015.
[28] Caltrans. 2013. Eligible and Officially Designated Routes. http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm. Accessed on March 3, 2015.

Edgewood Road

Edgewood Road, which is located 0.5 mile north of the southern end of the Cañada Road segment, is another county-designated scenic corridor;[29] however, the route is not visible due to intervening hills.

Impact AE-1: The project would not have a substantial adverse effect on a scenic vista. (Less than Significant)

For purposes of this evaluation, a scenic vista is defined as an expansive, publically accessible view that is recognized and valued for its scenic quality. Scenic vistas are typically from static vista points (such as a vista point along a highway) or views from along a designated scenic highway. Parks and open space areas in the proposed project vicinity are generally considered to provide high-quality, aesthetically pleasing surroundings, and access to high-quality scenic vistas; however, the pipeline route is not visible from nearby parks, including Hallmark Park, Pulgas Open Space Preserve, and Edgewood County Park.

The proposed project would be located near a stretch of I-280 that is an officially designated state scenic highway. However, visible indications of the pipeline would not be noticeable from any portion of I-280 due to distance, topography, intervening vegetation, and the speed of motorists traveling along the interstate. The project areas would not be visible from SR 35/Skyline Boulevard—a state-designated scenic highway located 2 to 2.5 miles west of the Cañada Road segment—due to distance, topography, and the trees and shrubs that line Skyline Boulevard. A state-eligible scenic highway along SR 92 begins 0.75 mile west of the Cañada Road segment, at the intersection of SR 92 and I-280, and extends to the west. The pipeline route is not visible from SR 92 due to hilly topography. Therefore, the proposed project would have a less-than-significant impact on scenic resources within a state scenic highway.

As shown in Figure 3a: Viewpoint Locations, two officially designated scenic vista points are located in the project vicinity (Viewpoints 4 and 5). From the vista point on the southbound (west) side of I-280 (refer to Viewpoint 4 in Figure 4d: Viewpoint Photographs), the existing lattice steel transmission towers show the approximate route of the pipeline, but the specific location of the existing pipeline route is not obvious or visible due to topography and vegetation. The replacement pipeline route has the potential to be partially visible from this point during the construction phase, which includes clearing and grading an

[29] County of San Mateo. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

85-foot-wide temporary construction area and 7 acres of staging areas. A temporary clearing or break in vegetation is not likely to attract attention from the scenic vista point given that the area consists of oak woodland interspersed with grassland. Such a clearing would likely attract less attention than the transmission towers and would be similar to existing road networks visible in the area. The designated scenic vista point on the northbound east side of I-280 is on a ridgeline near Pulgas Ridge Open Space Preserve (refer to Viewpoint 5 in Figure 4e: Viewpoint Photographs). The transmission lines that mark the approximate pipeline route are barely visible, and the existing route is not visible.

Two temporary staging areas are located along the west side of I-280 (a state scenic highway), at the southern terminus of the Cañada Road segment. During construction, the staging areas have the potential to be visible to motorists traveling southbound on I-280; however, the existing vegetation and the hilly topography would allow only partial views. In addition, as travelers on I-280 would be traveling at a high rate of speed, views of the staging areas would be short term.

Several staging areas are located along Cañada Road, which is a county-designated scenic corridor. A small staging area is located south of the Pulgas Balancing Reservoir, on top of a bluff. The staging area would be visible from Cañada Road to hikers along Crystal Springs Trail and bicyclists using the bicycle lane; however, motorists would have to look up and to the side to see the staging area, and the views may be partially blocked by the car roof. A staging area located north of the Pulgas Balancing Reservoir would be blocked from sight by trees and vegetation along Cañada Road. At the northern end of the Cañada Road segment, a staging area would be located on a flat area along Cañada Road, and would be visible to users of Cañada Road. These staging areas would be restored to original grade post construction. PG&E would develop a Vegetation Restoration Plan in coordination with the SFPUC and the appropriate resource agencies. As a result, both short-term and long-term visual impacts on scenic vistas from the staging areas would be less than significant.

Impact AE-2: The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting. (Less than Significant)

Scenic resources are considered visual features, either natural or built, that positively contribute to the scenic quality of an area. Scenic resources have a distinctive and noticeably positive effect on a viewer's impression of a site or area. Cañada Road is a county-designated scenic corridor composed of various scenic elements—including the Upper Crystal Springs Reservoir and surrounding hillsides covered with

mature trees and vegetation—and is considered a scenic public setting. Approximately 490 trees and approximately 2,975 units of brush would be removed along the Cañada Road segment.[30] Tree removal is discussed in detail under Impact AE-3. Although a substantial number of trees would be removed, the tree removal along most of the alignment would not be visible from Cañada Road due to vegetation and topography, and the remaining trees would not be damaged. Therefore, this impact would be less than significant. PG&E would develop a Vegetation Restoration Plan in coordination with the SFPUC and appropriate resource agencies, which would help to further reduce the less-than-significant visual impacts on a scenic resource (mature trees and vegetation along the Cañada Road scenic corridor).

In the Bunker Hill segment, trees would be removed from SFPUC Watershed lands along the Highlands Fire Trail, which is off limits to the public. Trees to be removed from the Crystal Springs segment are also within SFPUC Watershed lands that are fenced off from the public, with the exception of the Caltrans Crystal Springs Safety Roadside Rest Area, which is not considered a scenic resource. Therefore, no scenic resources that contribute to a public setting are located within the Bunker Hill and Crystal Springs segments.

Impact AE-3: The project would not substantially degrade the existing visual character or quality of the site and its surroundings. (Less than Significant)

Short-term Impacts

During construction of the replacement pipeline, temporary visual impacts from clearing and grading, staging of materials, and the presence of conventional construction equipment may occur from publically accessible places such as Cañada Road, a county-designated scenic corridor and bicycle lane, and the Crystal Springs segment of the Crystal Springs Regional Trail in the Cañada Road segment A portion of the pipeline would be located in a new route along Cañada Road for approximately 1,000 feet (refer to Viewpoint 2 in Figure 4b: Viewpoint Photographs), staging areas would be located along the road, and existing views of mature trees and vegetation would be replaced by views of construction activity. In the Bunker Hill and Crystal Springs segments, a total of seven staging areas (refer to Section A.4.4, Temporary Work Areas) would be visible from residences during construction. Temporary visual

[30] Manischalchi, D. 2014. Arborist Report, R-046, Line 109-4A, Cañada Road. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

impacts would also occur from clearing and grading, and the presence of construction equipment along the pipeline alignments. However, these disruptions would be temporary and short term at all three segments. The pipeline route and staging areas along all three segments would be restored to original grade after construction is complete. For this reason, construction-related impacts on visual quality and character would be less than significant.

In addition, Mitigation Measure M-NO-1a requires temporary 20-foot-high sound barrier walls to be located at the HDD entry and exit sites in the Bunker Hill segment. These would block views of the watershed from the closest residences for the duration of HDD activities—approximately 25 days. This disruption would also be short term and temporary. Therefore, the secondary aesthetic impact of this mitigation would be less than significant.

Sheep Camp Trail would be closed to the public for the duration of construction activities for the Cañada Road segment because it would be crossed by the proposed project and used as an access road. Due to the trail closure, no views from the trail would be available during construction. Because the trail closure would be short term and temporary, and because other trails with scenic views—including the Crystal Springs segment of Crystal Springs Regional Trail—would be available for use, short-term construction-related visual impacts from the loss of views from Sheep Camp Trail would be less than significant.

Long-term Impacts

Cañada Road Segment. Along the entire Cañada Road segment, approximately 490 trees and 2,975 units of brush would be removed.[31] Coast live oak woodlands are fairly dense on the slopes between Cañada Road and I-280, and most of the woodlands are east of the project area. Within the project area, a large stretch of oak woodland occurs north of the Pulgas Balancing Reservoir, with smaller patches on slopes adjacent to the various drainages that are crossed. Approximately 445 acres of oak woodland exist on the slopes between Cañada Road and I-280, which forms a more-or-less contiguous woodland group adjacent to the project area.[32]

[31] Manischalchi, D. 2014. Arborist Report, R-046, Line 109-4A, Cañada Road. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[32] USDA Forest Service. 2014. CALVEG Zone 6. Vegetation layers obtained for oak woodlands in the area.

The northern portion of the Cañada Road segment would closely parallel an approximately 1,000-foot-long stretch of Cañada Road and the Crystal Springs segment of the Crystal Springs Regional Trail, as shown in Figure 3a: Viewpoint Locations. Approximately 18 trees would be removed at the northern terminus of this segment, and less than five trees would be removed along the road. This area is characterized by shrubs and patchy areas of trees. The removal of trees would be visible, but likely not noticeable to users of Cañada Road, the Cañada Road bicycle lane, or the Crystal Springs trail segment, and the tree removal would be screened from motorists on I-280 south by a berm with intervening vegetation. Therefore, long-term impacts associated with tree removal along the approximately 1,000-foot-long stretch of the proposed alignment would be less than significant.

The majority of the trees within the Cañada Road segment would be removed along the middle of the alignment. As discussed previously and in Section E.13, Biological Resources, this area is characterized by a large, continuous stretch of oak woodland north of the Pulgas Balancing Reservoir, with smaller patches on slopes adjacent to the various drainages that are crossed. From Sheep Camp Trail to just north of the Pulgas Water Temple, a substantial number of trees would be removed along the alignment. However, the alignment is not visible from Cañada Road or I-280 because intervening hills and vegetation obstruct the view. Therefore, visual impacts related to tree removal between Sheep Camp Trail and the Pulgas Balancing Reservoir would be less than significant.

Beginning just north of the Filoli Estate driveway, the alignment runs north along a berm between Cañada Road and the Pulgas Balancing Reservoir, and the trees and brush on the berm would be removed. Currently, the white roof of the Pulgas Balancing Reservoir is partially visible between the sparse brush. After tree removal, the berm would continue to partially screen views of the Pulgas Balancing Reservoir, although the white roof would be more visible from Cañada Road because of the trees removed from the top of the berm. However, because the Pulgas Balancing Reservoir is in a low area behind a small berm, visual impacts from the change in the amount of roof visible to viewers from Cañada Road would be minor and less than significant.

Along the remainder of Cañada Road, from approximately the intersection with the Filoli Estate driveway south, the pipeline alignment is located a minimum of 150 feet from the road and is not visible from the road because intervening hills and vegetation obstruct the view. Therefore, the visual impact from tree removal would be less than significant. Approximately five trees would be trimmed and approximately six trees would be removed at the southern terminus of the Cañada Road segment, just

west of I-280. This area is approximately 100 feet from the southbound (west) side of I-280, but is not visible from this portion of I-280 because of a 10- to 35-foot berm and the rapidly sloping terrain just west of the freeway. These factors prevent visibility of all foreground landscape from this portion of I-280. A substantial number of trees would remain between Cañada Road and the trees to be trimmed/removed; therefore, when viewed by the public along Cañada Road, the impact of the tree removal at the southern terminus of the alignment would be negligible and less than significant.

Many trees along Sheep Camp Trail would be trimmed to accommodate access for construction equipment. The long-term impact from tree trimming along Sheep Camp Trail would be minimal, as the view from the trail due to tree trimming would remain relatively unchanged. Because the trees would be removed within a 20-foot-wide right-of-way centered above the pipeline, users of Sheep Camp Trail may experience a noticeable visual change looking south at the intersection of the pipeline alignment. However, the new view would be of an open grassland area surrounded by trees and vegetation, and would not constitute a significant, adverse aesthetic impact. In addition, a Vegetation Restoration Plan would be developed and implemented post construction to restore the landscape to pre-project conditions—with the exception of the 20-foot-wide right-of-way centered above the pipeline, where trees cannot be planted—which would further reduce this already less-than-significant impact. Therefore, the proposed project would not substantially or permanently degrade the visual quality for the public at Sheep Camp Trail, and long-term impacts would be less than significant.

Bunker Hill Segment. Along the Bunker Hill segment, 64 trees and approximately 722 units of brush would be removed for construction,[33] and approximately nine trees would be trimmed. All of the tree work would occur south of Bunker Hill Drive, along the Highlands Fire Trail and along the fence line behind the residences on Lexington Avenue, which would be noticeable only in the foreground from the backs of residences along Lexington Avenue, and the removal of trees in the foreground view would open up a largely open panoramic view of the hills on the SFPUC Watershed lands to the west. The new, more distant view of the watershed lands would not constitute a substantial adverse aesthetic impact because the new views would generally be scenic views of a natural, wooded watershed area. Hence,

[33] Manischalchi, D. 2014. Arborist Report, R-185, Line 109-4A, Bunker Hill. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

visual quality of the project area would not be substantially degraded. Therefore, long-term impacts from nearby tree removal would be less than significant along the Bunker Hill segment.

Crystal Springs Segment. Along the Crystal Springs segment, approximately 309 trees and approximately 85 brush units would be removed.[34] Trees along the Crystal Springs segment form a mosaic with open grasslands and sage scrub, not a continuous woodland or closed canopy, with patches of oak woodland interspersed within non-native woodland. Approximately 34 trees would be removed at the southern end of the Crystal Springs segment, which would be noticeable only in the foreground from the backs of residences along Lakeview Drive, and the removal of trees in the foreground view would open up a largely open panoramic view of the hills on the SFPUC Watershed lands to the west.

Trees would be removed along the alignment north of the Caltrans Crystal Springs Safety Roadside Rest Area, between I-280 to the west and Black Mountain Road to the east. Tree removal in this location would also be noticeable from the back side of residences along Black Mountain Road; however, it would be a less-than-significant impact, as the removal of trees in the foreground view would open up a panoramic view of the hills on the SFPUC Watershed lands to the west. While some areas of tree removal would be visible to motorists along I-280, the trees to be removed are at the top of an incline, and motorists would not be able to see beyond the hill. Additionally, the view angle from a vehicle becomes more off-angle to the right (looking northeast), away from the direction of travel and, as motorists would be traveling at a high rate of speed, the view would generally be fleeting.

Approximately 12 trees would be removed from the area north of Hayne Road and west of Black Mountain Road, and approximately 60 trees would be removed north of Hayne Road and east of Black Mountain Road; however, due to a large stand of remaining trees to the west, between the trees to be removed and I-280, the view would be essentially unchanged. Therefore, visual impacts from tree removal north of Hayne Road would be less than significant.

After construction, a 20-foot-wide right-of-way centered above the pipeline would be kept permanently clear of trees along the three segments for pipeline safety reasons. Shrubs would be kept permanently clear within a 10-foot-wide right-of-way centered on the pipeline. Native trees and shrub cover would be

[34] Hunzeker, D. 2014. Arborist Evaluation for R-048, Crystal Springs. Line 109-4C. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

allowed to re-establish in the remaining temporarily disturbed areas. The pipeline route and staging areas along all three segments would be restored to original grade post construction. Permanent new facilities would include short (3 to 4 feet tall) posts or bollards in some locations and some signage, similar to existing facilities and signage normally encountered within a utility corridor. These new visual elements would not be considered out of place given the location and are considered a less-than-significant visual impact. PG&E would develop and implement a Vegetation Restoration Plan in coordination with the SFPUC and appropriate resource agencies. Implementation of Mitigation Measure M-BI-1f, Habitat Protection Measures, along with Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, would serve to further reduce the less-than-significant long-term visual impacts from tree removal.

Impact AE-4: The project would create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or that would substantially impact other people or properties. (Less than Significant with Mitigation)

Construction would typically occur during the daytime hours (Monday through Saturday between the hours of 7 a.m. and 5:30 p.m.), and would be within the hours allowed by San Mateo County Code of Ordinances Chapter 4.88.360. HDD work is not anticipated to occur at night; however, it is possible that nighttime HDD activities could occur because some portions of the work must be performed continuously without stopping. HDD activities could occur during one night for the Cañada Road segment and during one night for the Bunker Hill segment, for a total of two nights. If nighttime construction work is necessary, lighting to accommodate the work at the project sites would be temporary and short term in nature, and would be confined to a small area within the project footprint (entry and exit locations only). No residences are located in the vicinity of the HDD areas for the Cañada Road segment. Residences in the vicinity of the HDD activities for the Bunker Hill segment could be affected by night lighting at the HDD entry and exit sites for one night; however, the sound barrier walls would block most, if not all, of the lighting from the closest residences. The closest residences are approximately 580 feet away from the HDD exit location, and approximately 80 feet away from the HDD entry location. With implementation of Mitigation Measure M-AE-4, Nighttime Lighting, which requires lighting to be pointed downward and away from sensitive receptors, this impact would be reduced to a less-than-significant level. Beyond minor glare from use of limited construction equipment—which would be similar to the existing glare from vehicles on local roads—no new sources of glare would be associated with project construction.

Mitigation Measure M-AE-4: Nighttime Lighting

Nighttime lighting shall be shielded and directed specifically onto work areas to minimize light spillover, away from sensitive receptors such as the residences and open spaces adjacent to the project areas.

Impact C-AE-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a significant cumulative effect on aesthetics. (Less than Significant)

The geographic scope of potential cumulative impacts on aesthetics encompasses the project sites and viewshed shared by the Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project and other cumulative projects in the nearby vicinity, which are provided in Table 4: Past, Present, and Reasonably Foreseeable Actions. PG&E is planning to replace another segment of underground pipeline, as part of the Line 109 San Mateo Creek Pipeline Replacement Project, in 2017. This pipeline segment begins where the Bunker Hill segment ends, and runs north. If this project were to be constructed simultaneously with the proposed project, there would be more visual disturbance in the vicinity of the Bunker Hill segment during the construction phase due to additional equipment and workers. However, PG&E plans to construct the Line 109 San Mateo Creek Pipeline Replacement Project after the proposed project is complete. Because construction would be temporary and short term, the proposed project in combination with the Line 109 San Mateo Creek Pipeline Replacement Project would not have a significant cumulative impact on the aesthetic environment.

Table 4 also includes ~~seven~~ 10 completed PG&E utility projects, constructed between 2011 and ~~2013~~ 2014. Four of these projects were located adjacent to the proposed project, including modification of two existing valve stations and one above-ground valve structure, and the Line 109 4B Replacement Project, which replaced a section of pipeline adjacent to the Bunker Hill segment of the proposed project. ~~In addition, a~~Another pipeline replacement project (Line 109 4D Replacement) was constructed approximately 0.7 mile north of the Crystal Springs segment of the proposed project, while two other projects were constructed 4.1 and 5.6 miles north of the Crystal Springs segment. In addition, three pipeline replacement projects were completed along Line 109, approximately 2.5, 4.4, and 7 miles southeast of the Cañada Road segment. The aesthetic construction effects from these projects were temporary and will not contribute with the proposed project's temporary aesthetic effects. The long-term visual effects of these projects, similar to the proposed project, would be similar to the visual condition of

the area, which is in part an existing utility corridor. Utility corridors normally have little vegetation to avoid damage or interference to underground pipes and overhead lines. While some of these completed projects involved vegetative clearing, including tree removal, the overall effect was consistent with the existing utility corridor. Also, given the physical and visual separation between these project sites, each of the Line 109 cumulative projects tends to be visible individually to observers in close proximity to the site, rather than viewed as a whole or in combination with other cumulative projects. Therefore, the proposed project in combination with these completed projects would not have a significant cumulative impact on the aesthetic environment.

E.3. POPULATION AND HOUSING

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.3. POPULATION AND HOUSING— Would the project:					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒	☐
b) Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing?	☐	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐

The three segments of the proposed project are located in unincorporated San Mateo County, and entirely within SFPUC Watershed lands. The entire project area is zoned Recreation Management and designated as Parks/Open Space in the San Mateo County General Plan.[35] No residences or employment-generating uses are located on the project site. The nearest residential use to the Cañada Road segment of the pipeline is located approximately 0.5 mile east of the northern portion of the segment, across I-280. Two other segments of the proposed project—Bunker Hill and Crystal Springs—are located adjacent to residential areas. However, because these segments are located entirely within undeveloped SFPUC Watershed lands, proposed construction activities would not displace any housing or people.

Impact PH-1: The proposed project would not induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). (No Impact)

The purpose of the proposed project is to facilitate future pipeline integrity by replacing the existing 20- to 30-inch-diameter pipeline with 24- and 30-inch-diameter pipe to accommodate required pipeline integrity inspection activities. The increased diameter pipeline is not intended or expected to increase

[35] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

natural gas transmission capacity, allowing for additional development, and natural gas transmission provided by the natural gas pipeline would not be expanded beyond existing conditions.

The proposed project is located within primarily undeveloped land managed by the SFPUC, and no employment-generating uses are located along the project route. Construction of the proposed project would be short term and temporary, and a maximum of approximately 53 crewmembers are anticipated to be on site daily during construction. If all three segments were constructed concurrently, the maximum number of crewmembers per day would be approximately 100. Because of the short duration and extent of construction, all crewmembers are expected to be supplied from the existing local or regional labor pool. Existing roads in the area would be sufficient to support proposed project demands.

Because crewmembers would only be on site temporarily during construction and are anticipated to be supplied from the local or regional labor pool, and given the relatively small size of the overall workforce, the proposed project would not create an increase in population. As such, the proposed project would not induce substantial population growth in the area and there would be no impact.

Impact PH-2: The proposed project would not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere. (No Impact)

The proposed project is located entirely within land designated as Parks/Open Space, and would not displace any existing housing. As such, the proposed project would not result in the need for replacement housing. There would be no impact.

Impact PH-3: The proposed project would not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere. (No Impact)

Construction crewmembers are expected to commute from areas in the greater San Francisco Bay Area, and relocation of these workers is not anticipated to be required for the proposed project. Therefore, the proposed project would not impact existing residences or businesses, nor would it result in the displacement of any people or the construction of new housing elsewhere. There would be no impact.

Impact C-PH-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a cumulative impact on population and housing. (No Impact)

All three segments of the proposed project are located within primarily undeveloped SFPUC-managed land that is designated as Parks/Open Space in the San Mateo County General Plan. The area surrounding the Cañada Road segment is primarily undeveloped open space, with one residence—a watershed keeper's residence—located on the west side of Cañada Road, approximately 0.27 mile from the proposed project. The Bunker Hill and Crystal Springs segments of the pipeline are bordered by single-family homes to the northeast and SFPUC Watershed lands to the southwest. I-280 is located further south of these two segments.

As summarized in Table 4: Past, Present, and Reasonably Foreseeable Actions, the nearest residential development is the Winding Way project, located approximately 1.8 miles northeast of the Cañada Road segment, across I-280. This project involves annexing 3.41 acres of unincorporated San Mateo County land to the City of San Carlos, and subsequent development of this land for single-family residential use. A private middle school is proposed to be developed 1.3 miles north of the Cañada Road segment. No reasonably foreseeable residential projects are proposed within 1 mile of the proposed project.

The proposed project would not displace any existing housing or result in the need for replacement housing. Furthermore, because construction of the proposed project would be short term and temporary, it is not anticipated to impact the existing labor force, residences, or businesses. Construction personnel for the proposed project are expected to commute from the greater San Francisco Bay Area, and no relocation that would cause cumulative housing and population impacts is anticipated to occur. Although current and reasonably foreseeable projects may result in a population increase, the proposed project would not contribute to this cumulative impact.

E.4. CULTURAL RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.4.	**CULTURAL RESOURCES—Would the project:**					
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code?	☐	☐	☐	☒	☐
b)	Cause a substantial adverse change in the significance of an archeological resource pursuant to §15064.5?	☐	☒	☐	☐	☐
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐	☐
d)	Cause a substantial adverse change in the significance of a tribal cultural resource as defined by Public Resources Code §21074?	☐	☒	☐	☐	☐

The California Environmental Quality Act (CEQA) considers archeological resources to be an intrinsic part of the physical environment, and thus, requires that any project subject to CEQA review be analyzed for its potential to adversely affect an archeological resource (State CEQA Guidelines Section 21083.2). For a project that may have a substantial, unmitigable adverse effect on a significant archeological resource, CEQA requires preparation of an Environmental Impact Report (EIR) (State CEQA Guidelines Sections 21083.2 and 15065). CEQA recognizes two categories of significant archeological resources—a "unique" archeological resource (State CEQA Guidelines Section 21083.2) and an archeological resource that qualifies as a "historical resource" under CEQA (State CEQA Guidelines Sections 21084.1 and 15064.5).

E.4.1. Significance of Archeological Resources

An archeological resource can be significant as both or either a "unique" archeological resource and a "historical resource," but the process by which the resource is identified under CEQA, as either one or the other, is distinct (State CEQA Guidelines Sections 21083.2(g) and 15064.5[a][2]).

An archeological resource is a historical resource under CEQA if the resource meets one of the following requirements:

1. Listed on or determined eligible for listing on the California Register of Historical Resources (CRHR) (State CEQA Guidelines Section 15064.5). This includes National Register of Historic Places (NRHP)-listed or -eligible archeological properties.

2. Listed on a "local register of historical resources."

3. Listed on a "historical resource survey" (State CEQA Guidelines Section 15064.5[a][2]).

Generally, an archeological resource is determined to be a historical resource due to its eligibility for listing to the CRHR/NRHP because of the potential scientific value of the resource, that is, that the resource "has yielded, or may be likely to yield, information important in prehistory or history" (State CEQA Guidelines Section 15064.5 [a][3]). An archeological resource may be CRHR eligible under other evaluation criteria, such as Criterion 1, association with events that have made a significant contribution to the broad patterns of history; Criterion 2, association with the lives of historically important persons; or Criterion 3, association with the distinctive characteristics of a type, period, region, or method of construction. Appropriate treatment for archeological properties that are CRHR eligible under criteria other than Criterion 4 may be different than for a resource that is significant exclusively for its scientific value.

Failure of an archeological resource to be listed in any of these historical inventories is not sufficient to conclude that the archeological resource is not a historical resource. When the lead agency believes there may be grounds for a determination that an archeological resource is a historical resource, the lead agency should evaluate the resource for eligibility for listing to the CRHR (State CEQA Guidelines Section 15064.5[a][4]).

A unique archeological resource is a category of archeological resources created by the CEQA statutes (State CEQA Guidelines Section 21083.2[g]). An archeological resource is a unique archeological resource if it meets any one of the following three criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality, such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Under CEQA, evaluation of an archeological resource as a historical resource is privileged over the evaluation of the resource as a unique archeological resource in that CEQA requires that "when a project will impact an archeological site, a lead agency shall first determine whether the site is a historical resource" (State CEQA Guidelines Section 15064.5 [c][1]).

E.4.2. Evaluation of an Archeological Resource as Scientifically Significant

In requiring that a potentially affected archeological resource be evaluated as a historical resource (that is, usually as an archeological site of sufficient scientific value to be CRHR eligible), CEQA presupposes that the published guidance of the California Office of Historic Preservation (OHP) for CEQA providers is to serve as the methodological standard by which the scientific, and thus, the CRHR eligibility, of an archeological resource is to be evaluated. As guidance for the evaluation of the scientific value of an archeological resource, the OHP has issued two guidelines—Archeological Resource Management Reports (1989) and the Guidelines for Archeological Research Designs (1991).

E.4.3. Integrity of an Archeological Resource

Integrity is an essential criterion in determining that a resource, including an archeological resource, is a historical resource. In terms of CEQA, integrity can, in part, be expressed in the requirement that a historical resource must retain "the physical characteristics that convey its historical significance" (State CEQA Guidelines Section 15064.5 [b]).

For an archeological resource that is evaluated for CRHR eligibility under Criterion D, has yielded or may be likely to yield information important to prehistory or history, integrity is conceptually different than how it is usually applied to the built environment. For a historic building, possessing integrity means that the building retains the defining physical characteristics from the period of significance of the building. In archeology, an archeological deposit or feature may have undergone substantial physical change from the time of its deposition, but it may still have sufficient integrity to qualify as a historical resource. The

integrity test for an archeological resource is whether the resource can yield sufficient data (in type, quantity, quality, and diagnosticity) to address significant research questions. Thus, in archeology, integrity is often closely associated with the development of a research design that identifies the types of physical characteristics (data needs) that must be present in the archeological resource and its physical context to adequately address research questions appropriate to the archeological resource.

E.4.4. Significant Adverse Effect on an Archeological Resource

The determination of whether an effect on an archeological resource is significant depends on the effect of the project on those characteristics that make the archeological resource significant. For an archeological resource that is a historical resource because of its prehistoric or historical information value—that is, its scientific data—a significant effect is impairment of the potential information value of the resource.

The depositional context of an archeological resource, especially soils stratigraphy, can be informationally important to the resource in terms of dating and reconstructing the characteristics of the resource present at the time of deposition, and interpreting the impacts of later deposition events on the resource. Thus, for an archeological resource eligible for listing on the CRHR under Criterion D, a significant adverse effect may not be limited to impacts on the artifacts it contains, but may include effects on the soils matrix in which the artifacts are situated.

E.4.5. Mitigation of Adverse Effect to an Archeological Resource

Preservation in place is the preferred treatment of an archeological resource (State CEQA Guidelines Sections 21083.2[b] and 15126.4 [b][3][a]). When it is not possible to preserve an archeological resource in place, data recovery—in accordance with a data recovery plan prepared and adopted by the lead agency prior to any soil disturbance—is appropriate mitigation (State CEQA Guidelines Section 15126.4 [b][3][c]). In addition to data recovery, under CEQA, the appropriate mitigation of effects on an archeological resource that is significant for its scientific value is curation of the recovered scientifically significant data in an appropriate curation facility (State CEQA Guidelines Section 15126.4[b][3][c])—that is, a curation facility compliant with the State CEQA Guidelines for the Curation of Archeological Collections.[36] In

[36] California OHP. 1993. Guidelines for the Curation of Archeological Collections. http://ohp.parks.ca.gov/pages/1054/files/guide93.pdf. Accessed on March 5, 2015.

instances when a potentially adversely affected archeological resource is legally significant primarily for its information value, the City of San Francisco requires curation of significant data of the resource for mitigation of the effect. Final studies reporting the interpretation, results, and analysis of data recovered from the archeological site are to be deposited in the regional California Historical Resources Regional Information Center (State CEQA Guidelines Section 15126.4[b][3][c]).

E.4.6. Effects on Human Remains

Human remains and associated burial items may be significant resources in the following two ways:

1. They may be significant to descendant communities for patrimonial, cultural, lineage, and religious reasons.

2. They may be important to the scientific community, such as to prehistorians, epidemiologists, and physical anthropologists. The specific stake of some descendant groups in ancestral burials is a matter of law for some groups, such as Native Americans (State CEQA Guidelines Section 15064.5[d], Public Resources Code Section 5097.98). In other cases, the concerns of the associated descendent group regarding appropriate treatment and disposition of discovered human burials may become known only through outreach. Beliefs concerning appropriate treatment, study, and disposition of human remains and associated burial items may be inconsistent and even conflictual between descendent and scientific communities. CEQA and other state regulations concerning Native American human remains provide the following procedural requirements to assist in avoiding potential adverse effects on human remains within the contexts of their value to both descendant communities and the scientific community:

    - When an initial study identifies the existence or probable likelihood that a project would impact Native American human remains, the lead agency is to contact and may work with the appropriate Native American representatives identified through the Native American Heritage Commission (NAHC) to develop an agreement for the treatment and disposal of the human remains and any associated burial items (State CEQA Guidelines Section 15064.5[d], Public Resources Code Section 5097.98)

    - If human remains are accidentally discovered, the county coroner must be contacted. If the county coroner determines that the human remains are Native American, the coroner must

contact the NAHC within 48 hours. The NAHC must identify the most likely descendant (MLD) to provide the opportunity to make recommendations for the treatment and disposal of the human remains and associated burial items. If the MLD fails to make recommendations within 48 hours of notification or the project applicant rejects the recommendations of the MLD, the Native American human remains and associated burial items must be reburied in a location not subject to future disturbance within the project site (Public Resources Code Section 5097.98).

- If potentially affected human remains/burial may have scientific significance, whether or not they have significance to Native Americans or other descendent communities, the appropriate mitigation of effect may require the recovery of the scientific information of the remains/burial through identification, evaluation, data recovery, analysis, and interpretation (State CEQA Guidelines Section 15064.5[c][2]).

E.4.7. Consultation with Descendant Communities

Although not a requirement derived from CEQA, the cosmopolitan nature and history of San Francisco necessitates cultural management sensitivity of archeological remains associated with local indigenous, ethnic, overseas, and religious communities. Upon discovery of an archeological site associated with descendant Native Americans or any other descendant community, as appropriate, the Environmental Review Officer (ERO) should seek consultation with an appropriate representative of the descendant group with respect to appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. Documentary products resulting from archeological research of the descendant community associated with the site should be made available to the community.

E.4.8. Approach to Analysis

The analysis describes potential impacts on historical, archeological, and paleontological resources, as well as the potential to disturb human remains during construction activities. The assessment of proposed project impacts on cultural, archeological, and paleontological resources includes the following steps:

- Identify historical and archeological resources within the CEQA Area of Potential Effects (C-APE).

- Evaluate the legal significance of historical resources, as defined by CEQA Section 15064.5, that may be affected by the project.
- Determine whether the proposed project may cause a substantial adverse change to significant historical, archeological, or tribal cultural resources.

The results of the cultural resources investigations are presented in several reports, including:

- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project, San Mateo County, California[37]
- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project, San Mateo County, California[38]
- Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project, San Mateo County, California[39]

The results incorporate the information from investigation of all three segments, which are collectively referenced as the project area within this section. These results, as they relate to impacts under CEQA, are described in the following paragraphs.

E.4.9. CEQA Area of Potential Effects

The definition of the C-APE developed by the San Francisco Planning Department's Environmental Planning Division is modeled after the federal APE definition contained in Title 36 of the Code of Federal Regulations (CFR) 800.16(d). The C-APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historical resources (i.e., CRHR-eligible resources), if any such resources exist. The C-APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

[37] Patrick, M.P., J. Meyer, N. Scher, J. Thomas. 2013. Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project, San Mateo County, California.
[38] Patrick, M.P., J. Meyer, N. Scher, J. Thomas. 2014. Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project, San Mateo County, California.
[39] Patrick, M.P., J. Meyer, N. Scher, J. Thomas. 2013. Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project, San Mateo County, California.

The C-APE for the proposed project includes all areas of proposed ground-disturbing activities and the immediate vicinity. Work areas and staging areas are also included in the C-APE boundaries. Because the proposed project does not involve the construction of any permanent aboveground buildings or structures, the C-APE is the same for both archeological and architectural resources. The belowground project footprint includes all areas where potential impacts could occur as a result of implementing the project; the vertical C-APE varies based on anticipated construction activities along the proposed project route. The estimated excavation depth for pipeline replacement activities is approximately 6.5 to 8 feet.

Archeological Background Research

Cultural resources information for existing conditions in the project area was obtained from the California Historical Resources Information System (CHRIS). The CHRIS maintains regional offices that manage cultural resource records for known cultural resource locations and related technical studies. The regional office for San Mateo County is the Northwest Information Center (NWIC), housed at Sonoma State University. On December 11, 2011, the NWIC responded to the original record search request. Additional in-house record searches were conducted on May 24, May 31, July 10, and August 1, 2013. Sources reviewed included all recorded archeological and historic site records, and cultural resource reports within a 0.25-mile radius of the project. Additional resources that were consulted for relevant information included the NRHP, Historic Property Data File, CRHR, California Historical Landmarks, California Historic Resources Inventory, California Points of Historical Interest, and historic maps.

The record search identified six known resources—two of which have not been formally recorded—within a 0.25-mile radius of the proposed project. Four of these resources were found within a 0.25-mile radius of the Cañada Road segment and two were found within a 0.25-mile radius of the Bunker Hill segment. No previously recorded resources were located within 0.25 mile of the Crystal Springs segment. Fourteen previous studies were conducted within the 0.25-mile radius; three of these studies bisect the study area.

The following four sites were recorded within a 0.25-mile radius of the Cañada Road segment:

41-002111. A historic bridge that spans an unnamed creek is located on a dirt road that, at one time, was called Woodside Crystal Springs Road. The bridge has not been formally evaluated for the state or national registers. The site record indicates that a thorough statement of significance could not be

prepared due to lack of information. The site record indicated that the bridge is not significant under Criterion D.

41-000186/CA-SMA-186H. The Bourn-Roth Estate, also known as Filoli, is located on Cañada Road. The property is a State Historical Landmark and is listed in the NRHP.

Hetch Hetchy. A component of this vast conveyance water system—an aqueduct that trends east/west underground—bisects the center of the project area. The aqueduct has not been formally recorded or evaluated for the state or national registers.

Pulgas Water Temple. The temple is located at the southern terminus of the Upper Crystal Springs Reservoir. Although it is within the 0.25-mile study area, it is outside of the C-APE and would not be affected by the proposed project. The temple does not appear to have been listed and/or evaluated for the state or national registers.

The following two sites were previously recorded within a 0.25-mile radius of the Bunker Hill segment.

41-002123/CA-SMF-372. This is a habitation site with a shell midden and flakes. The site has not been evaluated for the CRHR or NRHP.

41-002144. This is a historic water tank that was recommended as not eligible for the NRHP.

Cultural resources pedestrian surveys were conducted on May 20 and 21, 2013, of all visible areas of potential ground disturbance—including footpaths and roads—with an emphasis on areas exposed by animal activity. All rocks and outcrops were investigated for any cultural modification. The intensive pedestrian survey used 20-meter transects. Additional surveys occurred on July 6 and August 14, 2013, to cover new work areas, including the Bunker Hill and Crystal Springs segments. The surveys identified 10 isolated finds of indeterminate age, including three potential hunting blinds, two miscellaneous debris scatters, one standpipe, one concrete retaining wall and culvert, one concrete drainage ditch, one scatter of saw cut bone, and one linear feature (an earthen drainage ditch). Because none of these finds have characteristics indicating that they are 45 years old or older, they were reported, but not formally recorded.

Native American Concerns

At this time, no federally recognized tribe has traditional authority over the proposed project area. However, to acquire more information about potential cultural resources located in or near the proposed project area, a request for information in the Sacred Lands file database was submitted to the NAHC. The NAHC responded on June 5, 2013, and indicated that no Native American traditional cultural places are recorded in the NAHC Sacred Lands file. The NAHC also enclosed a list of Native American individuals and/or organizations that might have further knowledge of cultural resources in or near the proposed project area. Letters were sent to the Native American individuals and/or organizations on June 6, 2013, with follow-up emails sent on June 13, 2013. Additional follow-up phone calls were placed on June 21, 2013. Additional letters for the new areas (the Bunker Hill and Crystal Springs segments) were sent on August 11, 2013 and October 4, 2013.

The following responses were received:

- An email on June 13, 2013, stating that the respondent believes that the area is sensitive and has a high potential to yield inadvertent discoveries. The respondent requested that the proposed project be monitored by both a qualified archeologist and Native American.
- An email on June 19, 2013, recommending that the Muwekma Tribe be contacted, as the respondent considered the project area to be within their jurisdiction. A representative from the tribe, who represents the group per the list provided from the NAHC, was included in the initial outreach.
- A respondent was not interested in the project because it is not located within their tribe's territory, which is in the Santa Cruz Mountains and along the coast.
- A respondent stated that she was not interested in the project.
- A respondent would like a call back if there are further efforts to identify prehistoric resources.
- A respondent shared her knowledge and concerns regarding burials along the Crystal Springs Reservoir, Stanford Golf Course, and Lawler Ranch Road. She recommended that a Native American and archeological monitor be present during ground-disturbing activities.

E.4.10. Environmental Setting

Prehistoric Setting

This section describes the cultural changes in the San Francisco Bay Area. No discussion of the Clovis time (11,500 to 8,000 calibrated Before Present [cal. B.P.]) is provided, as no evidence related to this time has been found in the area, presumably because it has been submerged or buried.[40] The sequence utilized here is very broad and includes the Lower, Middle, and Late Archaic periods, and the Emergent Occupation.

Lower Archaic (8,000 to 3,500 cal. B.P.). A generalized mobile forager pattern among prehistoric groups is characterized by portable milling stones, millingslabs (metates), and handstones (manos), as well as wide-stemmed projectile points. Archeobotanical remains suggest an economy focused on acorns.

Middle Archaic (3,500 to 500 cal. B.P.). During the Middle Archaic, there appears to be an increase in regional trade and possibly signs of sedentism. The first cut shell beads appear in mortuaries. Mortars and pestles are documented shortly after 4,000 cal. B.P. Net sinkers are a typical marker for this time. The burial complexes with ornamental grave associations seem to represent a movement from forager to semi-sedentary land use.[41]

Upper Archaic (500 cal. B.P. to cal. Anno Domini [A.D.] 1,050). The Upper Archaic period shows continued specialization and an increase in the complexity of technology. Acorns and fish are the predominant food sources. New bone tools and ornaments appear, including whistles and barbless fish spears. Beads become very prominent and include several types. Mortars and pestles continue to be the sole grinding tools. Net sinkers disappear at most sites. Mortuary practices change from a flexed position to an extended position.

Emergent (cal. A.D. 1,050 to Historic). Many archeologists believe that craft specialization, political complexity, and social ranking were highly developed. New bead types and multi-perforated and bar-

[5] Milliken, R., R. T. Fitzgerald, M. G. Hylkema, T. Origer, R. Groza, R. Wiberg, A. Leventhal, D. Bieling, A. Gottsfield, D. Gillette, V. Bellefemine, E. Strother, R. Cartier, and D. A. Fredrickson. 2007. Punctuated Culture Change in the San Francisco Bay Area. In California Prehistory: Colonization, Culture, and Complexity, edited by Terry L. Jones and Kathryn Klar. Altamira Press, Walnut Creek, California.

[6] Ibid.

scored ornaments appear. The bow and arrow replace the dart and atlatl as the favored hunting tools.[42] Cultural traditions seem to be very similar to those witnessed at the time of European contact.

Ethnographic Setting

The project is located within the territory occupied by the Native American group known to the Spanish as the Costanoan.[43] The contemporary descendants of this group consider themselves Ohlone. The Costanoan group occupied the coast of California from San Francisco to Monterey, and inland to include the coastal mountains from the southern side of the Carquinez Strait to the eastern side of the Salinas River, south of the Chalone Creek.

Costanoan is a linguistic term for a family of eight related languages. Each language was spoken by a distinct group of people within a recognized geographic area. In the Martinez area, the spoken language was Karkin. This language was spoken only in a very small area, and the speakers were likely all related. Political units within each ethnic group were called tribelets, and each tribelet contained between 50 and 500 people. Each tribelet had one or more permanent villages and several temporary camps were likely located within each territory.

The Costanoans of this era were hunter gatherers, with acorns being the most important plant food. Various roots, nuts, berries, and seeds were important. The Costanoan group's practices included burning chaparral to encourage sprouting of seed plants and improve browsing for deer and elk. The favored animals for hunting were deer and rabbit. Whales and sea lions were eaten when found stranded on the beach. Waterfowl were captured in nets using decoys. Important fish were steelhead, salmon, and sturgeon, and mussels and abalone were the preferred shellfish.

Dome thatched houses with rectangular doorways and a central hearth were the standard dwellings. Technology included tule balsa canoes, bows and arrows, and baskets.

7 Moratto, M. J. 1984. California Archeology. Orlando: Academic Press.
8 Levy, Richard S. 1978. Costanoan. In California, edited by Richard F. Heizer, pp. 485-495. Handbook of North American Indians 8, William C. Sturtevant general editor. Smithsonian Institution, Washington, DC.

Historic Overview

The historic era began in 1769, with Spanish explorations of San Francisco Bay. Notably, Gaspar de Portolla crossed San Francisquito Creek in November 1769, as did Rivera in 1772. [44] Subsequently, in 1776, the Juan Bautista de Anza expedition traversed the project area in search of a suitable location for a Spanish settlement. Spanish colonial policy throughout the late 1700s and early 1800s was directed toward establishing missions, presidios, and secular towns known as pueblos, with all land held by Spain.

The Spanish Period in this area lasted until 1821, when the Mexican government gained control over Alta California. [45] During the 1820s, the mission system declined as Indians abandoned the missions, and land formerly held by Spain was divided into vast tracts owned by individuals. Secularization grew with the creation of these land grants, the rise of a ranching class, and the growth of pueblo populations. Santa Clara Mission lands were divided up late in this process, with most land grants established after 1837.[46]

After the outbreak of the Mexican-American War (1846–1848), the United States military was able to quickly gain control of California. Led by the efforts of a small Army exploratory force and the Navy's Pacific Squadron, very limited fighting actually took place. The hostilities formally ended in California with the signing of the Treaty of Cahuenga in January 1847. The region remained under United States military control until the State of California was established in 1850.

During the early 20th century, population in the region grew considerably. [47] Cities such as Menlo Park and Palo Alto expanded, with the latter incorporating Mayfield and Stanford University by the beginning of World War II. The general area also began to lose its rural character. Commercial development, including salt-evaporating ponds, flourished between the San Francisco Bay and U.S. Highway 101, while residential and commercial uses were widespread west of U.S. Highway 101.

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[44] Milliken, Randall T. 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. Thomas C. Blackburn Editor. Ballena Press, Menlo Park, California.

[10] Beck, Warren A., and Ynez D. Haase. 1974. Historical Atlas of California. University of Oklahoma Press, Norman, Oklahoma.

[11] Perez, Cris. 1982. Grants of Land in California made by Spanish or Mexican Authorities. Boundary Determination Office State Lands Commission.

[12] Patrick, M.P., J. Meyer, N. Scher, J. Thomas. Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project, San Mateo County, California.

The City and County of San Francisco (CCSF) developed the Hetch Hetchy system, including the O'Shaughnessy Dam and Hetch Hetchy Reservoir. The system was designed as part of the transition from private companies to government agency control over the water supply. The project developed into an opportunity to provide electrical power as well as water. In 1914, after much controversy, construction began on the Hetch Hetchy water and power system. The project resulted in a network of dams, reservoirs, power plants, and aqueducts that tied into additional resources, including pipelines leased by the Spring Valley Water Company, which was purchased by the CCSF in 1930, creating the San Francisco Water Department.

In the late 1920s, PG&E began successfully piping natural gas from distant sources to the main cities within its service area. Construction began in January 1929 and was completed 7 months later.[48] The 250-mile-long pipeline consisted of a 16-inch-diameter main from Buttonwillow to a compressor station in the Kettleman Hills, a 22-inch-diameter line to Panoche Junction in the County of Fresno, and a 20-inch-diameter line continuing north to the metering station in Milpitas. From there, the main stem (now known as Line 101) continues another 44 miles north through the Peninsula to San Francisco. The first natural gas was delivered to San Francisco on August 16, 1929.[49]

Buried Site Sensitivity Analysis

The buried site sensitivity analysis used a geoarcheological research perspective to assess whether previously unidentified sites may be buried beneath the historic surface within the proposed project area. Buried sites are most often associated with formerly stable surfaces that were subsequently covered by sediments. The buried archeological site sensitivity assessment indicated that there are some portions of the proposed project area that have a moderate to high potential to contain buried archeological deposits, although the majority of the proposed project area has very low sensitivity.[50] The pipeline crosses relatively short segments of moderate potential near the northern terminus of the project and near the Pulgas Balancing Reservoir, and one short segment of high potential south of the Pulgas Balancing Reservoir. The remainder of the proposed project area has low to very low sensitivity.

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[48] Coleman, Charles M. 1952. PG&E of California: The Centennial Story of Pacific Gas and Electric Company 1852-1952. McGraw-Hill, New York.

[49] Ibid.

[50] Patrick, M.P., J. Meyer, N. Scher, J. Thomas. 2013. Archaeological Survey Report for the Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project, San Mateo County, California.

Tribal Cultural Resources

Tribal cultural resources (TCRs) are identified by CEQA (Public Resources Code Sections 21074, 21080.3.1) as any site, feature, place, object or any entity with cultural value to Native American tribal groups traditionally affiliated with the geographic area of a proposed project that has been determined to be subject to CEQA evaluation. A TCR may be eligible for listing to the CRHR under Evaluation Criterion 1 (Events) on the basis of its significant traditional and cultural value to living Native American tribal groups. For projects which a Notice of Intent to Adopt a Preliminary Negative Declaration or a Notice of Preparation for an Environmental Impact Report is published after July 1, 2015, affiliated tribal groups must be given the opportunity to consult on the identification, potential presence, and cultural significance of any TCRs that may be affected by the project, the type of environmental evaluation warranted, and mitigation of effect. As required by CEQA, a notice offering consultation with the Planning Department regarding the potential of the proposed project to affect TCRs was sent on August 17, 2015, to Native American tribal groups who have requested such notification. For consultation to be initiated, tribal groups must respond within 30 days of notification.

Impact CR-1: The project would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code. (No Impact)

This section discusses historical resources of the built environment (i.e., structures, buildings, objects, and districts). A discussion of archeological resources, including those that qualify as historical resources as defined in State CEQA Guidelines Section 15064.5, is provided in the Impact CR-2 discussion.

State CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, object, or district listed on or determined to be eligible for listing on the CRHR, or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California.

The NWIC record searches identified the following five known historical resources recorded within 0.25 mile of the proposed project:

41-002111. A historic bridge that spans an unnamed creek is located on a dirt road that at one time was called Woodside Crystal Springs Road. The actual date of the bridge is unknown, but it is present on a

1921 historic map. The bridge is within the C-APE. This bridge is located approximately 200 feet from the proposed centerline of the new pipe; however, it would not be impacted by pipeline construction or removal of the existing pipeline span adjacent to the bridge. The bridge is routinely utilized by PG&E, the SFPUC, and CDFW during maintenance activities, and would be utilized as part of an access road. Because the bridge is actively used, use of the bridge during construction would not cause a substantial adverse change to the bridge.

41-000186/CA-SMA-186H. The Bourn-Roth Estate, also known as Filoli, is located on the west side of Cañada Road. The estate is a Georgian Revival (ca. 1917), is a State Historical Landmark, and is listed on the NRHP. The estate is not within the C-APE and would not be directly affected by construction.

Hetch Hetchy. This is a vast conveyance water system consisting of reservoirs, dams, aqueducts, and electrical power plants. The majority of the system was built between 1913 and 1930; the major features include the Hetch Hetchy Reservoir and the O'Shaughnessy Dam. A portion of the Hetch Hetchy—the aqueduct that bisects the center of the Cañada Road segment of the proposed project, trending east/west underground—is within the C-APE; this aqueduct has not been formally recorded or evaluated for either the CRHR or NRHP. The aqueduct crosses a portion of the proposed project in which the pipeline is not being replaced, and thus, this resource would not be impacted.

Pulgas Water Temple. The temple was built in 1934 in the Greek and Roman Classical style. The temple does not appear to have been listed and/or evaluated for the CRHR or NRHP. The temple is located at the southern tip of the Upper Crystal Springs Reservoir. Although it is located within the 0.25-mile study area, it is outside of the C-APE and would not be affected.

41-002144. This historic water tank was recommended as not eligible for the NRHP. It is not located within the C-APE and would not be affected by the proposed project.

Although one listed historical resource (Bourn-Roth Estate) is located within a 0.25-mile radius of the proposed project, it would not be affected by project construction. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource, and there would be no impact.

Impact CR-2: The project would cause a substantial adverse change in the significance of an archeological resource pursuant to CEQA Guidelines Section 15064.5. (Less than Significant with Mitigation)

CEQA requires that a project's effects on archeological resources be taken into consideration and that if a project might affect an archeological resource, it shall first be determined whether the archeological resource is a historical resource; that is, whether the archeological resource meets the criteria for listing on the CRHR. No known archeological resources are located within the C-APE and the following known archeological resource is located within a 0.25-mile radius of the proposed project:

41-002123/CA-SMF-372. This is a habitation site with a shell midden and flakes that has not been evaluated for inclusion on the CRHR or NRHP. This site is not within the C-APE and would not be affected by the proposed project.

Although the results of the archeological survey for the proposed project were negative, the results of the sensitivity assessment determined that a small percentage of the project area has a moderate and high sensitivity for buried resources. In the areas of moderate and high sensitivity for buried archeological resources, unknown archeological resources have the potential to be impacted during ground-disturbing activities; however, with the implementation of Mitigation Measure M-CR-2, Archeological Monitoring, the potential impact would be reduced to a less-than-significant level.

> **Mitigation Measure M-CR-2: Archeological Monitoring**
>
> The following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged historical resources within areas of moderate and high sensitivity for buried resources. The project sponsor shall retain the services of an archeological consultant from the rotational Department Qualified Archeological Consultants List (QACL) maintained by the Planning Department archeologist. The project sponsor shall contact the Planning Department archeologist to obtain the names and contact information for the next three archeological consultants on the QACL. The archeological consultant shall undertake an archeological monitoring program. All plans and reports prepared by the consultant, as specified herein, shall be submitted first and directly to the Environmental Review Officer (ERO) for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of 4

weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archeological resource—as defined in CEQA Guidelines Section 15064.5 (a)(c)—to a less-than-significant level.

Archeological Monitoring Program (AMP). The AMP shall minimally include the following provisions:

- The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related ground-disturbing activities. The ERO—in consultation with the project archeologist—shall determine which project activities shall be archeologically monitored. In most cases, any ground-disturbing activities—such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc.—shall require archeological monitoring because of the potential risk that these activities pose to archeological resources and to their depositional context. The results of this meeting, including the schedule, shall be documented in a brief monitoring plan that shall be distributed to the ERO, project sponsor, and the archeological consultant.

- The archeological consultant shall advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archeological resource.

- The archeological monitor(s) shall be present at the project site according to a schedule that is agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities would have no impact on significant archeological deposits.

- The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material, as warranted for analysis.

- If an intact archeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/construction crews and heavy equipment until the deposit is evaluated. If in the case of pile-driving activity (foundation, shoring, etc.), the archeological monitor has cause to believe that the pile-driving activity may affect an archeological resource, the pile-driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archeological consultant shall immediately notify the ERO of the encountered archeological deposit. The archeological consultant shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the ERO.

Consultation with Descendant Communities. On discovery of an archeological site[51] associated with descendant Native Americans or other appropriate descendent group, an appropriate representative[52] of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to consult with the ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. A copy of the Final Archeological Resources Report shall be provided to the representative of the descendant group.

If the ERO, in consultation with the archeological consultant, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, at the discretion of the project sponsor, either:

- the proposed project shall be re-designed so as to avoid any adverse effect on the significant archeological resource; or

[51] By the term "archeological site" is intended here to minimally include any archeological deposit, feature, burial, or evidence of burial.

[52] An "appropriate representative" of the descendant group is here defined to mean, in the case of Native Americans, any individual listed in the current Native American Contact List for the City and County of San Francisco maintained by the California Native American Heritage Commission and in the case of the Overseas Chinese, the Chinese Historical Society of America.

- an archeological data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

If an archeological data recovery program is required by the ERO, the archeological data recovery program shall be conducted in accord with an archeological data recovery plan (ADRP). The project archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and approval. The ADRP shall identify how the proposed data recovery program will preserve the significant information that the archeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archeological data recovery program.
- Security Measures. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities.
- Final Report. Description of the proposed report format and distribution of results.

- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains, Associated or Unassociated Funerary Objects. The treatment of human remains and of associated or unassociated funerary objects discovered during any ground-disturbing activities shall comply with applicable state and federal laws, including immediate notification of the coroner of the County of San Mateo and, in the event of the coroner's determination that the human remains are Native American, notification of the California Native American Heritage Commission, who shall appoint a most likely descendant (MLD) (Public Resources Code Section 5097.98). The archeological consultant, project sponsor, landowner, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the excavation, removal, recordation, analysis and curation (as appropriate), possession, and final disposition of the human remains and associated or unassociated funerary objects.

Final Archeological Resources Report. The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the draft final report.

Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archeological Site Survey NWIC shall receive one copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Environmental Planning division of the Planning Department shall receive one bound; one unbound; and one unlocked, searchable PDF copy on CD of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented previously.

Impact CR-3: The project would disturb human remains, including those interred outside of formal cemeteries. (Less than Significant with Mitigation)

Human remains and associated burial items may be significant resources in two ways: (1) they may be significant to descendent communities for patrimonial, cultural, lineage, and religious reasons; and (2) they may be important to the scientific community, such as prehistoric archeologists and physical anthropologists. CEQA and state regulations concerning Native American human remains provide procedural requirements to assist in avoiding potential adverse effects on human remains within the contexts of their value to both descendants and the scientific community.

No evidence of human remains in the proposed project area was found in documentary research, and buried human remains are extremely unlikely to be present within the project area. Nevertheless, unknown prehistoric burials may exist and may be uncovered during ground-disturbing activities associated with project construction. California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. With the implementation of Mitigation Measure M-CR-3, Unanticipated Discoveries for Human Remains, this impact would be reduced to a less-than-significant level.

Mitigation Measure M-CR-3: Unanticipated Discoveries for Human Remains

In the unlikely event that human remains or potential human remains are uncovered during construction, the find shall be secured and the project Head Foreman and/or PG&E shall immediately notify the ERO and suspend any ground-disturbing activities within 100 feet, or a distance recommended by the monitor, of the discovery until the ERO has determined what additional measures should be undertaken.

If the remains are not human, the ERO shall determine whether the find represents an archeological deposit and whether Mitigation Measure M-CR-2 applies. If the remains are human, the ERO shall immediately implement the applicable state law, which can be found in Sections 5097.9 through 5097.996 of the Public Resources Code. This shall begin with the immediate notification of the San Mateo County Coroner. All archeological work conducted under this mitigation measure shall be subject to review by the ERO or designee.

Impact CR-4: The proposed project may cause a substantial adverse change in the significance of a tribal cultural resource. (Less than Significant with Mitigation)

As discussed previously, no Native American traditional sacred places are recorded in the NAHC Sacred Lands file within the proposed project area. In addition, as described under Impact CR-2, no known archeological resources that might be identified as TCRs are located within the C-APE, and the closest known archeological resource (within a 0.25-mile radius of the proposed project) would not be affected. Discussions with Native American individuals identified by the NAHC have not identified any TCRs that may be affected by the proposed project.

However, unknown archeological resources may be encountered during construction that could be identified as TCRs at the time of discovery or at a later date. Therefore, the potential adverse effects of the proposed project on previously unidentified archeological resources, discussed under Impact CR-2, also represent a potentially significant impact on TCRs. Implementation of Mitigation Measure M-CR-2, Archeological Monitoring, and Mitigation Measure M-CR-4, Tribal Cultural Resources Interpretive Program, would reduce potential adverse effects on TCRs to a less-than-significant level. Mitigation Measure M-CR-4 would require either preservation-in-place of the TCRs, if determined effective and feasible, or an interpretive program regarding the TCRs developed in consultation with affiliated Native American tribal representatives.

Mitigation Measure M-CR-4: Tribal Cultural Resources Interpretive Program

If the Environmental Review Officer (ERO) determines that preservation-in-place of previously unidentified archeological resources pursuant to Mitigation Measure M-CR-2, Archeological Monitoring, is not a sufficient or feasible option, and if in consultation with the affiliated Native American tribal representatives, the ERO determines that the resource constitutes a TCR, the project sponsor shall implement an interpretive program of the TCR in consultation with affiliated tribal representatives. An interpretive plan produced in consultation with the ERO and affiliated tribal representatives, at a minimum, and approved by the ERO would be required to guide the interpretive program. The plan shall identify, as appropriate, proposed locations for installations or displays, the proposed content and materials of those displays or installation, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, artifacts displays and interpretation, and educational panels or other informational displays.

Impact C-CR-1: Construction of the proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, could result in a significant cumulative impact on cultural resources. (Less than Significant with Mitigation)

The geographic scope of potential cumulative impacts on cultural resources encompasses the proposed project site and vicinity. All cumulative projects identified are assumed to involve some degree of ground disturbance during construction and to have the potential to impact historic, archeological, and tribal cultural resources. However, it is important to note that impacts on historic, archeological, and tribal cultural resources are site specific. Five of the cumulative projects identified in Table 4 are adjacent to the proposed project, but four of these projects have already been constructed (Crystal Springs Valve Station Upgrade, Edgewood Valve Station Upgrade, Half Moon Bay Valve Automation Project, and Line 109 4B Replacement), and no known cultural resources were identified adjacent to the proposed project; therefore, the proposed project combined with these four projects would not result in significant cumulative cultural resources impacts. However, one project (the Line 109 San Mateo Creek Pipeline Replacement Project) has not been constructed, and unidentified archeological and tribal cultural resources could overlap between this project and the proposed project. Therefore, a potentially significant cumulative impact exists related to archeological and tribal cultural resources. The proposed project's contribution to this potentially significant cumulative impact may be considerable because scientifically and/or culturally valuable features or human remains may be present within the area of effect of the proposed project that may not be present within the Line 109 San Mateo Creek Pipeline Replacement Project. As previously discussed, by implementing the proposed mitigation measures, construction of the proposed project is anticipated to have less-than-significant impacts on archeological and tribal cultural resources and human remains. With implementation of Mitigation Measures M-CR-2, M-CR-3, and M-CR-4, the proposed project's contribution to the potentially significant cumulative impact related to archeological and tribal cultural resources would be less than cumulatively considerable.

E.5. TRANSPORTATION AND CIRCULATION

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.5.	**TRANSPORTATION AND CIRCULATION— Would the project:**					
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐	☐
b)	Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☐	☒
c)	Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that results in substantial safety risks?	☐	☐	☐	☐	☒
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	☐	☐	☐	☐	☒
e)	Result in inadequate emergency access?	☐	☐	☒	☐	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐	☐

The proposed project would not result in a change in air traffic patterns or substantially increase hazards due to a design feature or incompatible uses. Therefore, significance criteria E.5(c) and E.5(d) are not applicable to construction of the proposed project and are not discussed further. Significance criteria E.5(b) is not applicable to the project construction phase and there would be no changes to operations that would interfere with any congestion management program or other standards; thus, this criterion is not discussed further.

The proposed project is located in unincorporated San Mateo County, in three locations east and west of I-280, from just north of Hayne Road (to the north) to just north of the I-280 southbound Edgewood Road exit (to the south). The three locations, from south to north, include the Cañada Road segment, Bunker

Hill segment, and Crystal Springs segment. See Figure 1: Regional Overview, in Section A, Project Description, for pipeline segment locations. The Cañada Road segment of the project would begin approximately 0.5 mile north of Edgewood Road and end south of the intersection of SR 92 and I-280, between the east side of Cañada Road and west side of I-280. Cañada Road is a county-maintained roadway. The Cañada Road segment would include some construction along Cañada Road for approximately 1,000 feet in the northern section of the alignment.

The Bunker Hill segment would parallel the Highlands Fire Trail and an access road to a PG&E electric substation that is located east of I-280, from just north of the San Mateo Highlands Water Tower to just north of Bunker Hill Drive at the northern end of the segment; this portion of the project alignment is fenced off from the public. This pipeline segment would cross one roadway, Bunker Hill Drive, just east of the northbound I-280 on-ramp and-off ramp; however, planned construction includes drilling under Bunker Hill Drive.

The Crystal Springs segment is located east of I-280, from south of the Caltrans Crystal Springs Safety Roadside Rest Area at the southern end of the segment to just east of the I-280 northbound on-ramp north of Hayne Road, and roughly parallels Black Mountain Road (for approximately 0.4 mile). The Crystal Springs segment would cross two roadways—Hayne Road and Black Mountain Road (see Figure 2C: Parcel Map, in Section A, Project Description); however, construction would occur using jack-and-bore techniques in these areas. Outside of these road crossings, the project would include construction along or near existing access roads near these three segments, with the exception of the construction of one new temporary access road—at the southern end the Cañada Road segment—that would be between the pipeline alignment and a staging area, away from public roadways.

Following construction of the proposed project, the condition and use of the access roads (most of which are existing) and related maintenance activities[53] for the pipeline would be similar to existing maintenance activities and related truck traffic; therefore, the proposed project would not cause an increase in long-term, operational transportation impacts over existing conditions. Project operations

[53] PG&E's current maintenance activities are scheduled as follows: minimum quarterly visual walking of the line, monthly flyovers and gas leak detection on the entire line, and yearly digs in 40-foot sections (approximately 20 feet wide) when flagged for integrity management. PG&E's maintenance activities are identified in Code of Federal Regulations Title 49, Section 192, Subpart M, which includes walking and visually inspecting the line, gas leak detection, yearly testing of all valves, quarterly inspections of electrolysis stations, and monthly inspections of cathodic protection rectifiers.

would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. The proposed project would have no operational impacts on transportation and traffic.

This analysis, therefore, focuses solely on the potential short-term transportation-related effects of construction—including the temporary construction-related impacts on traffic, transit, emergency access, pedestrian/bicycle facilities, and parking. Under CCSF significance criteria and thresholds, construction-related transportation impacts are not generally considered significant because of their temporary duration and limited scope. The proposed project is estimated to occur over a 15-month construction period. Construction of the Bunker Hill and Cañada Road segments would overlap for a total of 60 days, and construction of the Cañada Road and Crystal Springs segments would also overlap by approximately 60 days.

Much of the pipeline segment construction would occur within SFPUC property (within PG&E existing or proposed easements), and a majority of the construction traffic would be to and from existing access roads (not public roadways), with the exception of approximately 1,000 feet along Cañada Road, where construction would occur along the roadway. HDD is the proposed technique for pipeline installation that crosses Bunker Hill Drive, and the jack-and-bore technique is proposed for pipeline installation under Hayne and Black Mountain roads; therefore, because no trenching would be required, these roadways would not be closed.

Impact TR-1: The construction of the project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. (Less than Significant)

For all three pipeline segments, construction activities would occur primarily within undeveloped SFPUC Watershed lands, and would not be conducted within regional or local roadways. For the Cañada Road segment, pipeline replacement would occur adjacent to Cañada Road for approximately 1,000 feet. The traffic on Cañada Road at the approximately 1,000-foot-long section would be limited to one lane of traffic and one bike lane Monday through Saturday, from 7 a.m. to 5:30 p.m. (remaining within the hours allowed by San Mateo County Code of Ordinances Chapter 4.88.360), and no work would be conducted on Sundays. Traffic direction would be flagged and altered based on queuing times. Within the Bunker

Hill segment, to avoid any lane closures at the Bunker Hill Drive crossing, the pipeline would be installed under the road using HDD. Within the Crystal Springs segment, to avoid any lane closures at the Hayne Road and Black Mountain Road crossings, the pipeline would be installed under the roads using jack-and-bore techniques.

Anticipated construction-related traffic would include construction vehicles travelling to and from each pipeline segment during construction, and would occur on truck routes and project site access routes. The roadways that could potentially be affected by temporary and short-term construction-related traffic include I-280, SR 92, Cañada Road, Edgewood Road, Bunker Hill Drive, Polhemus Road, Paul Scannell Drive, Loop Road, SR 35/Skyline Boulevard, and Hayne Road.

The main access to the Cañada Road pipeline segment would be from Cañada Road along existing SFPUC access roads.The southernmost access would be from the access gate at the Edgewood Crossover Station, just off of the southbound I-280 off-ramp to Edgewood Road. Construction vehicles would utilize SFPUC access roads, including a road that provides access to Edgewood Crossover Station approximately 0.75 mile north of Edgewood Road off of Cañada Road, access roads near the Pulgas Balancing Reservoir, and the Sheep Camp Trail/SFPUC access road.

Construction vehicle access to the Bunker Hill segment would be through two access points. Prior to the HDD phase of construction, all access would be from the south gate, near Lexington Avenue and Allegheny Way. Construction vehicles would use Polhemus Road, Paul Scannell Drive, and Loop Road to access the south gate. After the HDD phase, access would be from a gate on the north side of Bunker Hill Drive. No new access roads would be created for the Bunker Hill segment.

Primary access to the Crystal Springs segment would be from a gate at the Caltrans Crystal Springs Safety Roadside Rest Area off of I-280. Project access would also occur from a gate on the south side of Hayne Road. No new access roads would be created for the Crystal Springs segment.

For all three pipeline segments, 15 temporary work areas totaling approximately 38 acres, on undeveloped SFPUC property, would be cleared and graded along the pipeline route to create temporary staging locations for storage of equipment and materials and turnarounds. Construction vehicles traveling to and from staging areas would utilize the existing and (one) new access roads discussed previously (see Appendix A, Project Overview Maps). For the Cañada Road segment, a staging area would be located at the Edgewood Crossover Station at the southern end of the project site, with access

from the southbound I-280 off-ramp to Edgewood Road. Staging areas would also be located adjacent to Cañada Road just south of the Pulgas Balancing Reservoir, and at the northwestern end of the project area. One main staging area would be adjacent to and along the northern side of Bunker Hill Drive for the Bunker Hill segment. For the Crystal Springs segment, staging areas would primarily be located along the pipeline, including on either side of the Hayne Road and Black Mountain Road crossings. Other staging areas would be located away from roadways along the pipeline segments, and would be accessed from the existing access roads.

Construction of the proposed project pipeline segments would generate traffic in the form of construction vehicles (construction worker vehicles, equipment, and trucks) traveling to and from the access roads on Cañada Road, Edgewood Road, Bunker Hill Drive, Polhemus Road, Hayne Road, Black Mountain Road, and other local and regional roadways. An estimated maximum of 53 construction workers per day per segment would be at the project sites for a total construction period of 15 months. As described previously, construction of the Bunker Hill and Cañada Road segments and the Cañada Road and Crystal Springs segments could overlap at times, for a total duration of approximately 60 days each. The specific number of workers at the project sites would vary depending on the nature of work activities. It is estimated that, during the overlapping construction phases for two segments, the maximum number of construction workers would be 70. On average, construction for each of the pipeline segments would generate approximately 10 round-trip truck trips daily. In addition, it is estimated that construction at each of the proposed project sites would generate up to 10 round-trip passenger vehicle trips per day from construction personnel (assuming vans or carpooling of workers). These construction vehicle trips would not necessarily occur at the same time of day or during the peak period for general traffic. In addition, the potential for construction vehicle trips for each segment to overlap would only occur over a period of approximately 60 days when construction of the Bunker Hill and Cañada Road segments would coincide, and 60 days in the following year when construction of the Cañada Road and Crystal Springs segments would coincide.

The construction vehicle trips would be intermittent and temporary in nature, and would not be considered substantial. Similarly, although construction activities may generate increases in traffic on I-280, SR 92, and local roads, impacts on local and regional traffic would be temporary and short term in nature, and as such, would be considered less than significant. As part of the proposed project, workers engaged in construction activities would be required to carpool, as part of the PG&E — construction contract documents (refer to Section A.4.7, Best Management Practices). A construction yard located off of

Paul Scannell Drive would be the primary carpool meeting location, and the Caltrans laydown yard adjacent to the Edgewood Crossover Station would also be used. This carpooling initiative would help to relieve demand on local roadways, as well as help reduce vehicle emissions (see Section E.7, Air Quality). In addition, construction management contact information would be included in the project Construction Management Plan(s), and as part of that plan, would be posted at each primary access point for the public to call with questions, including at the access points along Cañada Road to SFPUC access roads, at the north and south gates for the Bunker Hill segment, and at the Caltrans Crystal Springs Safety Roadside Rest Area gate and Hayne Road gate for the Crystal Springs segment (refer to Section A.4.7, Best Management Practices).

Transit. No public transportation is adjacent to the proposed Cañada Road segment. The nearest public transportation to the Cañada Road segment project area is San Mateo County Transit District (SamTrans) bus service (Route 294) along SR 92. No public transportation is adjacent to the Bunker Hill segment. The nearest public transportation is SamTrans Route 260, which provides service on Polhemus Road between its intersection with Bunker Hill Drive and Paul Scannell Drive, and on Paul Scannel Drive to just beyond its intersection with Lessingia Court. Also, east of the Bunker Hill segment pipeline route, SamTrans Route 58 provides service on Bunker Hill Drive between its intersections with Polhemus Road to the south and Yorktown Road to the north. Route 58 runs on school days only—once in the early morning and three times between 1 p.m. and 3 p.m. No mass transit is located in the vicinity of the Crystal Springs segment. Project construction would not affect any transit facilities (such as bus stops or zones) along any of the three pipeline segments. Project construction vehicles would travel on local and regional roadways, including some roadways (SR 92 and Polhemus Road) that have transit service. This temporary increase in construction-related vehicles on local and regional roadways would not be considered substantial. Therefore, construction of the proposed project would not conflict with mass transit or transit policies.

Pedestrians. The northern portion of the Cañada Road segment roughly parallels Cañada Road, and construction activities would occur adjacent to the roadway. Cañada Road does not have sidewalks; however, the Crystal Springs segment of the Crystal Springs Regional Trail currently starts at SR 92 and runs south along the westerly right-of-way of Cañada Road. Across Cañada Road from the area where project construction would occur adjacent to the roadway, the Crystal Springs Regional Trail is removed from the roadway by approximately 20 to 30 feet of vegetation, and in some areas, a berm.

Although the portion of Sheep Camp Trail from Cañada Road to the Scenic Overlook access gate would be temporarily closed (for up to 7 months), the proposed project would cause negligible interference with pedestrian accessibility to the Crystal Springs Regional Trail. This is because public parking is available in other locations on Cañada Road, including along the road shoulders near the intersections of Edgewood Road and Cañada Road, and SR 92 and Cañada Road. Sheep Camp Trail is a recreational trail from the eastern crest of the SFPUC Watershed lands to Cañada Road, approximately 0.25 mile north of the Pulgas Water Temple. Sheep Camp Trail is a 1-mile-long, multi-use trail connecting Waterdog Lake Trail in Belmont to the Crystal Springs Regional Trail, and is utilized by pedestrians and hikers. Construction access would be required along the existing Sheep Camp Trail over a 7-month period, and trail access to the public would not be retained over that period. PG&E would notify the County of San Mateo Parks Department regarding the anticipated weeks/months of construction for the Cañada Road segment and the closure of Sheep Camp Trail during those times, for potential posting on the San Mateo Parks Department website. PG&E would also post this construction information on its website. PG&E would note the closure dates on signs at the trailhead, and on another sign located a safe distance from the construction area. Similar to the construction along Cañada Road, following construction access use along this portion of the pipeline, Sheep Camp Trail would be returned to existing conditions. Although an inconvenience to some members of the public, impacts resulting from the temporary closure of the portion of Sheep Camp Trail west of I-280 would be considered less than significant due to low usage (particularly during weekdays), and because other recreational trails are available in the area. Implementation of the BMPs found in Section A.4.7, Best Management Practices, would serve to further reduce this less-than-significant impact.

The only road crossed (drilled under) by the Bunker Hill segment is Bunker Hill Drive. This portion of Bunker Hill Drive links the residential area to the I-280 on-ramp and off-ramp, and has no sidewalks. Pedestrian use is negligible. The Crystal Springs pipeline segment crosses Hayne Road and Black Mountain Road at locations that lack sidewalks and residences. The portion of Hayne Road crossed by the pipeline segment connects the residential area to the I-280 on-ramp and off-ramp. Construction-related traffic on the local road network would not interfere with pedestrian use, and no public trails are located in the vicinity of the Bunker Hill and Crystal Springs segments.

Bicycles. Cañada Road is a designated Recreational Bicycle Route between SR 92 and Woodside Road in San Mateo County. The San Mateo County Comprehensive Bicycle and Pedestrian Plan identifies Cañada Road as a Class II bicycle lane; however, sporadic signage and markings and a somewhat narrow

shoulder/bicycle lane in some locations do not meet the Caltrans/California Manual on Uniform Traffic Control Devices definition and requirements for a Class II bicycle lane.[54,55] The county, through implementation of its 2000 Bicycle Plan, restriped, repaved, and put in some bicycle lane markings along this portion of Cañada Road.[56] Edgewood Road west of I-280 is currently unclassified (not a bicycle route), with shoulders that can accommodate bicycle traffic. Construction vehicles accessing the pipeline and construction access roads over the construction period would intermittently conflict with bicycle traffic, when present along Cañada Road. Additionally, construction along Cañada Road for approximately 1,000 feet at the northern end of the Cañada Road pipeline segment would require closure of the road's shoulder and bike lane in one direction. Bicyclists would be able to ride with traffic, but all traffic would be directed through the construction zone by flaggers. PG&E would work with San Mateo County to address bicyclists using this section of the road on Mondays through Saturdays during construction. It is estimated that construction along this portion of Cañada Road would occur for approximately 2 weeks, and the roadway would return to existing conditions following pipeline installation. Because construction would not occur on Sundays, San Mateo County's Bike Sundays—during which the portion of Cañada Road between the Filoli Estate entrance and SR 92 is closed to vehicle traffic and open only to bicycle and pedestrian traffic from 9 a.m. to 3 p.m.—would not be affected by Cañada Road segment project construction.

No bicycle lanes or paths are located in the direct vicinity of the Bunker Hill or Crystal Springs segments. Although not designated facilities, the Silicon Valley Bicycle Coalition San Mateo County bicycle map identifies Hayne Road and Black Mountain Road near the Crystal Springs segment as routes recommended by local bicyclists. As noted in Section A, Project Description, where construction of the pipeline segment would cross these roadways, jack-and-bore techniques would be used to avoid construction-related lane closures at these crossings.

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54 City/County Association of Governments of San Mateo County. 2011. San Mateo County Comprehensive Bicycle and Pedestrian Plan. https://performance.smcgov.org/Livable-Community/San-Mateo-County-Comprehensive-Bicycle-and-Pedestr/r4g3-aghc. Accessed on February 19, 2015.

55 California Department of Transportation. 2014. California Manual on Uniform Traffic Control Devices. http://www.dot.ca.gov/hq/traffops/engineering/mutcd/. Accessed on March 2, 2015.

56 City/County Association of Governments of San Mateo County. 2011. San Mateo County Comprehensive Bicycle and Pedestrian Plan. https://performance.smcgov.org/Livable-Community/San-Mateo-County-Comprehensive-Bicycle-and-Pedestr/r4g3-aghc. Accessed on February 19, 2015.

Construction vehicles accessing the pipeline and construction access roads over the estimated 15-month construction period at all three pipeline segments would intermittently conflict with bicycle traffic, when present on local roadways, including some designated (such as Polhemus Road for the Bunker Hill segment and Cañada Road for the Cañada Road segment) and unofficial bicycle routes. Construction vehicle traffic, as described previously, would be limited to up to 15 months, and the Cañada Road segment lane closure would be limited to 2 weeks. Therefore, pipeline segment construction and construction-related vehicle traffic would not substantially affect existing bicycle facilities or bicycle traffic in the vicinity of the proposed project segments.

Parking. During construction, workers at all three pipeline segment areas would utilize the temporary staging areas—described in Section A, Project Description—for parking. These parking areas would be located off of adjacent roadways for all three pipeline segments. While no designated parking spaces are located on Cañada Road for the Cañada Road segment, public parking typically occurs adjacent to the road, where the unpaved shoulder can accommodate it. Construction activities would occur adjacent to the east side of Cañada Road at the northern end of the project route for approximately 1,000 feet, and may impact potential public parking on the east side of the roadway along this section (as lanes would likely be shifted and narrowed). For the Bunker Hill segment, it is possible to park along portions of Bunker Hill Drive on the north side near the gate; however, this area is removed from the residential area and is rarely used for parking. No road shoulder is located on the west side of Black Mountain Road for the Crystal Springs segment, but some parking for residents is located in front of their homes. No vehicle parking is permitted along Hayne Road on the block crossed by the proposed project. PG&E would implement BMPs for work zone barriers, including, but not limited to the installation of appropriate barriers between work zones and transportation facilities, posting of adequate signage, establishment of adequate on-site parking and staging areas, and the requirement of construction worker carpooling (refer to Section A.4.7, Best Management Practices). Any temporary loss of parking along Cañada and Bunker Hill roads would be considered a less-than-significant impact due to the temporary and limited nature of project construction.

Impact TR-2: Construction of the project would not result in inadequate emergency access. (Less than Significant)

The California Department of Forestry and Fire Protection provides fire services to the project areas, and police services are provided by the San Mateo County Sheriff's Department. As indicated previously,

following construction, emergency access to the pipeline segments would be similar to existing conditions; therefore, operation of the proposed project would not alter emergency vehicle access. The area surrounding the Cañada Road segment of the pipeline does not have an extensive local road network, and primary access to the pipeline segment would be via Cañada Road along existing SFPUC access roads. The northern portion of the Cañada Road segment roughly parallels Cañada Road, and construction activities would occur adjacent to approximately 1,000 feet of Cañada Road. One lane would be closed for 2 weeks (except on Sundays); however, emergency access would be maintained during this time. A more substantial local road network serves the areas east of the Bunker Hill and Crystal Springs segments of the proposed project, including Bunker Hill Drive and Hayne Road, and these roadways would be utilized for pipeline access for construction-related activities. Also located near the Bunker Hill segment is the Highlands Fire Trail, which parallels the pipeline alignment and would provide access for construction-related activities and emergency response services in the event of a fire. No road closures are anticipated to be required for the Bunker Hill and Crystal Springs segments, and routes for emergency vehicles would be maintained throughout project construction. As a routine construction measure, emergency access and evacuation procedures would be developed and implemented as part of the on-site Health and Safety Plan. Therefore, construction impacts on emergency access at all three pipeline segment locations and on adjacent local and regional roadways would be less than significant.

Impact C-TR-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects, would not result in cumulative transportation and circulation impacts. (Less than Significant)

The geographic scope of potential cumulative impacts related to transportation includes local roads and regional freeways in the vicinity of the three pipeline segment areas. Construction of the Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project would result in less-than-significant impacts on traffic and circulation due to the limited duration of construction and the low number of vehicle and truck trips associated with construction. Although pedestrian, bicycle, and vehicle traffic north of the Cañada Road segment is affected by other construction projects—including San Mateo County's Crystal Springs Dam Bridge Replacement Project and the related SFPUC Crystal Springs/San Andreas Water Transmission System Upgrade Project—the proposed project would occur over a more limited timeframe (15 months versus over several years) and scope of work in comparison, and its contribution to construction-related transportation conditions in the area would not be cumulatively considerable. Construction and operation of other projects in the site vicinity would generate additional

traffic; however, the traffic levels are not anticipated to substantially reduce the capacities of local roadways. No other major projects are located in the vicinity of the Bunker Hill and Crystal Springs segments. Therefore, the proposed project would have less-than-significant cumulative construction-related transportation impacts.

E.6. NOISE

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.6. NOISE—Would the project:						
a)	Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐	☐
b)	Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐	☐
c)	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒	☐
d)	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐	☐
e)	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☐	☐	☒
f)	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒
g)	Be substantially affected by existing noise levels?	☐	☐	☐	☐	☒

The project site is not located near a public airport or a private airstrip, nor does the proposed project include development of any noise-sensitive uses that could be substantially affected by existing noise levels. Therefore, significance criteria E.6(e), E.6(f), and E.6(g) are not applicable and are not discussed further.

The proposed project would involve replacing a combined total of approximately 4.7 miles of existing underground natural gas pipeline across SFPUC Watershed lands within unincorporated San Mateo County near the shores of the Upper Crystal Springs Reservoir, along I-280, and adjacent to residential communities. The proposed project is located in open space roughly parallel to I-280 from north of the intersection of Black Mountain Road and Hayne Road to north of Edgewood Road, and is composed of three discontinuous project segments—Cañada Road, Bunker Hill, and Crystal Springs.

The project vicinity is rural in nature along the Cañada Road segment, and residential to the east along the Bunker Hill and Crystal Springs segments. The surrounding areas are primarily used by the public for recreation and residences. Noise and vibration sources in the vicinity include nearby residences and

vehicular traffic from nearby I-280, and to a lesser extent, Cañada Road, Black Mountain Road, and Lexington Avenue.

A few sensitive receptors are located near the proposed project, most of them recreational in nature. Sheep Camp Trail—used by hikers—crosses the Cañada Road segment, connecting the Upper Crystal Springs Reservoir with the nearest residential area across I-280. This trail generally runs perpendicular to the pipeline alignment, and crosses the pipeline alignment north of the Pulgas Water Temple. The Pulgas Ridge Open Space Preserve is located approximately 500 feet east of the southern end of the Cañada Road segment, across I-280. Edgewood County Park is located southeast across I-280, approximately 0.60 mile from the proposed project. Benjamin Fox Elementary school is approximately 0.75 mile northeast of the northern end of the Cañada Road segment. Hallmark Park is approximately 0.90 mile northeast of the northern section of the Cañada Road segment. With the exception of a nearby watershed keeper's cottage, located approximately 0.22 mile southwest of the northern end of the Cañada Road segment, the nearest residential land use is approximately 0.50 mile northeast of the proposed Cañada Road segment.

Along the Bunker Hill segment, the sensitive receptors are primarily schools, residences, and recreational uses. Highlands Elementary School is approximately 0.15 mile north, Highlands Recreation Center is approximately 0.10 mile northeast, Highlands-Baywood Park is approximately 0.50 mile north, and Timberland Park is approximately 0.70 mile northeast of the proposed Bunker Hill segment. The Bunker Hill segment crosses under Bunker Hill Drive and abuts backyards of residences along Lexington Avenue. The nearest residential land use to the Bunker Hill segment are the homes along Lexington Avenue, which are immediately adjacent to the project site, ranging from approximately 0.01 mile (55 feet) to 0.10 mile (528 feet) from the proposed pipeline alignment.

Along the Crystal Springs segment, sensitive receptors are primarily schools and residences. West Hillsborough Elementary School is approximately 0.15 mile north and Vista Park is approximately 1.10 miles northeast of the Crystal Springs segment. The northern section of the Crystal Springs segment runs roughly parallel to Black Mountain Road and the residences approximately 0.01 mile (55 feet) northeast across the street, while the southern section runs parallel to residential backyards along Wedgewood Drive approximately 0.10 mile (528 feet) northeast of the proposed segment.

E.6.1. Noise Descriptors

Sound is a phenomenon that occurs in a medium (such as air or water); the manner in which sound travels through the medium is influenced by the physical properties of the medium (such as temperature, density, humidity, etc.). The amount of energy in the sound is proportional to the pressure that it generates in the medium. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by more than 1 million times within the range of human hearing, a logarithmic scale is used to keep sound pressure measurements within a convenient and manageable range. Because the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The A-weighted decibel (dBA) refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from approximately 0 dBA to approximately 140 dBA. A 10-dBA increase in the level of a continuous noise represents a perceived doubling of loudness. The noise levels presented in this section are expressed in terms of dBA, unless otherwise indicated. Table 5: Typical Sound Levels Measured in the Environment, provides representative noise sources and their corresponding noise levels in dBA.

Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: noise levels above 35 dBA can disturb sleep, noise levels of 60 dBA begin to interfere with human speech, and prolonged exposure to noise levels greater than 85 dBA can damage hearing.[57]

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. Several of these sensitive land uses—including residences, three schools, libraries, churches, hospitals, one nursing home, and recreational trails and roadways used by the public—are located in the vicinity of the proposed project.

[57] USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Condensed Version). Washington D.C. (EPA/ONAC 550/9-74-004).

TABLE 5: 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	
School cafeteria with untreated surfaces	80	Loud
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. The Noise Guidebook. Office of Community Planning and Development.		

Construction Noise

One of the more recent and complete compilations of construction equipment noise is the Roadway Construction Noise Model (RCNM), prepared by the Federal Highway Administration (FHWA). The expected equipment noise levels provided by the RCNM User's Guide[58] are used for this evaluation. Given the linear nature of both highway and pipeline construction, the method developed by the FHWA can be reasonably applied to pipeline construction activities.

Equipment noise levels from Table 1 in the RCNM User's Guide for the types of equipment anticipated to be used for the pipeline construction are shown in Table 6: Construction Equipment Noise Levels from the RCNM User's Guide. 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

[58] Federal Highway Administration. 2006. FWHA Roadway Construction Noise Model User's Guide. Final Report. January.

account the reduction of noise with distance due to geometric divergence, and logarithmically adding the contribution of each to get the total noise anticipated from all of the construction equipment. Geometric divergence is the primary mechanism of noise reduction close to a noise source. At farther distances, additional attenuation (e.g., ground effects and atmospheric attenuation) can be significant. This excess attenuation is not accounted for in the model. Therefore, the model output should be considered conservatively high.

TABLE 6: CONSTRUCTION EQUIPMENT NOISE LEVELS FROM THE RCNM USER'S GUIDE

Equipment Description	Acoustical Usage Factor (%)	Specified L_{max} @ 50 feet (dBA)	Actual Measured L_{max} @ 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. FWHA Roadway Construction Noise Model User's Guide. Final Report. January.
L_{max} = maximum decibel noise level
dBA = decibels (A-weighted scale)

E.6.2. Vibration Descriptors

Vibration caused by construction activities can be interpreted as energy transmitted in waves through the ground. Vibration attenuates as a function of the distance between the source and receptor. Vibration emanating from a single location (a "point source") attenuates at a rate of approximately 50 percent for each doubling of distance from the source (termed the "inverse square law"). This calculation tends to underestimate attenuation and, therefore, provides a "worst-case" estimate of vibration at the receptor.

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is used to assess the potential for damage to buildings and structures, and is

expressed in inches per second (in/sec). In general, threshold damage[59] to residential buildings can occur at vibrations greater than 0.5 in/sec PPV for "transient" or "intermittent" vibration, and 0.4 in/sec PPV for continuous vibration. Transient vibration is typically less than 20 seconds in duration per occurrence and occurs infrequently; intermittent vibration is typically 20 seconds or less per occurrence and occurs several times per hour on a regular basis; and "continuous" vibration occurs when vibratory construction methods, such as a vibratory compactor or vibratory pile driver, are employed.[60] Vibration below ground surface is lower than that measured at ground surface; thus, underground utilities are less sensitive than surface structures. A much higher threshold of 4 in/sec PPV is commonly used for these underground utilities, such as pipelines and optical-fiber cables. The 4 in/sec PPV threshold is consistent with thresholds recommended by Standard Recommended Practice for Evaluation of Transportation-Related Earthborne Vibrations.[61] Underground or restrained concrete structures can withstand vibration of 10 in/sec PPV before threshold cracks appear.[62]

The responses of human receptors and structures to vibration are influenced by a combination of factors, including soil/rock type, distance from the source, duration, and the number of perceived events. Energy transmitted through the ground as vibration can reach levels that cause structural damage; however, humans are very sensitive, and the vibration amplitudes that can be perceived by humans are well below the levels that cause architectural or structural damage. A freight train passing at 100 feet can result in vibrations of 0.1 in/sec PPV, while a strong earthquake can produce vibration in the range of 10 in/sec PPV.

In general, cosmetic or threshold damage to residential buildings can occur at vibrations over 0.5 in/sec PPV. The Federal Transit Administration (FTA) recommends a vibration threshold criterion of 0.2 in/sec PPV for fragile buildings.[63] Much lower vibration levels (exceeding 0.012 in/sec PPV) can cause disturbance or annoyance, and this threshold is typically applied to construction activities during the

[59] For the purpose of this analysis, threshold damage is defined as the level of vibration above which cosmetic damage to structures could occur. This criterion provides a conservative approach to assessing the potential for structural damage, which would occur at higher vibration levels than the threshold for cosmetic damage.

[60] Wilson, Ihrig & Associates, Inc. 2008. Vibration Criteria – New Irvington Tunnel Memo. Prepared for Baseline Environmental and Jones & Stokes. December 9, 2008.

[61] American Association of State Highway and Transportation Officials, 2004. Standard Recommended Practice for Evaluation of Transportation-Related Earthborne Vibrations.

[62] WIA. 2009. Crystal Springs Pipeline No. 2, Noise and Vibration Study, Impacts and Mitigation Technical Memo. Prepared for the ESA+Orion Joint Venture. September 24, 2009.

[63] U.S. Department of Transportation, Federal Transit Administration. 2006. Transit Noise and Vibration Impact Assessment. DTA-VA-90-1003-06, May 2006. http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

more sensitive nighttime hours. Exceedance of the annoyance threshold at night could result in sleep disturbance, depending on the receptor's proximity to construction activities.

Construction Vibration

A vibratory analysis was conducted based on the FTA's methods for assessing vibration from construction equipment at vibration-sensitive receptors. This method evaluates the potential of annoyance to people and damage to buildings. The criterion selected for annoyance was a vibration level of 80 vibration velocity level in decibels (VdB) (relative to 1 micro inch/second root mean square) based on transient vibration events occurring at residences. The criterion selected for damage was a PPV of 0.2 in/sec based on non-engineered timber and masonry buildings.

Existing Ambient Conditions

Ambient noise measurements were taken over a 24-hour period on May 15, 2015, at the HDD entry and exit locations in the Bunker Hill segment (see Table 7: Ambient Sound Levels Measured at The Bunker Hill HDD Entry and Exit Locations). Daytime ambient noise levels were 56 dBA at the HDD entry site and 60 dBA at the HDD exit site during construction hours. Nighttime levels were significantly quieter at 48 dBA at the HDD entry site and 51 dBA at the HDD exit site.

TABLE 7: AMBIENT SOUND LEVELS MEASURED AT THE BUNKER HILL HDD ENTRY AND EXIT LOCATIONS

Measurement Location (Station)	L_{eq} Sound Levels[1]	L_{max} Sound Levels[1]	L_{min} Sound Levels[1]	Calculated Daytime L_{eq}[2]	Calculated Nighttime L_{eq}[3]
HDD Entry (Station 27+00)	43 to 59	53 to 72	36 to 55	56	**48**
HDD Exit (Station 47+00)	37 to 67	46 to 82	26 to 63	60	**51**

[1] Full range of sound levels during 24-hour measurement
[2] Calculated based on construction hours of 7 a.m. to 5:30 p.m.
[3] Calculated based on hours between 10 p.m. and 7 a.m.

Impact NO-1: The project would result in exposure of persons to or generation of noise levels in excess of standards established in local general plans or noise ordinances, or applicable standards of other agencies. (Less than Significant with Mitigation)

Because the California Public Utilities Commission (CPUC) has exclusive jurisdiction over siting, design, and construction of the proposed project, it is not subject to local land use regulations. However, because the project is located in unincorporated San Mateo County and the lead agency is the City of San Francisco Planning Department, this document uses the San Mateo County and the CCSF noise

requirements to set noise thresholds. The daytime and nighttime noise thresholds set for this project are the more stringent of the two.

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. According to the San Mateo County Code of Ordinances, noise from construction activities is allowed between the hours of 7 a.m. and 6 p.m. on weekdays, 9 a.m. and 5 p.m. on Saturdays, and is 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 outside of the hours listed above, or at any time on Thanksgiving and Christmas." Construction activities would typically occur within the allowable work hours, Monday through Saturday. There is no decibel noise limit for construction activities in unincorporated county areas during the allowed times of operation. CCSF has not formally adopted significance standards for impacts related to noise and vibration, but generally considers that implementation of the proposed project would have a significant impact on noise and vibration if it would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. To address the CEQA significance criterion regarding "substantial temporary or periodic noise increases in ambient noise levels" for construction noise, a "substantial" noise increase is defined as an increase in noise to a level that causes interference with land use activities at nearby sensitive receptors. One indicator that construction noise could interfere with daytime (7 a.m. to 10 p.m.) activities is speech interference. An indicator that nighttime HDD noise could interfere with nighttime (10 p.m. to 7 a.m.) activities is sleep interference.

A speech interference threshold, in the context of impact duration and time of day, is used to identify a substantial increase in noise from temporary construction activities. Noise peaks generated by construction equipment could result in speech interference in nearby buildings if the noise level at the interior of the building exceeds 45 to 60 dBA. The range is due to variables such as frequency content, listener hearing ability, and distance between speakers. A typical building can reduce noise levels by 25 dBA with the windows closed.[64] This noise reduction could be maintained only on a temporary basis in

[64] USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Condensed Version). Washington D.C. (EPA/ONAC 550/9-74-004).

some cases, because it assumes that windows must remain closed at all times. Assuming a 25-dBA reduction with the windows closed, an exterior noise level of 70 dBA equivalent continuous noise level (L_{eq}) at sensitive receptors would maintain an acceptable interior noise environment of 45 dBA. With windows open, interior noise levels (due to a 70-dBA L_{eq} exterior noise level) would increase to 55 dBA, which would still provide acceptable interior noise levels, but could cause occasional speech interference effects. It should be noted that such noise levels would typically be sporadic rather than continuous in nature, because different types of construction equipment would be used throughout the construction process. The duration of exposure at any given receptor is then considered to determine the impact's significance. Daytime exposure to noise from construction activities above these thresholds for 2 weeks or less is considered to be less than significant. This analysis uses the CCSF's CEQA standards for the daytime noise threshold, whereby a significant daytime noise impact would occur if exterior noise levels remained above the 70 dBA L_{eq} speech interference threshold for a long-term period.

Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable.[65] Assuming a 15-dBA reduction with the windows open, an exterior noise level of 50 dBA L_{eq} at sensitive receptors would maintain an acceptable interior noise environment of 35 dBA. Additionally, according to the San Mateo County Code of Ordinances Chapter 4.88.330, the acceptable nighttime exterior noise level is 50 dBA. Therefore, the exterior sleep interference threshold of 50 dBA L_{eq} has been applied for this analysis.

Equipment used during construction of the proposed project would generate noise. 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 1 week at a time, as construction activities move along the corridor. The equipment used for clearing, grading, excavating, and removing material from the site—associated with the site preparation and excavation phases—usually generate the highest noise levels (typically 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,[66] which would be approximately the distance from

[65] Ibid.

[66] Generally speaking, when addressing maximum noise exposure in terms of the L_{max}, the reference noise level from the loudest source of noise (e.g., loudest piece of construction equipment) is used to complete the analysis. This is consistent with the Federal Highway Administration RCNM analysis procedure.

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). Although this noise level is above the CCSF's daytime exterior threshold of 70 dBA L_{eq}, the noise would not be continuous and would be short term, lasting for no more than 1 week at each location along the pipeline corridor. Therefore, noise impacts on sensitive receptors would be less than significant.The nearest school to the Bunker Hill segment is Highlands Elementary School, located approximately 0.15 mile (792 feet) northeast of this segment, and the nearest school to the Crystal Springs segment is West Hillsborough Elementary School, located approximately 0.15 mile (792 feet) 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 threshold of 70 dBA, impacts on nearby schools from daytime construction noise would be less than significant.

Recreational corridors—including bicycle routes and hiking trails—are adjacent to the Cañada Road segment of the proposed project. The project would temporarily affect recreational uses in the vicinity of the proposed project; however, PG&E would temporarily close trails and reroute trail traffic on Sheep Camp Trail and the Cañada Road bicycle lane on the east side of the road, which would reduce potential noise impacts on the public. Anyone using these recreational features—such as hikers and bicyclists—would be passing through the area, and therefore, would only be subjected to construction noise for a brief distance and a relatively short amount of time. Therefore, noise impacts on recreational corridors would be less than significant.

HDD pipeline installation techniques would be used to cross an ephemeral drainage (Cañ-D3) from station 63+50 to 77+50 in the Cañada Road segment, and to avoid impacting sensitive biological resources located at station 27+00, extending under Bunker Hill Drive to station 47+00, in the Bunker Hill segment. The nearest receptor to the HDD activities along the Cañada Road segment is the Pulgas Water Temple to the west, located approximately 1,030 feet from the HDD entry location and approximately 1,560 feet from the HDD exit location. The nearest receptors to the HDD activities along the Bunker Hill segment are the residences located approximately 80 feet from the entry location at station 27+00, along Lexington

Avenue, and approximately 580 feet northeast of the HDD exit location at station 47+00, along Lexington Avenue.

The drilling machine would be used for approximately 25 days at each segment. The HDD equipment in use at the entry locations would be an idling side boom. The noise level for an idling side boom would be 83 dBA at 50 feet. The HDD equipment in use at the exit locations would consist of an HDD drill rig, reclaimer, and mud pump. The resultant noise level for all HDD equipment operating at exit locations would be 95 dBA at 50 feet.

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. This analysis evaluated the L_{eq}. As shown in Table 8: Noise Analysis for Daytime HDD Boring, 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; both of these measurements are above the CCSF's daytime exterior threshold of 70 dBA L_{eq}.

TABLE 8: NOISE ANALYSIS FOR DAYTIME HDD BORING

Location	Distance (feet) / Direction to Receptor	Existing Daytime L_{eq} (dBA)	Calculated HDD L_{eq} Noise Level	Combined Future Level (Existing Plus HDD)	Estimated Increase Over Existing L_{eq}
No Barrier (Unmitigated)					
Nearest Receptor to Bunker Hill HDD Entry (Station 27+00)	80 / N	56	79	**79**	23
Nearest Receptor to Bunker Hill HDD Exit (Station 47+00)	580 / NE	60	72	**72**	12
Two-sided Barrier Wall, 10 Feet High					
Nearest Receptor to HDD Entry (Station 27+00)	80/ N	56	73	**73**	17
Nearest Receptor to HDD Exit (Station 47+00)	580 / NE	60	66	**67**	7
Two-sided Barrier Wall, 20 Feet High					
Nearest Receptor to HDD Entry (Station 27+00)	80 / N	56	65	**66**	10
Nearest Receptor to HDD Exit (Station 47+00)	580 / NE	60	58	**62**	2

With implementation of a 20-foot-high, two-sided barrier wall, exterior noise levels would be 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, which is an acceptable interior noise environment. Therefore, noise levels from daytime HDD activities would be less than significant with implementation of Mitigation Measures M-NO-1a, Install Sound Barrier Wall, and M-NO-1b, Notify Nearby Residents of HDD Activities.

The HDD exit location at the Cañada Road segment is approximately 1,560 feet from the closest receptor, the Pulgas Water Temple, which would be closed during any evening and nighttime work. The closest residence to the HDD work is a watershed keeper's cottage that is located approximately 0.90 mile (4,800 feet) from the exit location. At this distance, the exterior sound levels associated with HDD activities would be in the range of 56 dBA (entry) to 62 dBA (exit), which is less than the daytime exterior threshold of 70 dBA. With attenuation due to the building, interior sound levels with the windows open would be approximately 41 to 47 dBA, and noise would be reduced further with the windows closed. As mentioned previously, an interior sound level of 45 dBA is similar to that of a quiet office environment. Noise impacts from HDD activities at the Cañada Road segment would be less than significant.

HDD work is not anticipated to occur at night. However, in the case of an unanticipated condition (e.g., the drill gets stuck or drilling goes slower than expected), 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 without stopping. Any potential nighttime noise from HDD activities would only occur at the HDD entry and exit locations, at stations 63+50 and 77+50 in the Cañada Road segment, and at stations 27+00 and 47+00 in the Bunker Hill segment. As mentioned previously, an interior nighttime level of 35 dBA is considered acceptable,[67] and based on an attenuation of 15 dBA for a building with the windows open, the acceptable nighttime exterior noise level at a residence is 50 dBA. Additionally, according to the San Mateo County Code of Ordinances Chapter 4.88.330, the acceptable nighttime exterior noise level is 50 dBA.

The calculated noise levels for the closest receptors to the entry and exit locations in the Bunker Hill segment were also compared to the measured nighttime L_{eq} noise levels. As shown in Table 9: Noise

[67] USEPA. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Condensed Version). Washington D.C. (EPA/ONAC 550/9-74-004).

Analysis for Nighttime HDD Boring, at 80 feet from the HDD entry site, the nighttime exterior noise level at the closest residences would be 79 dBA, which is 29 decibels above the nighttime exterior threshold of 50 dBA. Implementation of a 20-foot-high, two-sided barrier wall would reduce the sound level by 14 decibels, to 65 dBA. As shown in Table 9, at 580 feet from the HDD exit site, the nighttime exterior noise level at the closest residences would be 72 dBA, which is 22 decibels above the nighttime exterior threshold. Implementation of a 20-foot-high, two-sided barrier wall would reduce the sound level by 14 decibels to 58 dBA.

TABLE 9: NOISE ANALYSIS FOR NIGHTTIME HDD BORING

Location	Distance (feet) / Direction to Receptor	Measured Existing Nighttime L_{eq} (dBA)	Calculated HDD L_{eq} Noise Level	Combined Future Level (Existing Plus HDD)	Estimated Increase Over Existing L_{eq}	Decibels Above Nighttime Exterior Threshold (50 dBA)
No Barrier (Unmitigated)						
Nearest Receptor to HDD Entry (Station 27+00)	80 / N	48	79	**79**	31	**29**
Nearest Receptor to HDD Exit (Station 47+00)	580 / NE	51	72	**72**	21	**22**
Two-sided Barrier Wall, 10 Feet High						
Nearest Receptor to HDD Entry (Station 27+00)	80 / N	48	73	**73**	25	**23**
Nearest Receptor to HDD Exit (Station 47+00)	580 / NE	51	66	**66**	15	**16**
Two-sided Barrier Wall, 20 Feet High						
Nearest Receptor to HDD Entry (Station 27+00)	80 / N	48	65	**65**	17	**15**
Nearest Receptor to HDD Exit (Station 47+00)	580 / NE	51	58	**59**	8	**8**

Given the local climate conditions (cool evenings) and expected short duration of nighttime HDD activities (potentially 1 night at each location), it is reasonable to anticipate that windows would be closed during the nighttime hours. Assuming a 25-dBA reduction with the windows closed, in addition to the noise reduction by the 20-foot-high, two-sided barrier wall, nighttime interior noise levels during HDD

activities would be 40 dBA at the residences closest to the HDD entry site, and 33 dBA at the residences closest to the HDD exit site. These noise levels are above the nighttime interior threshold of 35 dBA for the residences closest to the HDD entry site, and below the threshold for residences closest to the HDD exit site.

PG&E would implement Mitigation Measure M-NO-1a, Install Sound Barrier Wall, to reduce the daytime and nighttime noise levels at nearby residences as much as feasible. However, as shown in Table 9, even with a 20-foot-high barrier wall in place, the noise level would remain above the nighttime exterior threshold at the closest residences, from both the HDD entry and exit locations. Therefore, PG&E would also implement Mitigation Measures M-NO-1b, Notify Nearby Residents of HDD Activities, which would include notification of residents both 2 weeks and 1 day prior to the daytime and nighttime HDD work, and M-NO-1c, 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 1 night of HDD work.

Mitigation Measure M-NO-1a: Install Sound Barrier Wall

A 20-foot-tall sound barrier with an STC rating of at least 25 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.

The sound barriers required in Mitigation Measures M-NO-1a would block views of the watershed from the closest residences for the duration of HDD activities—approximately 25 days. This disruption would be short term and temporary, and therefore secondary aesthetic impacts would be less than significant.

Mitigation Measure M-NO-1b: 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 2 weeks prior and again 1 day prior to daytime and potential nighttime HDD activities.

Mitigation Measure M-NO-1c: Temporarily Relocate Nearby Residents from Nighttime HDD Activities

For the limited locations where PG&E is unable to mitigate noise through Mitigation Measure M-NO-1a, 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 1 night of potential HDD activities. Special medical conditions shall be verified by a doctor.

Impact NO-2: The project would not result in a substantial temporary or periodic increase in groundborne vibration or groundborne noise in the project vicinity. (Less than Significant)

Construction of the proposed project would involve ground-disturbing activities—including drilling, excavation, grading, and clearing—that would generate some localized groundborne vibration and noise; however, the groundborne vibration or noise generated by these temporary and short-term activities is not anticipated to be excessive. Construction activities resulting in minor groundborne vibration are expected to occur only during daylight hours.

As stated previously, the criterion selected for annoyance is a vibration level of 80 VdB (relative to 1 micro inch/second root mean square), based on transient vibration events occurring at residences. The vibration impact calculations were based on the FTA's methods for assessing vibration from construction equipment at vibration-sensitive receptors. A large bulldozer is the loudest single piece of equipment expected to be used during construction of the proposed project, and HDD work would also result in vibration. The FTA provides a reference of a PPV of 0.089 inch/second at a distance of 25 feet for both the bulldozer and drilling techniques (which were assumed to be comparable to HDD operations). This corresponds to a vibration level of 87 VdB at a reference distance of 25 feet.

Calculations based on the algorithms in the FTA (2006) document indicated that the damage criterion would not be exceeded at distances farther than 15 feet from the vibration source (bulldozer or HDD work), and the annoyance criterion would not be exceeded at distances farther than 43 feet. The nearest residences are located at a distance greater than 43 feet from any proposed project construction, and therefore, construction vibration would not have an impact on the residences in the vicinity of the Cañada Road, Bunker Hill, or Crystal Springs segments of the pipeline. Any groundborne vibration resulting from project construction would also be short term and temporary, and therefore, would not have any long-term impacts on nearby receptors. Some recreational trails and parks are located in the

area; however, any impact on recreational receptors would be infrequent, temporary, and offset by trail closures and rerouting. Therefore, this impact would be less than significant.

Impact NO-3: The project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (No Impact)

The proposed project involves the replacement of an existing pipeline. Construction would create temporary and short-term noise-related impacts, which would cease once construction is completed. Therefore, the proposed project would not result in a permanent increase in noise relative to ambient noise levels in the project area, and there would be no impact.

Impact NO-4: The project would result in a substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant with Mitigation)

Ambient conditions were measured at the Bunker Hill segment and found to range between 37 dBA at night and 67 dBA during the day (refer to Table 7: Ambient Sound Levels Measured at The Bunker Hill HDD Entry and Exit Locations). It is expected that ambient noise levels in the Cañada Road and Crystal Springs segments would be similar. Construction activities would result in temporary and short-term increases in noise levels in the project vicinity. These temporary construction noises would generally occur Monday through Saturday during the daytime work hours allowed by the San Mateo County Code of Ordinances.

As stated in the discussion under Impact NO-1, noise would be generated at each staging area 8 hours per day for 25 days, though 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 1 week at a time, as construction activities move along the corridor. The drilling machine would be used for approximately 25 days at each HDD location. With the exception of the HDD drill, the loudest construction noise would occur along the pipeline corridor. Although this noise level would be a substantial increase in ambient levels, the noise would not be continuous and would be short term, lasting for no more than 1 week at each location along the pipeline corridor. Therefore, noise impacts on sensitive receptors would be less than significant. Noise levels from daytime HDD activities would also constitute a substantial increase in ambient noise levels; however, this noise would be short term and temporary, and would be less than significant with implementation of Mitigation Measures M-NO-1a, Install Sound Barrier Wall, and M-NO-1b, Notify Nearby Residents of HDD Activities.

As stated previously, HDD activities may occur for a maximum of 1 night each for the Cañada Road and Bunker Hill segments, when the pipe string is pulled in. The calculated noise levels for the closest receptors to the entry and exit locations in the Bunker Hill segment would constitute a substantial increase in ambient noise levels. If nighttime HDD work is necessary, PG&E would implement Mitigation Measures M-NO-1a, Install Sound Barrier Wall, M-NO-1b, Notify Nearby Residents of HDD Activities, and M-NO-1c, Temporarily Relocate Nearby Residents from Nighttime HDD Activities, which would reduce the noise levels at the Bunker Hill segment and notify residents prior to the potential nighttime work. With implementation of the mitigation measures and because the HDD activities would be short term and temporary (1 night only), impacts from construction noise would be less than significant.

Impact C-NO-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects, would result in less-than-significant cumulative noise impacts. (Less than Significant)

Noise and vibration impacts of the proposed project would be limited to the project sites and their immediate vicinities; therefore, the geographic scope of potential cumulative noise and vibration impacts encompasses the immediate vicinity of the proposed project segments.

During project construction, there would be a potential for cumulative noise increases on local roadways if construction-related truck traffic were generated by other projects and the proposed project on the same delivery/haul/access routes at the same time. The proposed project would contribute a minimal amount of noise by using these corridors for equipment and vehicle access; only 10 daily passenger and 10 daily truck round-trips are anticipated on average for any one segment. PG&E estimates 12 daily passenger vehicle and 12 daily truck round-trips for overlapping construction phases for two segments.

Due to the generally undeveloped and rural nature of the area surrounding the Cañada Road segment, and the lack of other projects in the vicinity of the Bunker Hill and Crystal Springs project areas, any cumulative noise impacts would be less than significant. Impacts from vehicle trips would be short term and limited to the construction duration, and would not generate traffic substantial enough to dramatically increase existing ambient traffic noise. Therefore, any cumulative noise impacts would be less than significant.

E.7. AIR QUALITY

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.7.	**AIR QUALITY—Would the project:**					
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐	☐

E.7.1. Background

The project area is located in San Mateo County, which is part of the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the regional agency with jurisdiction over the nine-county SFBAAB, which includes San Francisco, Alameda, Contra Costa, Marin, San Mateo, Santa Clara, and Napa counties, and portions of Sonoma and Solano counties. The BAAQMD is responsible for attaining and maintaining air quality in the SFBAAB within federal and state air quality standards, as established by the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), respectively. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the SFBAAB and to develop and implement strategies to attain the applicable federal and state standards. The CAA and the CCAA require plans to be developed for areas that do not meet air quality standards. The most recent air quality plan, the 2010 Clean Air Plan (CAP), was adopted by the BAAQMD on September 15, 2010. The CAP updates the Bay Area 2005 Ozone Strategy, in accordance with the requirements of the CCAA, to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases (GHGs) in a single, integrated plan; and establish emission control measures to be adopted or implemented.

The CAP contains the following primary goals:

- Attain air quality standards
- Reduce population exposure and protect public health in the San Francisco Bay Area
- Reduce GHG emissions and protect the climate

The CAP represents the most current applicable air quality plan for the SFBAAB. Consistency with this plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of air quality plans.

Topography, Meteorology, and Climate

The SFBAAB covers approximately 5,540 square miles of complex terrain, made up of coastal mountain ranges, inland valleys, and the San Francisco Bay. The SFBAAB is generally bordered on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range. The project areas are located in the westernmost portion of the SFBAAB, in the peninsula region.

The peninsula region extends from northwest of San Jose to the Golden Gate. The Santa Cruz Mountains run up the center of the peninsula, with elevations exceeding 2,000 feet at the southern end and decreasing to 500 feet in South San Francisco. Coastal towns experience a high incidence of cool, foggy weather in the summer. Cities in the southeastern peninsula experience warmer temperatures and fewer foggy days because the marine layer is blocked by the ridgeline to the west.

Annual average wind speeds range from 5 to 10 miles per hour (mph) throughout the peninsula, with higher wind speeds usually found along the coast. Winds on the eastern side of the peninsula are often high in certain areas, such as near the San Bruno Gap and the Crystal Springs Gap.

The prevailing winds along the peninsula's coast are from the west, although individual sites can have significant differences. For example, Fort Funston in western San Francisco has a southwest wind pattern, while Pillar Point in San Mateo County has a northwest wind pattern. On the east side of the mountains, winds are generally from the west, although wind patterns in this area are often influenced greatly by local topographic features.

Air pollution potential is highest along the southeastern portion of the peninsula. This is the area most protected from the high winds and fog of the marine layer. Pollutant transport from upwind sites is common. In the southeastern portion of the peninsula, air pollutant emissions are relatively high due to

motor vehicle traffic as well as stationary sources. At the northern end of the peninsula in San Francisco, pollutant emissions are high, especially from motor vehicle congestion. Localized pollutants, such as carbon monoxide (CO), can build up in "urban canyons." Winds are generally fast enough to carry the pollutants away before they can accumulate in concentrations that would be of concern.

Criteria Air Pollutants

In accordance with the state and federal CAAs, air pollutant standards are identified for the following six criteria air pollutants: ozone, CO, particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (see Table 10: National and California Ambient Air Quality Standards and Attainment Status). 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. In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal or state standards. The SFBAAB is designated as either in attainment[68] or unclassified for most criteria pollutants with the exception of ozone, fine particulate matter ($PM_{2.5}$), and respirable particulate matter (PM_{10}); the SFBAAB is designated as non-attainment by either the state or federal standards for these pollutants. By its very nature, regional air pollution is largely a cumulative impact in that no single project is sufficient in size to, by itself, result in non-attainment of air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality impacts. If a project's contribution to cumulative air quality impacts is considerable, the project's impact on air quality would be considered significant.[69]

Land use projects may contribute to regional criteria air pollutants during the construction and operational phases of a project. Table 11: Criteria Air Pollutant Significance Thresholds, identifies air quality significance thresholds—originally developed by BAAQMD and used by the San Francisco Planning Department—followed by a discussion of each threshold. Projects that would result in criteria air pollutant emissions below these significance thresholds would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the SFBAAB.

[68] "Attainment" status refers to those regions that are meeting federal and/or state standards for a specified criteria pollutant. "Non-attainment" refers to regions that do not meet federal and/or state standards for a specified criteria pollutant. "Unclassified" refers to regions where there is not enough data to determine the region's attainment status for a specified criteria air pollutant.

[69] BAAQMD. 2012. CEQA Guidelines. Page 2-1.

TABLE 10: NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	California Standards[a]		National Standards[b]	
		Concentration[c]	Attainment Status	Primary[c,d]	Attainment Status
Ozone	1 hour	0.09 ppm (180 μg/m^3)	Nonattainment	—	—
	8 hours	0.070 ppm (137 μg/m^3)	Nonattainment	0.075 ppm (147 μg/m^3)	Nonattainment
Respirable particulate matter (PM_{10})	24 hours	50 μg/m^3	Nonattainment	150 μg/m^3	Nonattainment
	Annual arithmetic mean	20 μg/m^3	Nonattainment	—	—
Fine particulate matter ($PM_{2.5}$)	24 hours	—	—	35 μg/m^3	Attainment
	Annual arithmetic mean	12 μg/m^3	Nonattainment	12.0 μg/m^3 [e]	Nonattainment[l]
Carbon monoxide	8 hours	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment
	1 hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen dioxide[f]	Annual arithmetic mean	0.030 ppm (57 μg/m^3)	Attainment	0.053 ppm (100 μg/m^3)	Attainment
	1 hour	0.18 ppm (339 μg/m^3)	Attainment	0.100 ppb (188 μg/m^3)	Unclassified
Sulfur dioxide[g]	Annual arithmetic mean	—	—	0.030 ppm (for certain areas)	Attainment
	24 hours	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (for certain areas)	Attainment
	1 hour	0.25 ppm (655 μg/m^3)	Attainment	0.075 ppm (196 μg/m^3)	Attainment
Lead[h,]	30-day average	1.5 μg/m^3	Attainment	—	—
	Calendar quarter	—	—	1.5 μg/m^3 (for certain areas)[i]	Attainment
	Rolling 3-month average	—	—	0.15 μg/m^3	

Pollutant	Averaging Time	California Standards[a]		National Standards[b]	
		Concentration[c]	Attainment Status	Primary[c,d]	Attainment Status
Visibility-reducing particles [j]	8 hours	See footnote [j]	Unclassified	No national standards	
Sulfates	24 hours	25 μg/m^3	Attainment		
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m^3)	Unclassified		
Vinyl chloride[k]	24 hours	0.01 ppm (26 μg/m^3)	No information available		

Notes:
mg/m^3 = milligrams per cubic meter; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppb = parts per billion; ppm = parts per million; μg/m^3 = micrograms per cubic meter
Sources: BAAQMD. 2013. Air Quality Standards and Attainment Status. http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm. Accessed on March 5, 2015.
CARB. 2008. State Implementation Plan. http://www.arb.ca.gov/planning/sip/sip.htm. Accessed on March 5, 2013.

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards. Contact EPA for further clarification and current national policies.

[c] Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] On January 15, 2013, EPA revised the national annual $PM_{2.5}$ standard to 12.0 μg/m^3 to provide increased protection against health risks.

[f] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[g] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical of 0.075 ppm.

[h] CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[i] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[j] In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and the "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

[k] No information is available to designate the region for vinyl chloride.

[l] EPA lowered the 24-hour $PM_{2.5}$ standard from 65 μg/m3 to 35 μg/m3 in 2006. The EPA designated the Bay Area Air Quality Management District (BAAQMD) as nonattainment of the PM2.5 standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the BAAQMD had 5 years to develop an implementation plan that demonstrates how the region will achieve the revised standard by December 14, 2014. On January 9, 2013, the EPA issued a final rule to determine that the SFBAAB has attained the 24-hour $PM_{2.5}$ NAAQS. This action suspended federal SIP planning requirements for the Bay Area, but BAAQMD still needs to submit a redesignation request.

TABLE 11: CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS

Pollutant	Construction Thresholds
	Average Daily Emissions (lbs/day)
ROG	54
NO_x	54
PM_{10}	82 (exhaust)
$PM_{2.5}$	54 (exhaust)
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices

Ozone Precursors. As discussed previously, the SFBAAB is currently designated as non-attainment for ozone and particulate matter. 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 Regulation 2, Rule 2 requires that any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors ROG and NO_x, the offset emissions level is an annual average of 10 tons per year (or 54 pounds [lbs.] per day).[70] These levels represent emissions by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

Particulate Matter (PM_{10} and $PM_{2.5}$).[71] The federal New Source Review (NSR) 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. For PM_{10} and $PM_{2.5}$, the emissions limit under NSR is 15 tons per year (82 lbs. per day) and 10 tons per year (54 lbs. per day), respectively. These emission limits represent levels at which a source is not expected to have an impact on air quality.[72]

[70] BAAQMD. 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 17.

[71] PM_{10} is often termed "coarse" particulate matter and is made of particulates that are 10 microns in diameter or smaller. $PM_{2.5}$, termed "fine" particulate matter, is composed of particles that are 2.5 microns or less in diameter.

[72] BAAQMD.2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 16.

Although the previously described regulations apply to new or modified stationary sources, the proposed project would result in ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions during construction activities. Therefore, the thresholds can be applied to the construction phase of the project, and emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ozone precursors or particulate matter.

Fugitive Dust. Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of BMPs at construction sites significantly controls fugitive dust,[73] and individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent.[74] The BAAQMD has identified a number of BMPs to effectively control fugitive dust emissions from construction activities.[75] While the Construction Dust Ordinance would not apply to this project, the BMPs employed in compliance with the BAAQMD's Basic Construction Measures are an effective strategy for controlling construction-related fugitive dust.

Other Criteria Pollutants. Regional concentrations of CO in the Bay Area have not exceeded the state standards in the past 11 years, and SO_2 concentrations have never exceeded the standards. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of the total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of the Bay Area total basin-wide CO emissions. As discussed previously, the Bay Area is in attainment for both CO and SO_2. Furthermore, the BAAQMD has demonstrated, based on modeling, that in order to exceed the California ambient air quality standard of 9.0 parts per million (ppm) (8-hour average) or 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). Therefore, given the Bay Area's attainment status and the limited CO and SO_2 emissions that could result from the proposed project, the project would not result in a cumulatively considerable net increase in CO or SO_2, and quantitative analysis is not required.

[73] Western Regional Air Partnership. 2006. WRAP Fugitive Dust Handbook. http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed on March 16, 2014.
[74] BAAQMD. 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 27.
[75] BAAQMD. 2012. CEQA Air Quality Guidelines.

Local Health Risks and Hazards

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. Human health effects of TACs include birth defects, neurological damage, cancer, and mortality. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk that they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach to determine which sources and pollutants to control, as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated, and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.[76]

Exposures to $PM_{2.5}$ are strongly associated with mortality, respiratory diseases, and lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease.[77] In addition to $PM_{2.5}$, diesel particulate matter (DPM) is of concern. The California Air Resources Board (CARB) identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans.[78] 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 every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Land uses such as residences, schools, child daycare centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress or, as in the case of residential receptors, their exposure time is greater than for other

[76] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, estimating the increased risk of cancer as a result of exposure to one or more TACs.

[77] San Francisco Department of Public Health. 2008. Assessment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review.

[78] CARB. 1998. Fact Sheet, The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines.

land uses. Therefore, these groups are referred to as sensitive receptors. Exposure assessment guidance typically assumes that residences would be exposed to air pollution 24 hours per day, 350 days per year, for 70 years. Therefore, assessments of air pollutant exposure to residents typically result in the greatest adverse health outcomes of all population groups.

In determining the potential distance from which emissions from a source may affect nearby sensitive receptors, a summary of research findings in the CARB's Land Use Compatibility Handbook suggests that air pollutants from high-volume roadways are substantially reduced or can even be indistinguishable from upwind background concentrations at a distance of 1,000 feet downwind from sources such as freeways and large distribution centers.[79] This radius is also consistent with Health and Safety Code Section 42301.6 (Notice for Possible Source Near School).

Sensitive receptors were identified based on proximity to project emission sources. In the case of the Cañada Road segment, no sensitive receptors were identified within 1,000 feet. No sensitive receptors were identified within 1,000 feet of more than one segment (all segments are located more than 2,000 feet from each other). Emissions from the project were modeled using area source modeling parameters for construction emissions that would occur in one place, and linear source modeling parameters for emissions that would occur along each segment. Modeling parameters are further discussed in the Health Risk Screening Analysis Methodology, Assumptions, and Results, prepared by TRC Solutions.[80] For the Bunker Hill segment, the nearest sensitive receptor to the area source emissions is different from the linear source emissions. The sensitive receptor identified nearest the area source emissions for the Bunker Hill segment is located approximately 600 feet northeast of station 50+00. The sensitive receptor identified nearest the linear source emissions for the Bunker Hill segment is located approximately 10 feet northeast of station 5+00. Multiple residences are equidistant from the construction activity linear source emissions. For the Crystal Springs segment, the nearest receptor to the proposed project area and linear source emissions was identified as the same receptor, located approximately 100 feet northeast of station 55+00. See the Project Overview Maps in Appendix A for station locations for all segments.

[79] BAAQMD. 2011. CEQA Guidelines. Page D-36. CARB. 2005 Land Use Compatibility Handbook. Page 8.

[80] PG&E. 2015. Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results. Prepared by TRC Solutions, Inc. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

The following paragraphs describe the health risk thresholds used in this Initial Study. Thresholds are identified for excess cancer risk, acute and chronic Health Indices (HIs), and $PM_{2.5}$.

Excess Cancer Risk and Hazard Index. Similar to the criteria pollutant thresholds identified previously, BAAQMD Regulation 2, Rule 5 sets cancer risk limits for new and modified sources of TACs at the maximally exposed individual (MEI). In addition to cancer risk, some TACs pose non-carcinogenic chronic and acute health hazards. Acute and chronic non-cancer health hazards are expressed in terms of a hazard index, or HI, which is a ratio of the TAC concentration to a reference exposure level, a level below which no adverse health effects are expected, even for sensitive individuals.[81] In accordance with Regulation 2, Rule 5, the BAAQMD Air Pollution Control Officer shall deny any permit to operate a source that results in an increased cancer risk of 10 per million or an increase chronic or acute HI of 1 at the MEI. This threshold is designed to ensure that the source does not contribute to a cumulatively significant health risk impact.[82]

Fine Particulate Matter ($PM_{2.5}$). Particulate matter, primarily associated with mobile sources (vehicular emissions) is strongly associated with mortality, respiratory diseases, and impairment of lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease. Based on toxicological and epidemiological research, smaller particles and those associated with traffic appear more closely related to health effects.[83] Therefore, estimates of $PM_{2.5}$ emissions from a new source can be used to approximate broader potential adverse health effects. The United States Environmental Protection Agency (USEPA) has proposed a Significant Impact Level (SIL) for $PM_{2.5}$. For developed urban areas, the USEPA has proposed an SIL of between 0.3 $\mu g/m^3$ and 0.8 $\mu g/m^3$. The SIL represents the level of incremental $PM_{2.5}$ emissions that represents a significant contribution to regional non-attainment.[84] The lower range of the USEPA-recommended SIL of 0.3 $\mu g/m^3$ is an appropriate threshold for determining the significance of a source's $PM_{2.5}$ impact.

[81] BAAQMD. 2011. CEQA Guidelines. Page D-35.
[82] BAAQMD. 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 54.
[83] San Francisco Department of Public Health. 2008. Assessment and Mitigation of Air Pollutant Health Effects for Intra Urban Roadways: Guidance for Land Use Planning and Environmental Review. Page 5.
[84] BAAQMD. 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 65.

For reasons discussed previously, potential health risks and hazards from new sources for sensitive receptors are assessed within a 1,000-foot zone of influence, and risks and hazards from new sources that exceed any of the following thresholds at the MEI are determined to be significant: excess cancer risk of 10 per 1 million, chronic or acute HI of 1, and annual average $PM_{2.5}$ increase of 0.3 $\mu g/m^3$.

Cumulative Health Risk. The USEPA has established an excess cancer risk standard of 100 per 1 million persons (100 excess cancer risk) for conducting air toxic analyses and making risk management decisions at the facility and community-scale level.[85] As described by the BAAQMD, the USEPA considers a cancer risk of 100 per million to be within the "acceptable" range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants rulemaking,[86] the USEPA states that it "…strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in 10,000 [100 in 1 million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years."

In terms of non-carcinogenic chronic and acute health hazards associated with TACs, a project would have a significant cumulative impact if the total of all past, present, and foreseeable future sources within a 1,000-foot radius (or beyond where appropriate) from the project MEI, plus the contribution from the project, exceeds a chronic HI greater than 10 for TACs.[87]

With respect to an incremental annual average $PM_{2.5}$ threshold, a $PM_{2.5}$ standard of 0.8 $\mu g/m^3$ is used for cumulative sources within the 1,000-foot evaluation zone because the USEPA is proposing a Prevention of Significant Deterioration of 0.8 $\mu g/m^3$ as a cumulative threshold for all $PM_{2.5}$ sources.[88] This threshold is used as the basis for determining cumulative health risk impacts from this project.

Project-related air quality impacts fall into two categories—short-term impacts from construction and long-term impacts from project operation. The only operational emissions associated with the project would be related to infrequent maintenance activities, which would be unchanged from current

[85] Ibid, page 67.
[86] USEPA. 1989. National Emissions Standards for Hazardous Air Pollutants. 54 Federal Register 38044.
[87] BAAQMD. 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. Page 68.
[88] Ibid, page 67.

maintenance activities; therefore, long-term operational emissions would not increase as a result of the pipeline replacement project. The following impact assessment addresses construction-related air quality impacts.

Impact AQ-1: The proposed project's construction activities would generate fugitive dust and criteria air pollutants, and could violate an air quality standard, contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants. (Less than Significant with Mitigation)

Construction activities (short term) typically result in emissions of ozone precursors and particulate matter in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and particulate matter are primarily a result of the combustion of fuel from on-road and off-road vehicles. However, ROGs are also emitted from activities that involve painting, other types of coatings, or asphalt paving. 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, which are discussed further in the following paragraphs.

Fugitive Dust

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. According to the CARB, reducing $PM_{2.5}$ concentrations to state and federal standards of 12 micrograms per cubic meter ($\mu g/m^3$) in the San Francisco Bay Area would prevent between 200 and 1,300 premature deaths.[89]

[89] CARB. 2008. Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California. Staff Report, Table 4c.

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 are reduced to a less-than-significant level.

No naturally occurring asbestos has been identified along the Cañada Road segment. Therefore, this segment is not required to implement an Asbestos Dust Mitigation Plan, and uncontrolled fugitive dust emissions would be a significant impact. As discussed previously, the BAAQMD has identified feasible BMPs that effectively control fugitive dust emissions at construction sites, and CCSF has similarly implemented an ordinance to control fugitive dust. The Construction Dust Control Ordinance would not apply to the proposed project because the project is located outside of CCSF jurisdiction. However, Mitigation Measure M-AQ-1a, Dust Control, includes the requirements of BAAQMD's Basic Construction Measures and would reduce fugitive dust emissions generated during construction of the Cañada Road segment to a less-than-significant level.

Mitigation Measure M-AQ-1a: 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 off site 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. 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.

Criteria Air Pollutants

As discussed previously, construction activities would result in emissions of criteria air pollutants from the use of off- and on-road vehicles and equipment.

To determine whether the thresholds listed in Table 11: Criteria Air Pollutant Significance Thresholds would be exceeded, a detailed air quality assessment was conducted. Proposed project-related construction activities were quantified using the BAAQMD-recommended California Emission Estimator Model (CalEEMod) Version 2013.2.2.[90] Individual CalEEMod modeling runs were performed for each of the three project segments—Cañada Road, Bunker Hill, and Crystal Springs. Specific construction information—such as construction schedule, duration of activities, types of equipment used (including horsepower and USEPA engine tier), and acres of site disturbance—was provided by PG&E after consultation with the selected construction contractor, and was used for this analysis. Where project-specific information was not available, conservative assumptions and/or default assumptions contained in CalEEMod were used to quantify construction emissions. 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.[91]

As provided in Table 12: Unmitigated Project Construction Emissions, with the exception of NOx (oxides of nitrogen) emissions, the proposed project's average daily construction emissions would not exceed the significance thresholds. NOx emissions would exceed the applicable threshold, and therefore, would constitute a significant impact.

[90] South Coast Air Quality Management District. 2011. California Emission Estimator Model V 2013.2.2. http://www.caleemod.com/. Accessed in January 2014.

[91] PG&E. 2015. Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results. Prepared by TRC Solutions, Inc. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

TABLE 12: UNMITIGATED PROJECT CONSTRUCTION EMISSIONS

Pollutant	Cañada Road Segment (total tons)	Bunker Hill Segment (total tons)	Crystal Springs Segment (total tons)	Total Project Average Daily Emissions (lbs/day)[2]	Significance Threshold (lbs/day)	Exceeds Threshold?
ROG	0.74	0.52	0.67	8.5	54	No
NO_x	8.14	5.77	7.48	94.1	54	Yes
Exhaust PM_{10}[1]	0.35	0.24	0.32	4.0	82	No
Exhaust $PM_{2.5}$[1]	0.32	0.23	0.29	3.7	54	No

Notes:
ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; lb/day = pounds per day.
[1] PM_{10} and $PM_{2.5}$ thresholds of significance only apply to exhaust emissions. Dust emissions are addressed through compliance with dust control measures.
[2] Average daily emissions were estimated assuming a duration of 455 days for construction activities. In reality, construction activities could occur over a longer period of time due to delays. However, to account for the minimum number of days that construction potentially would be completed, and to conservatively estimate average daily construction emissions, 455 days were used.
Source: Compiled By TRC Solutions in 2015 using CalEEMod V 2013.2.2. See the technical memorandum, Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results, prepared by TRC Solutions.

Mitigation Measure M-AQ-1b, Construction Emissions Minimization Plan, has been identified to reduce TAC and NOx emissions. Mitigation of NOx is included to reduce emissions to below the significance threshold. As shown in Table 13: Mitigated Project Construction Emissions, with implementation of Mitigation Measure M-AQ-1b, construction-related air quality impacts would be reduced to a less-than-significant level. While not required to mitigate NOx, Verified Diesel Emission Control Strategies (VDECS) are included to mitigate TAC emissions to reduce cancer and acute risk below significance thresholds, as discussed in Impact AQ-2.

TABLE 13: MITIGATED PROJECT CONSTRUCTION EMISSIONS

Pollutant	Cañada Road Segment (total tons)	Bunker Hill Segment (total tons)	Crystal Springs Segment (total tons)	Total Project Average Daily Emissions (lbs/day)	Significance Threshold (lbs/day)	Exceeds Threshold?
ROG	0.21	0.11	0.15	2.1	54	No
NO_x	3.18	0.93	1.33	23.9	54	No
Exhaust PM_{10}	0.03	0.01	0.02	0.3	82	No
Exhaust $PM_{2.5}$	0.03	0.01	0.02	0.3	54	No

Notes:
ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; lb/day = pounds per day.
Source: Compiled By TRC Solutions in 2015 using CalEEMod V 2013.2.2. See the technical memorandum, *Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results*, prepared by TRC Solutions.

Mitigation Measure M-AQ-1b: 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:

1. 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 Table M-AQ-1b-1: Construction Equipment Summary, below. Documentation of equipment tiers for in-use equipment shall be maintained on site as part of the plan.

2. Construction equipment, as noted in Table M-AQ-1b-1, 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 utilized.

Should any deviations from the requirements or the equipment in Table M-AQ-1b-1: Construction Equipment Summary, be proposed prior to or during construction, the project sponsor shall demonstrate, to the satisfaction of the ERO, that an equivalent amount of emissions reduction would be achieved.

Table M-AQ-1b-1: Construction Equipment Summary

Phase	Equipment Type	Horsepower	Quantity	Engine Tier	DPF Required?
Linear Work Phases					
1 & 2	Other Material Handling Equipment	120	4	NA - Gasoline	No
1 & 2	Off-Highway Trucks	250	3	Tier 4 (Final)	No
1 & 2	Tractors/Loaders/Backhoes	175	1	Tier 4 (Interim)	No
2	Graders	250	1	Tier 3	Yes
2	Rubber Tired Dozers	750	2	Tier 4 (Final)	No
2	Air Compressors	50	1	Tier 3	Yes
4	Other Material Handling Equipment	120	10	NA - Gasoline	No
4	Off-Highway Trucks	250	4	Tier 4 (Final)	No
4	Tractors/Loaders/Backhoes	500	2	Tier 3	Yes
4	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
4	Other General Industrial Equipment	250	1	Tier 4 (Final)	No
4	Generator	50	1	Tier 3	No
5	Other Material Handling Equipment	120	10	NA - Gasoline	No

Phase	Equipment Type	Horsepower	Quantity	Engine Tier	DPF Required?
5	Off-Highway Trucks	250	4	Tier 4 (Final)	No
5	Cranes	250	4	Tier 4 (Interim)	No
5	Other General Industrial Equipment	250	1	Tier 4 (Final)	No
5	Welders	50	6	Tier 4 (Final)	No
5	Air Compressors	50	1	Tier 3	Yes
5	Pressure Washers	50	1	Tier 4 (Final)	No
5	Generator	50	1	Tier 3	No
5	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
6	Other Material Handling Equipment	120	10	NA - Gasoline	No
6	Off-Highway Trucks	250	4	Tier 4 (Final)	No
6	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
6	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
6	Generator	50	1	Tier 3	No
8	Trenchers	175	1	Tier 3	No
8	Other Material Handling Equipment	120	3	NA - Gasoline	No
8	Off-Highway Trucks	250	4	Tier 4 (Final)	No
8	Graders	250	1	Tier 3	Yes
Area Work Phases					
3	Other Material Handling Equipment	120	4	NA - Gasoline	No
3	Off-Highway Trucks	250	1	Tier 4 (Final)	No
3	Bore/Drill Rigs	120	1	Tier 3	Yes
3	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
3	Cranes	250	2	Tier 4 (Interim)	No
3	Welders	50	2	Tier 4 (Final)	No
3	Air Compressors	50	1	Tier 3	Yes
7	Other Material Handling Equipment	120	3	NA - Gasoline	No
7	Off-Highway Trucks	250	5	Tier 4 (Final)	No
7	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
7	Cranes	250	1	Tier 4 (Interim)	No
7	Welders	50	3	Tier 4 (Final)	No
7	Air Compressors	50	2	Tier 3	Yes

As provided in Table 13: Mitigated Project Construction Emissions, the proposed project's average daily mitigated construction emissions would not exceed the significance thresholds. Therefore, construction criteria air pollutant impacts would be less than significant with mitigation.

Impact AQ-2: The project would expose sensitive receptors to substantial pollutant concentrations. (Less than Significant with Mitigation)

Construction activities would generate diesel particulate matter exhaust emissions from heavy-duty trucks and off-road diesel equipment. Although construction could be fairly intensive during excavation and some phases of pipeline installation, all construction activities would be temporary and short term, with construction activities anticipated to occur over a duration of approximately 15 months. In addition, construction emissions would occur intermittently throughout proposed project construction (i.e., construction equipment would not operate continuously for 8 hours each day), with only certain equipment expected to require intensive use for a portion of each day. Nonetheless, a health risk screening assessment (HRSA) was performed 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. As discussed previously, pollutant concentrations dissipate substantially at locations farther than 1,000 feet away. 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 receptor to the area source emissions was found to be different from the linear source emissions. The sensitive receptor identified nearest the area source is located approximately 600 feet northeast of station 50+00. The sensitive receptor identified nearest the linear source emissions is located approximately 10 feet northeast of station 5+00. Multiple residences are equidistant from the construction activity linear source emissions. For the Crystal Springs segment, for both the linear and area source emissions, the nearest receptor to the proposed project source type boundary was conservatively assumed and identified as the same receptor, located approximately 100 feet northeast of station 55+00. No sensitive receptors are located within 1,000 feet of more than one segment (all segments are located more than 2,000 feet from each other). See the project overview maps in Appendix A for station locations for all segments.

An HRSA was conducted using the Air Quality and Risk Analysis Screening Tool (tool) that was prepared by ENVIRON International Corporation for the SFPUC and Planning Department. The 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.

Two versions of the tool were developed—one for linear projects and one for area projects. Linear projects are defined as having construction activity that occurs along one or more long narrow area(s) or strip(s) of land (e.g., pipeline projects). Area projects are defined as having construction activity limited to a defined property or plot of land. Overall, the proposed project is a linear project, but it was determined that construction phases 3 and 7 would be better represented as area sources because the construction activity would not progress along the transmission corridor, but rather, would occur in a defined area for the duration of the construction phase. See the Air Quality Technical Memorandum for specific modeling assumptions used in this analysis.[92]

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. Each of the two project segments was evaluated independently with both linear and area components, and the MEI was identified (see Table 14: HRSA Results without Mitigation, and Table 15: HRSA Results with Mitigation, for HRSA results based on the unmitigated and mitigated cases, respectively).

Level III VDECS were included as mitigation in the input to the HRSA tool for all construction equipment, in compliance with Mitigation Measure M-AQ-1b. The Level III VDECS are required to reduce health risks associated with DPM emissions. The linear and area source phase durations for each segment do not overlap; therefore, the HRSA results for acute HI and $PM_{2.5}$ concentration from the two phase types were considered independently when compared to the significance thresholds in Table 14 and Table 15. Cancer risk is estimated based on a person's exposure to emissions over the duration of the proposed project. In contrast, cancer risk is expressed as the probability per 1 million persons exposed of contracting cancer from pollutant exposure. The chronic HI results have similarly been summed and presented as a project total chronic HI.

[92] PG&E. 2015. Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results. Prepared by TRC Solutions, Inc. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

TABLE 14: HRSA RESULTS WITHOUT MITIGATION

Segment	Phase Type	Receptor Type	Receptor Building Height	Distance to Receptor (ft)	Cancer Risk (in 1 million)	Chronic Hazard Index	Acute Hazard Index [3]	$PM_{2.5}$ Concentration ($\mu g/m^3$) [3]
Bunker Hill	Area	Residential	Two Story	>1,000	-	-	-	-
	Linear[1]			10	20.63	0.034	0.864	0.146
	Total				20.63	0.034	0.864	0.146
Crystal Springs	Area	Residential	Single Story	50	23.41	0.033	1.269	0.148
	Linear			50	6.22	0.010	0.263	0.044
	Total				29.63	0.043	1.269	0.148
Significance Threshold					**10**	**1**	**1**	**0.3**
Exceedance?					**Yes**	**No**	**Yes**	**No**

Notes:
[1] The HRSA Screening tool estimates risk for varying receptor heights (number of stories). Some two-story homes are adjacent to the Bunker Hill segment linear phase construction activity, the rest of the homes adjacent to the construction activity for both segments do not exceed one story.
[2] The linear and area phases of the Crystal Springs segment were equidistant from the nearest receptor.
[3] The total acute hazard index and $PM_{2.5}$ concentration are represented by the highest results from the area or linear source construction activity since these activities would not occur simultaneously.
Source: See the technical memorandum, Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results, prepared by TRC Solutions.

TABLE 15: HRSA RESULTS WITH MITIGATION

Segment	Phase Type	Receptor Type	Receptor Building Height	Distance to Receptor (ft)	Cancer Risk (in 1 million)	Chronic Hazard Index	Acute Hazard Index [3]	$PM_{2.5}$ Concentration ($\mu g/m^3$) [3]
Bunker Hill	Area	Residential	Two Story	>1,000	-	-	-	-
	Linear[1]			10	9.63	0.018	0.792	0.074
	Total				9.63	0.018	0.792	0.074
Crystal Springs	Area	Residential	Single Story	50	6.33	0.013	0.861	0.053
	Linear			50	2.89	0.005	0.241	0.022
	Total				9.22	0.018	0.861	0.063
Significance Threshold					**10**	**1**	**1**	**0.3**
Exceedance?					**No**	**No**	**No**	**No**

Notes:
[1] The HRSA screening tool estimates risk for varying receptor heights (number of stories). Some two-story homes are located adjacent to the Bunker Hill segment linear phase construction activity; the rest of the homes adjacent to the construction activity for both segments do not exceed one story.
[2] The linear and area phases of the Crystal Springs segment were equidistant from the nearest receptor.
[3] The total acute hazard index and PM2.5 concentration are represented by the highest results from the area or linear source construction activity since these activities would not occur simultaneously.
Source: See the technical memorandum, Pacific Gas and Electric Company Line 109 Air Quality Modeling and Heath Risk Screening Analysis Methodology, Assumptions, and Results, prepared by TRC Solutions.

Without mitigation from the Level III VDECS included in Mitigation Measure M-AQ-1b, both cancer risk and the acute HI would exceed the significance thresholds; chronic HI and $PM_{2.5}$ risk would not. With the 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. Therefore, this impact would be considered less than significant with mitigation incorporated.

Impact AQ-3: The project would not conflict with or obstruct implementation of applicable air quality plans. (Less than Significant)

The most recently adopted air quality plan for the SFBAAB is the CAP. The CAP is a road map that demonstrates how the San Francisco Bay Area will achieve compliance with the state ozone standards as expeditiously as practicable, and how the region will reduce the transport of ozone and ozone precursors to neighboring air basins. In determining consistency with the CAP, this analysis considers whether the project would: (1) support the primary goals of the CAP, (2) include applicable control measures from the CAP, and (3) avoid disrupting or hindering implementation of control measures identified in the CAP.

The primary goals of the CAP are to: (1) reduce emissions and decrease concentrations of harmful pollutants, (2) safeguard the public health by reducing exposure to air pollutants that pose the greatest health risk, and (3) reduce GHG emissions. To meet the primary goals, the CAP recommends specific control measures and actions. These control measures are grouped into various categories and include stationary and area source measures, mobile source measures, transportation control measures, land use measures, and energy and climate measures. The majority of the measures are not applicable to the proposed project because there are no long-term operational emissions. The most applicable measures to the proposed project are the mobile source control measures, which would apply during construction.

Mobile Source Measure C-1 (MSM C-1) for construction and farming equipment aims to reduce ozone precursors, DPM, and carbon dioxide (CO_2) emissions through implementation of the following strategies:

a) Provide cash incentives to retrofit older engines with diesel particulate filters or upgrade equipment with electric, Tier III, or Tier IV off-road engines.

b) Work with the CARB and the California Energy Commission to develop more fuel-efficient off-road engines and drivetrains.

c) Work with local communities, contractors, farmers, and developers to encourage the use of renewable electricity and renewable fuels, such as biodiesel from local crop and waste fats and oils, in applicable equipment.

The construction contractor selected for the proposed project has identified that it operates a well-maintained, fully compliant, and modern fleet of equipment, with all diesel off-road engines certified to a minimum Tier III standard. Therefore, the proposed project would include applicable control measures identified in the CAP to the meet the CAP's primary goals.

Examples of projects that could cause the disruption or delay of CAP control measures are those that would preclude the extension of a transit line or bike path, or projects that propose excessive parking beyond parking requirements. The proposed project would not preclude the extension of a transit line or a bike path or any other transit improvement, and thus, would not disrupt or hinder implementation of control measures identified in the CAP. For the reasons described previously, the proposed project would not interfere with implementation of the CAP, and because the proposed project would be consistent with the applicable air quality plan that demonstrates how the region will improve ambient air quality and achieve the state and federal ambient air quality standards, this impact would be considered less than significant.

Impact AQ-4: The proposed project would not create objectionable odors affecting a substantial number of people. (Less than Significant)

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public, and can cause citizens to submit complaints to local governments and regulatory agencies. Projects with the potential to frequently expose individuals to objectionable odors are deemed to have a significant impact. Typical facilities that generate odors include wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities.

Construction activities involving heavy-duty trucks and off-road construction equipment would generate DPM exhaust, which can be considered offensive by some individuals. As described previously, proposed project construction sites would be located as close as 10 feet from residences. However, unlike

the typical stationary and permanent odor sources listed previously, proposed project construction emissions would not be constantly generating odorous emissions. The proposed project 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 a significant odor impact on a substantial number of sensitive receptors. Therefore, the impact would be considered less than significant.

Impact C-AQ-1: The proposed project, in combination with past, present, and reasonably foreseeable future development in the project area, would result in less-than-significant cumulative air quality impacts. (Less than Significant with Mitigation)

Regional air pollution is, by its very nature, a cumulative impact. Emissions from past, present, and future projects contribute to the region's adverse air quality on a cumulative basis. No single project would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts.[93]

The thresholds of significance for criteria air pollutant and precursor emissions represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. If emissions would exceed any applicable threshold of significance, the proposed project would result in a cumulatively significant impact. As discussed in Impact AQ-1, none of the criteria pollutant emissions thresholds would be exceeded after mitigation.

A cumulative risk analysis was performed to evaluate the combined risk from the proposed project with impacts from nearby sources (within 1,000 feet of the proposed project's fenceline), which may include highways, roadways, and other permitted stationary sources. As detailed in Table 4, a number of other local past, present, and reasonably foreseeable projects were identified, but all were found to be more than 1,000 feet from the sensitive receptors identified for this project; thus, emissions from cumulative projects would not combine with the proposed project's emissions at the sensitive receptors analyzed.

[93] BAAQMD. 2012. CEQA Air Quality Guidelines. Page 2-1.

The BAAQMD CEQA Guidelines community risk and hazards screening tools—particularly the Stationary and Highway Screening Analysis Tools and Google Earth Maps, which estimate health risk impacts from stationary sources and highways, respectively—were used to identify health risks from nearby sources. [94] Using the stationary screening tool, it was determined that no permitted stationary sources are located within 1,000 feet of the project fenceline. SR 35/Skyline Boulevard and I-280 were identified as highway sources for the cumulative analysis.

Sensitive receptors identified as MEIs in the Project-Level HRSA were selected for evaluation in the cumulative risk analysis. As discussed in impact AQ-2, no sensitive receptors are located within 1,000 feet of the Cañada Road segment. Thus, no analysis of this segment's impact on sensitive receptors is required. The risk from the proposed project and the identified sources were combined to calculate the cumulative health risk for each MEI. As shown in Table 16, both SR 35/Skyline Boulevard and I-280 are located more than 1,000 feet from the Bunker Hill MEI. Thus ,the project-level HRSA is equivalent to the cumulative health risk analysis. The results of the analysis for MEI for the Bunker Hill and Crystal Springs segments are provided in Tables 16 and 17, respectively. Results for the same MEIs, including incorporation of Mitigation Measure M-AQ-1b, are provided in Tables 18 and 19. None of the identified sensitive receptors would be exposed to health risks in excess of the significance thresholds. Therefore, the impact would be considered less than significant.

TABLE 16: CUMULATIVE BUNKER HILL SEGMENT MEI, APPROXIMATELY 10 FEET NORTHEAST OF STATION 5+00, WITHOUT EMISSIONS REDUCTIONS

Sources w/in 1,000 feet	Distance to MEI (feet)	Cancer Risk (in 1 million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
SR 35/Skyline Boulevard (Link 1230)	>1,000	-	-	-
I-280 (Link 32)	>1,000	-	-	-
Area Project	>1,000	-	-	-
Linear Project	10	20.63	0.034	0.146
Cumulative Total		**20.63**	**0.034**	**0.146**
Cumulative Threshold		**100**	**10**	**0.8**

Notes:
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; µg/m3 = micrograms per cubic meter

[94] BAAQMD. CEQA Guidelines Tools and Methodology. http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed on March 4, 2015.

TABLE 17: CUMULATIVE CRYSTAL SPRINGS SEGMENT MEI, APPROXIMATELY 75 FEET NORTHEAST OF STATION 55+00, WITHOUT EMISSIONS REDUCTIONS

Sources within 1,000 feet	Distance to MEI (feet)	Cancer Risk (in 1 million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
SR 35/Skyline Boulevard (Link 1230)	25	2.90	0.004	0.049
I-280 (Link 32)	500	4.56	0.006	0.076
Area Project	50	23.41	0.033	0.148
Linear Project	50	6.22	0.010	0.044
Cumulative Total		**37.09**	**0.053**	**0.273**
Cumulative Threshold		**100**	**10**	**0.8**

Notes:
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; µg/m3 = micrograms per cubic meter

TABLE 18: CUMULATIVE BUNKER HILL SEGMENT MEI, APPROXIMATELY 200 FEET NORTH OF STATION 55+00, WITH EMISSIONS REDUCTIONS

Sources w/in 1,000 feet	Distance to MEI (feet)	Cancer Risk (in 1 million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
SR 35/Skyline Boulevard (Link 1230)	>1,000	-	-	-
I-280 (Link 32)	>1,000	-	-	-
Area Project	>1,000	-	-	-
Linear Project	10	9.63	0.018	0.074
Cumulative Total		**9.63**	**0.018**	**0.074**
Cumulative Threshold		**100**	**10**	**0.8**

Notes:
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; µg/m3 = micrograms per cubic meter

TABLE 19: CUMULATIVE CRYSTAL SPRINGS SEGMENT MEI, APPROXIMATELY 100 FEET NORTHEAST OF STATION 55+00, WITH EMISSIONS REDUCTIONS

Sources within 1,000 feet	Distance to MEI (feet)	Cancer Risk (in 1 million)	Chronic Hazard Index	$PM_{2.5}$ Concentration ($\mu g/m^3$)
SR 35/Skyline Boulevard (Link 1230)	25	2.90	0.004	0.049
I-280 (Link 32)	500	4.56	0.006	0.076
Area Project	50	6.33	0.013	0.053
Linear Project	50	2.89	0.005	0.022
Cumulative Total		**16.68**	**0.028**	**0.178**
Cumulative Threshold		**100**	**10**	**0.8**

Notes:
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; µg/m3 = micrograms per cubic meter

E.8. GREENHOUSE GAS EMISSIONS

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.8. GREENHOUSE GAS EMISSIONS— Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐	☐
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐	☐

E.8.1. Environmental Setting

The term "climate" refers to the accumulation of daily and seasonal weather events over a long period of time, whereas "weather" is defined as the condition of the atmosphere at any particular time and place.[95] The project areas are located in a climatic zone that is characterized as dry-summer subtropical or Mediterranean in the Köppen climate classification system.

The Köppen system classifications are based primarily on annual and monthly averages of temperature and precipitation. Refer to Section E.7, Air Quality, for a description of the meteorology and climate of the SFBAAB.

E.8.2. Attributing Climate Change—Physical Scientific Basis

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the Earth's surface temperature. When high-frequency solar radiation (e.g., visible light) enters the Earth's atmosphere from space (i.e., the sun), a portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back toward space. However, the re-radiated energy by the Earth is not the same high-frequency solar radiation that was received, but is lower-frequency infrared radiation (i.e., thermal energy). The frequencies at which bodies emit radiation are proportional to temperature. Therefore, having a much lower temperature than the sun, the Earth will emit lower

[95] Ahrens, D. C. 2012. Meteorology Today: An Introduction to Weather, Climate, and the Environment. Brooks Cole Inc., Pacific Grove, CA.

frequency (longer wavelength) radiation (i.e., infrared radiation). When infrared radiation comes into contact with GHGs in the atmosphere, a portion of that thermal energy can be absorbed by the GHG molecule and/or re-radiated back toward the Earth's surface. Both outcomes result in a "trapping" of heat within the Earth's atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Aside from naturally occurring atmospheric water vapor, prominent GHGs contributing to the Earth's greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and high global warming potential (GWP) GHGs. Although high-GWP gases typically are emitted at lower rates than CO_2, CH_4, and N_2O, they still can make a significant contribution to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2. The concept of carbon dioxide equivalent (CO_2e) is used to account for the different potentials of GHGs to absorb infrared radiation. This potential, known as the GWP of a GHG, is dependent on the lifetime or persistence of the gas molecule in the atmosphere, its ability to absorb/trap infrared radiation, and the spectrum of light energy (i.e., range of wavelengths and frequencies) absorbed by the gas molecule. Every GHG's GWP is measured relative to CO_2, which has a GWP of 1. High-GWP GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Anthropogenic (i.e., caused by humans) emissions of these GHGs leading to atmospheric levels of GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the Earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate.[96] CO_2 emissions associated with fossil fuel combustion for energy-related activities are the primary contributors to human-induced climate change.[97]

GHG emissions generated in the United States can contribute to climate change impacts in other countries or continents. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; it is suffice to say that the quantity is enormous, and no single project can be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climate.

[96] 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.

[97] USEPA. 2014. Basic Information. http://www.epa.gov/climatechange/basicinfo.html. Accessed on March 5, 2015.

E.8.3. Methodology

GHG emissions generated by construction of the proposed project were modeled using the same methods described in Section E.7, Air Quality. CalEEMod Version 2013.2.2 and EMFAC2011 provide emission factors for GHG emissions, in addition to criteria air pollutant emissions.[98] Although the same modeling assumptions for the air quality analysis were used to develop GHG emission estimates, GHG emissions are calculated in units of metric tons of CO_2e per year.

No GHG emissions were estimated for operational activities because operational activities associated with the proposed project are not expected to increase beyond existing operation and maintenance activities. Therefore, no net change in operational emissions is anticipated to occur with implementation of the proposed project.

E.8.4. Impact Discussion

In September 2006, former governor Arnold Schwarzenegger signed into law the Global Warming Solutions Act of 2006 (AB 32). AB 32 requires California to reach 1990 GHG emissions levels by 2020 and delegates the authority for implementation to the CARB. In accordance with AB 32, the CARB prepared the Climate Change Scoping Plan (Scoping Plan), which was approved in 2008. An update to the plan was approved in May 2014. The Scoping Plan provides measures and strategies for California to meet the GHG reduction targets of AB 32. The strategies include, but are not limited to, expanding and strengthening energy efficiency programs such as building and appliance standards; developing a cap-and-trade program; and adopting and implementing measures pursuant to existing laws such as California's Clean Car Standards and the Low Carbon Fuel Standard.

In 2011, the baseline or business-as-usual (BAU) level of GHG emissions in the Scoping Plan was revised to account for the economic downturn and state regulation emission reductions (i.e., Pavley, Low Carbon Fuel Standard, and Renewable Portfolio Standard). The BAU scenario is based on what could or would occur in the year 2020, without implementation of any state regulation of emission reductions or voluntary GHG-reduction measures. Accordingly, the Scoping Plan emission reduction target from BAU

[98] South Coast Air Quality Management District. 2013. California Emission Estimator Model. http://www.caleemod.com/. Accessed on March 15, 2014.

levels required to meet 1990 levels by 2020 was modified from 29 percent to 21.7 percent (where BAU GHG levels are based on 2010 GHG levels). The first update to the Scoping Plan was approved by the CARB on May 22, 2014.[99]

The Bay Area 2010 CAP establishes the performance objective of reducing GHG emissions to 1990 levels by 2020 (consistent with AB 32), and 40 percent below 1990 levels by 2035.[100]

No stationary sources of GHG emissions are associated with the proposed project. Therefore, the impact analysis is limited to temporary and short-term impacts associated with proposed project construction.

Impact GG-1: The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (Less than Significant)

During proposed project construction, GHG emissions would be generated from a variety of sources, such as construction worker vehicles, material haul trucks, and heavy-duty construction equipment. Table 20: Construction-related Greenhouse Gas Emissions, presents the total GHG emissions associated with proposed project construction activities. As shown in the table, total emissions over the anticipated 15-month construction period are estimated to be 2,065.8 metric tons of CO_2e ($MTCO_2e$). Even though PG&E's gas pipelines are designed to last longer, amortizing the GHG emissions over a 30-year project lifetime yields an annual emission rate of 68.9 $MTCO_2e$/year. The CARB and BAAQMD have not identified quantitative GHG emission significance thresholds for construction activities.

The total construction-related GHG emissions associated with the proposed project would be short term and temporary in nature. Therefore, the proposed project's contribution to GHG emissions would not be cumulatively considerable and the proposed project would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment.

[99] CARB. 2014. First Update to the Climate Change Scoping Plan. May 2014. http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed on March 5, 2015.

[100] BAAQMD. 2010. Bay Area 2010 Clean Air Plan. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Plans/2010%20Clean%20Air%20Plan/CAP%20Volume%20I%20%20Appendices.ashx?la=en. Accessed March 15, 2014.

TABLE 20: CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Proposed Project Segment	GHG Emissions (MTCO2e)
Bunker Hill	539.7
Cañada Road	794.1
Crystal Springs	732.0
Total Proposed Project	**2,065.8**
Amortized (over 30-years) Emissions	**68.9**
Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent. Source: Compiled by TRC Solutions in 2015 using CalEEMod V 2013.2.2	

Following completion of the proposed project, similar operation and maintenance activities as those currently conducted would continue. Therefore, the proposed project would not result in a net increase of operation and maintenance activities or associated GHG emissions, and there would be no impact.

Impact GG-2: The proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. (Less than Significant)

The applicable GHG plans for the proposed project are the AB 32 Scoping Plan (May 22, 2014 update), which describes the approach that California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020, and the BAAQMD 2010 CAP, which is a multi-pollutant strategy for improving air quality in the SFBAAB.

Implementation of the proposed project would result in temporary and short-term construction-related GHG emissions; however, the goal of the proposed project—to upgrade an existing pipeline for the purpose of allowing in-line inspection and maintenance of the gas transmission system—is consistent with the natural gas efficiency GHG reduction goals of the Scoping Plan.[101] In-line inspections of Line 109 are intended to check and ensure the integrity of the natural gas pipeline for safety and reliability purposes. By replacing the existing pipeline and conducting in-line inspections, the proposed project would identify potential leaks in the system to be repaired, thereby reducing wasted natural gas resources. The Scoping Plan's GHG reduction measure—Utility Energy Efficiency Programs, Natural Gas (CR-1)—directs utilities to identify potentially achievable natural gas efficiency projects. Although an in-

[101] CARB. 2008. Climate Change Scoping Plan. December 2008. http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed on April 9, 2015.

line inspection does not affect downstream consumer behaviors or efficiency of end-use consumption, it does serve to maintain safe and efficient delivery of natural gas and avoid waste of natural gas through potential leaks. Furthermore, natural gas is one of the resources, among others (i.e., renewable resources), that the Scoping Plan cites to replace existing coal plants.

The CAP establishes a control strategy that includes 55 control measures within five categories—Stationary Source Measures, Mobile Source Measures, Transportation Control Measures, Land Use and Local Impact Measures, and Energy and Climate Measures. Mobile Source Measure C-1, Construction and Farming Equipment (MSM C-1), is the most pertinent CAP control measure for the proposed project's construction-related GHG impacts. MSM C-1 establishes actions to assist construction equipment fleets to achieve early compliance with the CARB in-use off-road engine control measure. The CARB in-use off-road engine control measure aims to remove older, dirtier, and less-efficient (Tier I and II) engines from construction fleets. As stated in Impact AQ-3, the construction contractor selected for the proposed project has identified that it operates a well-maintained, fully compliant, and modern fleet of equipment, with all diesel off-road engines certified to a minimum Tier III standard. Therefore, the proposed project would be consistent with objectives of MSM C-1.

The proposed project would use construction equipment consistent with the control strategies outlined in the CAP, and the project objectives are consistent with the natural gas efficiency goals of the Scoping Plan. Therefore, the proposed project would not conflict with any applicable plan adopted for the purpose of reducing GHG emissions, and would have a less-than-significant impact.

E.9. WIND AND SHADOW

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.9.	**WIND AND SHADOW—Would the project:**					
a)	Alter wind in a manner that substantially affects public areas?	☐	☐	☐	☒	☐
b)	Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas?	☐	☐	☐	☒	☐

The proposed project would not substantially affect wind or create new shadows that would affect outdoor recreation facilities or public areas. The Cañada Road segment of the project crosses Sheep Camp Trail and roughly parallels Cañada Road. The Bunker Hill segment crosses under Bunker Hill Drive and parallels backyards of residences along Lexington Avenue. The northern section of the Crystal Springs segment runs roughly parallel to Black Mountain Road and the residences across the street, while the southern section runs parallel to residential backyards along Wedgewood Drive. However, because the proposed project involves replacing an existing underground pipeline and would not create any new permanent structures in the area that would alter wind or create new shadow, the proposed project would have no impact related to wind and shadow.

E.10. RECREATION

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.10. RECREATION—Would the project:					
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☐	☒	☐	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☐	☒
c) Physically degrade existing recreational resources?	☐	☐	☒	☐	☐

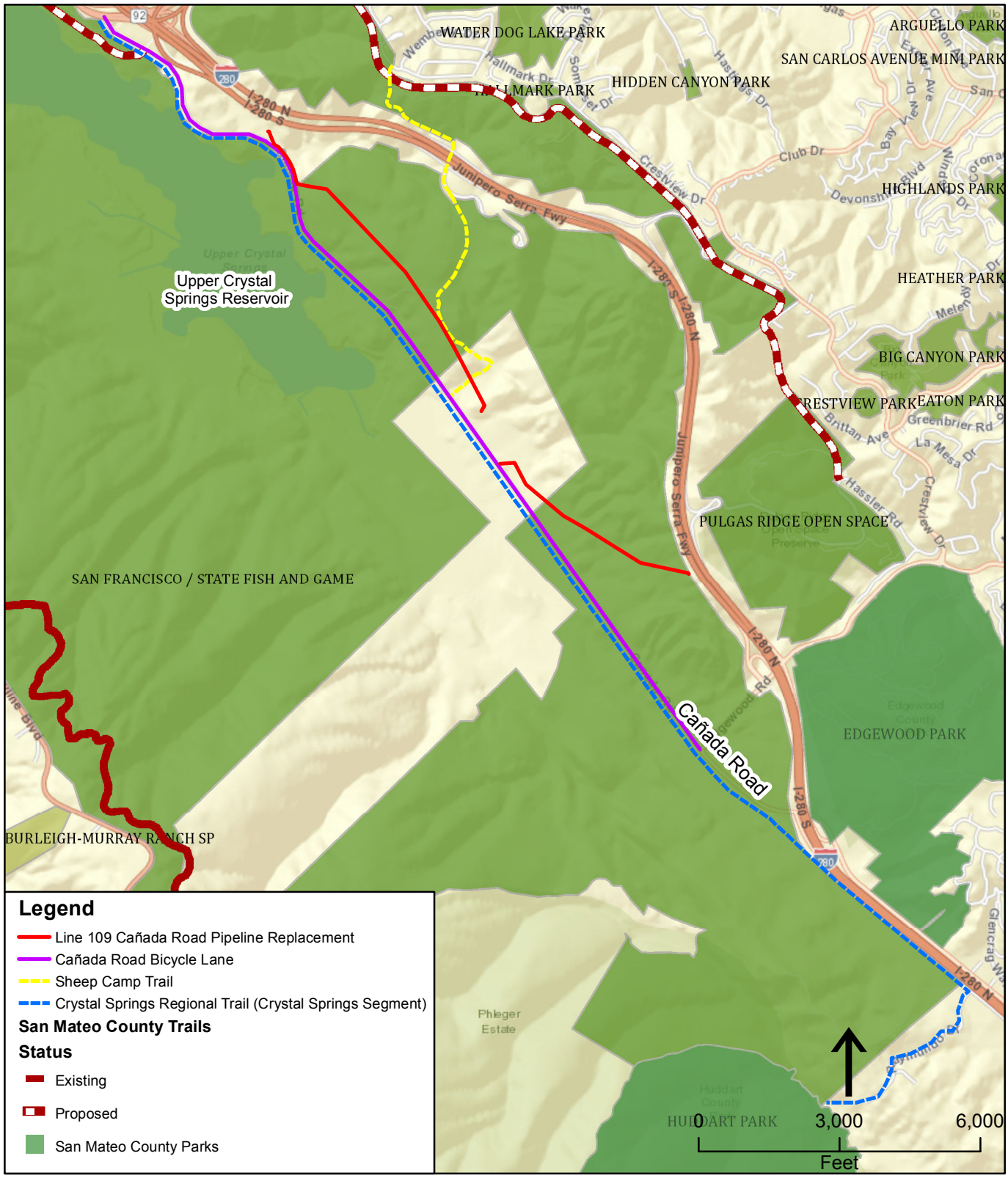
The proposed project would not involve or require the construction or expansion of recreational facilities. Therefore, significance criterion E.10(b) is not applicable to the proposed project and is not discussed further.

The proposed project is located within the 23,000-acre SFPUC Peninsula Watershed, a unique natural resource located in a predominantly urbanized region.[102] These lands are used for water collection, storage, and quality protection, and are off-limits to the public, except along hiking trails. The three proposed project segments are located in an area zoned RM (Resource Management) and designated Parks/Open Space in the San Mateo County General Plan.[103] Figures 5A, B, and C show the three segments in relation to parks and trails.

The proposed project crosses a Scenic and Recreation Easement (within SFPUC Watershed lands) and Sheep Camp Trail. As shown in Figure 5A: Recreation, the Cañada Road segment of the proposed project roughly parallels Cañada Road. Cañada Road is a designated Recreational Bicycle Route (between SR 92 and Woodside Road in San Mateo County). Edgewood Road is currently unclassified, with on-street bicycle access.

[102] SFPUC. 2013. Regional Watersheds, Peninsula. http://www.sfwater.org/index.aspx?page=199. Accessed on February 19, 2015.

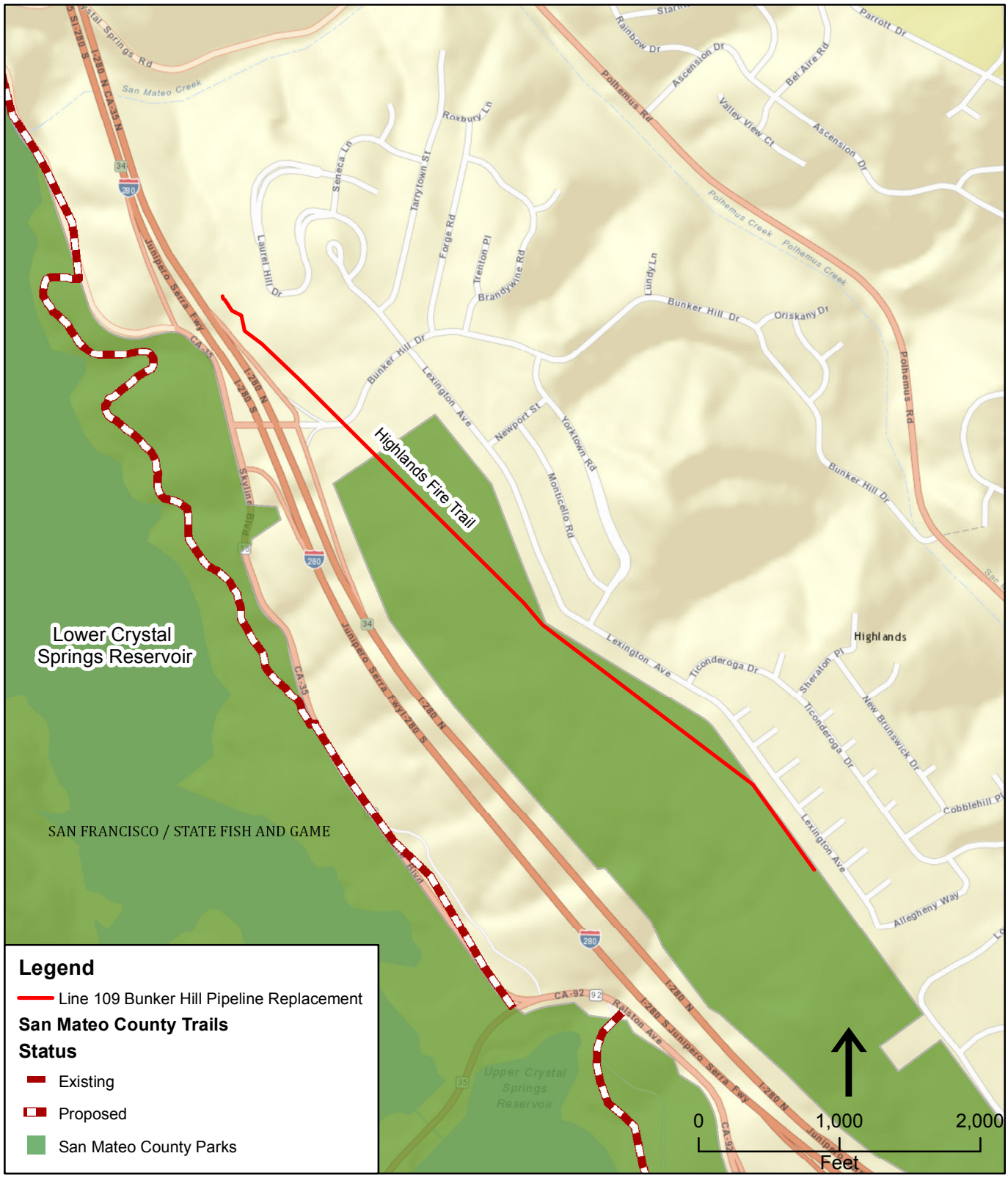
[103] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on February 19, 2015.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013 TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

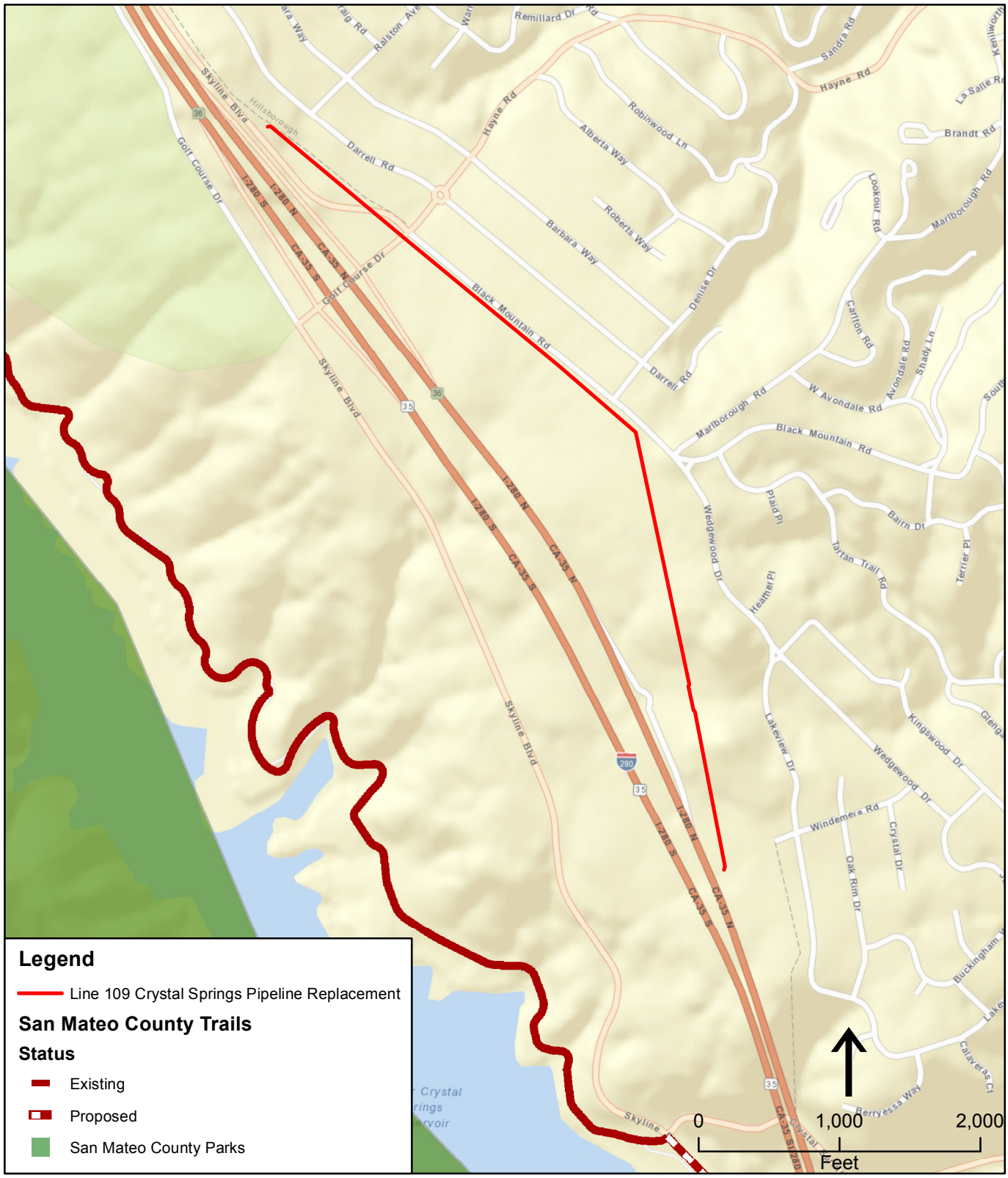
Figure 5A
Recreation



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013 TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 5B
Recreation



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013 TRC 2014, PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 5C
Recreation

Sheep Camp Trail is a recreational trail that begins at the eastern crest of SFPUC Watershed lands and ends at Cañada Road, 0.25 mile south of the Pulgas Water Temple. Access to Sheep Camp Trail—which is utilized by hikers[104]—is from Cañada Road. Additional recreational opportunities in the vicinity of the proposed project include Ralston Bike Trail (I-280 Overpass Trail), which connects a bike path on Ralston Road with Cañada Road just north of the Cañada Road segment, and Edgewood County Park, Pulgas Ridge Open Space Preserve, Highlands Recreation Center, and Hallmark Park, which are located east of I-280. All of these parks offer public hiking trails. The 600-acre Filoli Estate, which includes a residence, gardens, and grounds, and the Pulgas Water Temple are located on the west side of Cañada Road.

E.10.1. Scenic and Recreation Easement

The proposed project is located within a 4,000-acre Scenic and Recreation Easement that was established in 1969 through a four-party agreement between the SFPUC, U.S. Department of the Interior (Golden Gate National Recreation Area), Caltrans, and San Mateo County, with the objective to preserve watershed lands as open space.[105] This easement is located adjacent to I-280, and limited recreation activities—including hiking, biking, walking, and running—are permitted on trails. The public Crystal Springs Golf Course is located within the easement, approximately 1 mile north of the northern terminus of the Crystal Springs segment.

E.10.2. Sheep Camp Trail

Sheep Camp Trail is a 1-mile-long trail that begins at the eastern crest of the SFPUC Watershed lands, crosses under I-280 at the Vista Point off-ramp, and winds through meadows and beside oak-covered knolls before terminating at Cañada Road, 0.25 mile north of the Pulgas Water Temple.[106] This trail is designated multi-use in the San Mateo County 2001 Trails Plan, but it is currently only open to hikers.

[104] County of San Mateo Parks Department. Crystal Springs Regional Trail. http://parks.smcgov.org/crystal-springs-regional-trail. Accessed on February 19, 2015.
[105] SFPUC. 2013. Regional Watersheds, Peninsula. http://www.sfwater.org/index.aspx?page=199. Accessed on February 19, 2015.
[106] San Mateo County. 2001. Trails Plan. http://www.co.sanmateo.ca.us/Attachments/parks/Files/Parks%20Planning/Master%20Plans/Trails%20Master%20Plan.pdf. Accessed on February 19, 2015.

E.10.3. Cañada Road Bicycle Lane

Cañada Road is a designated Recreational Bicycle Route between SR 92 and Woodside Road in San Mateo County. The San Mateo County Comprehensive Bicycle and Pedestrian Plan identifies Cañada Road as a Class II bicycle lane; however, sporadic signage and markings and a somewhat narrow shoulder/bicycle lane in some locations do not meet the Caltrans/California Manual on Uniform Traffic Control Devices definition and requirements for a Class II bicycle lane.[107,108] The county, through implementation of its Comprehensive Bicycle Route Plan (2000), restriped, repaved, and installed some bicycle lane markings along this portion of Cañada Road.[109] The San Mateo County Parks Department closes the segment of Cañada Road between State Route 92 and the Filoli Estate entrance to motorized traffic every Sunday, allowing for activities such as jogging, bicycling, hiking, roller-skating, and walking.[110] Edgewood Road is currently unclassified, with on-street bicycle access.[111]

E.10.4. Crystal Springs Segment of the Crystal Springs Regional Trail

The Crystal Springs segment of the Crystal Springs Regional Trail currently starts at SR 92 in the north and runs along the westerly right-of-way of Cañada Road (across Cañada Road from the proposed project), primarily removed from the roadway. The northern portion of the trail segment can be accessed from the City of Belmont trails system via Sheep Camp Trail and the Ralston Bike Trail. Near the proposed project area, the trail passes the Pulgas Water Temple and Filoli Estate. The Crystal Springs segment of the trail is available for use by hikers, joggers, and equestrians, but not bicyclists. [112]

[107] City/County Association of Governments of San Mateo County. 2011. San Mateo County Comprehensive Bicycle and Pedestrian Plan. http:// http://ccag.ca.gov/wp-content/uploads/2014/07/CBPP_Main-Report__Sept2011_FINAL.pdf. Accessed on February 18, 2015.

[108] California Department of Transportation. CA MUTCD 2012. http://www.dot.ca.gov/hq/traffops/engineering/mutcd/ca_mutcd2012.htm. Accessed on February 19, 2015.

[109] City/County Association of Governments of San Mateo County. 2011. C/CAG Annual report 2010-2011. http://ccag.ca.gov/wp-content/uploads/2014/07/CAGAnnualReport-2010-11.pdf. Accessed February 19, 2015.

[110] San Mateo County Parks Department. 2014. Bicycle Sunday. http://parks.smcgov.org/bicycle-sunday. Accessed on February 19, 2015.

[111] City/County Association of Governments of San Mateo County. 2011. San Mateo County Comprehensive Bicycle and Pedestrian Plan. http:// http://ccag.ca.gov/wp-content/uploads/2014/07/CBPP_Main-Report__Sept2011_FINAL.pdf. Accessed on February 18, 2015.

[112] San Mateo County Parks Department. 2014. Crystal Springs Segment. http://parks.smcgov.org/crystal-springs-segment. Accessed on February 19, 2015.

Impact RE-1: The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facilities would occur or be accelerated. (Less than Significant)

The proposed project would temporarily affect recreational uses and modify use patterns in the vicinity of the proposed project. Construction vehicles using the construction access roads over the estimated 15-month construction period would intermittently conflict with bicycle traffic along Cañada Road (see Figure 5: Recreation). Construction would require temporary trail closures and rerouting of trail traffic on Sheep Camp Trail, as well as rerouting traffic along a 1,000-foot-long section of Cañada Road, including the bicycle lane on the east side of the road. The traffic on Cañada Road at the rerouted section would be limited to one lane of traffic and one bike lane Monday through Saturday, from 7 a.m. to 5:30 p.m., and no work would be permitted on Sundays. Traffic direction would be flagged and alternated based on queuing times. Sheep Camp Trail would be closed to public use for approximately 7 months. The trail would be closed from Cañada Road to the Scenic Overlook access gate. There are no alternative routes to this portion of Sheep Camp Trail. These closures would be temporary and short term, and are not anticipated to cause an increase in the use of other recreation facilities because of the large number of alternative recreational facilities that offer equivalent amenities and serve similar functions. Nearby facilities include the Sawyer Camp segment of the Crystal Springs Regional Trail, Edgewood County Park, Pulgas Ridge Open Space Preserve, Water Dog Lake Park, Hallmark Park, Big Canyon Park, Crystal Springs Cross Country Course, and Ralston Bike Trail, and these facilities would have the capacity to accommodate any additional temporary proposed project-related demand on recreational resources. Therefore, short-term recreation impacts would be less than significant.

As noted in Section E.2, Aesthetics, the presence of the construction equipment and materials necessary to implement the proposed project would temporarily diminish the quality of views experienced by recreational visitors in the vicinity of the proposed project, including users of the Cañada Road bicycle lane and the Crystal Springs segment of the Crystal Springs Regional Trail on the western side of Cañada Road at the Cañada Road segment, and the western side of Black Mountain Road and along I-280 at the Bunker Hill and Crystal Springs segments of the proposed project. Because construction would be temporary and relatively short in duration (15 months), no long-term or permanent impacts on recreation are anticipated to occur, and due to the availability of other nearby recreational resources—as indicated previously—the impact would be less than significant.

Impact RE-2: The proposed project would not degrade existing recreational resources. (Less than Significant)

Impacts on existing recreational resources would occur where the pipeline crosses Sheep Camp Trail and in certain places along the Cañada Road bicycle lane due to vegetation clearing, excavating, and grading within the proposed project site, and temporary staging of equipment and materials. These impacts would be temporary and short term, lasting only for the duration of construction activities.

After construction is complete, disturbed work areas would be restored to pre-project conditions and reseeded. PG&E would implement a post-construction Vegetation Restoration Plan that would include a discussion of locations and depth of topsoil segregation, seed collection and seed mix to be used, erosion-control methods, and monitoring requirements. Project construction would not degrade Sheep Camp Trail because the trail would only be closed during construction of the proposed project, and afterwards, the trail would be accessible for recreational use. The work areas near the trail would be restored. Additionally, as described under Impact RE-1, there would be alternate recreational opportunities available during construction-related trail closure. Therefore, construction of the proposed project would not cause the long-term or permanent physical deterioration of recreational facilities, and impacts would be less than significant.

Impact C-RE-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not result in a significant cumulative impact on recreational resources. (Less than Significant)

Table 4: Past, Present, and Reasonably Foreseeable Actions, lists and describes recent past projects that have been constructed, projects that are currently under construction, and reasonably foreseeable projects that have been approved but are not yet constructed in the vicinity of the proposed project. Cumulative recreation impacts could occur if the proposed project, in conjunction with other construction activities in the area, impedes recreation access or disrupts recreational uses; increases the use of recreational facilities, accelerating their deterioration; or degrades recreational resources. Development projects in the surrounding area would result in physical changes that would introduce new residences that may increase the use of park facilities.

Although the proposed project would result in temporary but less-than-significant impacts on Sheep Camp Trail and the Cañada Road bicycle lane, no current or reasonably foreseeable projects are located within 1 mile of the proposed project, and no other projects in the vicinity are expected to result in direct

impacts on these recreational facilities. Past projects would not contribute to cumulative recreational impacts either because they consisted of upgrade projects to sites that were not in recreational use, or because any construction-related impacts have ended. Therefore, the proposed project, in combination with other reasonably foreseeable projects, would have a less-than-significant cumulative impact on recreation.

E.11. UTILITIES AND SERVICE SYSTEMS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.11. UTILITIES AND SERVICE SYSTEMS— Would the project:						
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
c)	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
d)	Have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements?	☐	☐	☐	☒	☐
e)	Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒	☐

The proposed project involves replacing a natural gas pipeline; no new stormwater drainage facilities would be installed, no existing facilities would be expanded, and no connection to existing water services or sanitary sewers would be required. During construction, water for dust control and hydrostatic testing would be brought to the project sites by truck or sourced from a nearby fire hydrant operated by the City of San Mateo and/or the California Water Service Company. Water obtained from a fire hydrant is potable. Sanitary needs would be provided by a portable sanitary equipment services contractor. Therefore, significance criteria E.11(b), E.11(c), and E.11(e) are not applicable to the proposed project and are not discussed further.

The three pipeline segments of the proposed project are located in unincorporated San Mateo County. Wastewater and stormwater treatment in the project vicinity is managed by the South Bayside System Authority (SBSA). The SBSA treatment plant serves seven San Mateo County districts that provide

collection systems for the unincorporated areas and neighborhoods within those districts. Wastewater at the SBSA treatment plant is given advanced treatment before it is discharged into San Francisco Bay.

Stormwater in the project area flows to the Upper and Lower Crystal Springs reservoirs located immediately west of the proposed project.

The proposed project is located within an unincorporated, unfranchised solid waste management area;[113] thus, local solid waste disposal may be managed by either Recology San Mateo County or Allied Waste Services of Half Moon Bay. One active solid waste facility—the Corinda Los Trancos (Ox Mountain) Landfill—is located within the unincorporated area of San Mateo along SR 92, west of the project areas.

The area's potable water supply comes from the SFPUC Hetch Hetchy Regional Water System. Water distribution is managed by the SFPUC and San Mateo Public Works Department.

Impact UT-1: The proposed project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. (No Impact)

Wastewater would be generated by hydrostatic testing and sanitary services for construction workers. Water used for hydrostatic testing of gas pipelines on land that is within, or tributary to, SFPUC Watershed lands must meet drinking water quality standards prior to testing. Hydrostatic testing water would be obtained from the closest local water source or trucked in and stored in Baker™ tanks. Water would be analyzed before use to ensure that it meets SFPUC drinking water quality standards. Water that meets these standards would, therefore, meet San Francisco Bay Regional Water Quality Control Board (RWQCB) water quality criteria as well. 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 work (POTW), such as Seaport in Redwood City or the East Bay Municipal Utility District in West Oakland.

A minimal amount of effluent would be temporarily generated by up to 53 workers during proposed single-segment project construction. Construction of the Bunker Hill and Cañada Road segments would occur concurrently for a total duration of approximately 60 days, as would construction of the Cañada

[113] McNichol, Erin. Recycle Works Program Coordinator. 2014. Telephone communication with G. Drosky, TRC. April 18, 2014.

Road and Crystal Springs segments. The specific number of workers at project sites would vary depending on the nature of work activities and during overlapping phases for segments. It is estimated that, during the overlapping construction phases for two segments, the maximum number of construction workers would be 70. Wastewater services for up to 70 project construction workers would be provided via portable sanitary equipment services by a contractor. The effluent would be disposed via septic tank or at a POTW, in accordance with the requirements of the San Francisco Bay RWQCB. Because the construction workforce is relatively small in size, the amount of wastewater generated would be negligible.

For these reasons, the proposed project would have no impact on the wastewater treatment requirements of the San Francisco Bay RWQCB.

Impact UT-2: The proposed project would have sufficient water supply available to serve the project from existing entitlements and resources, and no new or expanded water supply resources or entitlements would be required. (No Impact)

Water would be used for hydrostatic testing of the new pipeline and for dust control. Water would be brought to the site via truck and also sourced from a nearby fire hydrant operated by the City of San Mateo and/or the California Water Service Company; no surface waters would be used. Existing water entitlements and resources would be sufficient to serve the temporary, minor construction needs of the project. Therefore, the proposed project would have no impact on water supply and water-delivery infrastructure.

Impact UT-3: The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (No Impact)

The proposed project would generate a minimal amount of solid waste as a result of construction debris from sources such as old pipeline markers, wrappers from materials, and lumber. The proposed project would generate a total of approximately 1,680 cubic yards (cy) of solid waste, with approximately 837 cy from the Cañada Road segment, 523 cy from the Bunker Hill segment, and 320 cy from the Crystal Springs segment. Non-hazardous spoils would be hauled off site for reuse or disposal in an approved landfill, such as the Ox Mountain Landfill located in Half Moon Bay. As of May 31, 2011, the Ox Mountain Landfill had approximately 27 million cy of remaining capacity, with an estimated closure date of January 1, 2018. Soil excavated during installation of the new pipeline that would be used as backfill for trenching activities would be stored on site, in accordance with the Stormwater Pollution Prevention Plan

(SWPPP). . Surplus excavated soils would be spread over temporary work areas following construction. No soils would be disposed of off site, unless the results of soil testing indicate that the project spoils are hazardous, in which case PG&E would manage and dispose of the waste through a separately contracted vendor. PG&E would implement BMPs for solid waste disposal, including recycling construction waste to the maximum extent possible (refer to Section A, Project Description, for a more detailed discussion). Because the proposed project would only generate approximately 1,680 cy of solid waste, the Ox Mountain Landfill's approximately 27 million cy of remaining capacity would have sufficient permitted capacity to accommodate project spoils. Furthermore, operation of the proposed project would not generate waste, and therefore, there would be no impacts from solid waste generation.

Impact UT-4: The proposed project would comply with federal, state, and local statutes and regulations related to solid waste. (No Impact)

The proposed project would produce general types of non-hazardous waste, such as pipeline markers, wrappers from materials, and lumber. PG&E would manage and dispose of any excess contaminated soils through a separately contracted vendor. Disposal of project waste would be in accordance with all federal, state, and local regulations regarding solid waste and, therefore, no impact would occur.

Impact C-UT-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, could result in a cumulative impact on utilities and service systems. (Less than Significant)

The geographic scope of potential cumulative utilities and service systems impacts consists of the project sites and immediate vicinity, the service areas of regional utility providers, and landfills in the project region.

As described previously, the proposed project would not involve the construction of any permanent stormwater drainage facilities; therefore, it would not contribute to any potential cumulative environmental impact in this regard. Project construction would generate a minimal amount of debris that would require off-site disposal. Other projects in the vicinity also would contribute an unknown quantity of solid waste to the Ox Mountain Landfill, which has approximately 27 million cy of remaining

capacity as of May 31, 2011, and has an estimated closure date of January 1, 2018.[114] The proposed project, in combination with other past, present, and reasonably foreseeable projects in the vicinity, could result in a cumulative impact on landfill capacity. However, the proposed project's incremental contribution to the landfill represents a miniscule fraction of the available landfill capacity.

Construction of the proposed project, when combined with other past, present, and reasonably foreseeable projects, would result in an incremental increased demand on utilities and service systems. The incremental demand placed on utilities and service systems is minor and limited to the period of construction, which would be short term and temporary; therefore, the proposed project's contribution to utilities and service systems impacts would be less than cumulatively considerable.

[114] Cal Recycle 2014. Solid Waste Information System. Facility Summary Details: Corinda Los Trancos Landfill (Ox Mountain). http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/. Accessed on March 5, 2015.

E.12. PUBLIC SERVICES

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.12. PUBLIC SERVICES— Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services?	☐	☐	☐	☒	☐

The three segments of the proposed project—Cañada Road, Crystal Springs, and Bunker Hill—are located within SFPUC Watershed lands in unincorporated San Mateo County. The Cañada Road segment is bordered to the east by I-280, to the west by Cañada Road and the Upper Crystal Springs Reservoir, to the north by SR 92, and to the south by Edgewood Road. The Bunker Hill segment is bordered to the east by residential neighborhoods along Lexington Avenue; to the west by open land and I-280, with the Lower Crystal Springs Reservoir further west; to the north by residential neighborhoods and Laurel Hill Court; and to the south by open land and SR 92. The Crystal Springs segment is bordered to the east by residential neighborhoods along Lakewood Drive, Wedgewood Drive, and Black Mountain Road; to the west by I-280, with the Lower Crystal Springs Reservoir further west; to the north by residential uses; and to the south by open land, with SR 92 further south. Fire protection on SFPUC Watershed lands is provided by the California Department of Forestry and Fire Protection (CAL FIRE). Law enforcement and emergency services in the project area are provided by the San Mateo County Sherriff's Department. Public school districts in the area include the Hillsborough City Elementary School District, San Mateo-Foster City Elementary School District, Belmont Elementary School District, San Carlos Elementary School District, San Mateo Union High School District, and Sequoia Union High School District.[115] Parks and other public facilities in the area are managed by the SFPUC and San Mateo County.

[115] San Mateo County Office of Education. 2014. Districts and Schools. http://www.smcoe.org/about-smcoe/districts-and-schools/. Accessed on March 5, 2015.

Impact PS-1: The proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services associated with fire protection, police protection, schools, parks, or other public facilities. (No Impact)

Police and Fire Protection

The three segments of the proposed project are located entirely within SFPUC Watershed lands designated Parks/Open Space in the San Mateo County General Plan.[116] CAL FIRE services the SFPUC Watershed lands, with the nearest station located in the City of Belmont at 20 Tower Road, approximately 1 mile north of the Cañada Road segment, 0.25 mile east of the Bunker Hill segment, and 2.5 miles south of the Crystal Springs segment of the proposed project. The area surrounding the Cañada Road segment of the pipeline does not have an extensive local road network. A more substantial local road network serves the areas east of the Bunker Hill and Crystal Springs segments of the proposed project. Also located near the Bunker Hill segment is the Highlands Fire Trail, which parallels the pipeline alignment and would provide access for construction-related activities and emergency response services in the unlikely event of a fire.

Although construction-related traffic may create an increase in traffic on the existing road network, this increase would be minor and limited to the duration of construction, and would include approximately 10 daily round-trip passenger vehicle trips and up to 10 daily round-trip truck trips for each segment. Construction of the Bunker Hill and Cañada Road segments would overlap for a total of 60 days and there would also be an overlap of approximately 60 days during construction of the Cañada Road and Crystal Springs segments. PG&E estimates 12 daily passenger vehicle round-trips and 12 daily truck round-trips during this time. The workforce would be supplied from the local and regional population, and would not require an expansion of the road network. Furthermore, the purpose of the proposed project is to upgrade the existing natural gas infrastructure within the PG&E service area, and construction of the proposed project would not alter the location, distribution, density, or growth rate of the population. The proposed project is part of PG&E's routine maintenance of existing infrastructure, and PG&E has a long history of completing similar projects using the proposed construction practices. As

[116] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on March 2, 2015.

such, PG&E has developed standard measures to reduce the potential risks associated with pipeline replacement projects. Fire prevention measures would be implemented in accordance with requirements prescribed in the SFPUC Access Permit, which would establish work procedures that minimize fire incident potential from work activities. Implementation of Mitigation Measure M-HZ-4, Fire Avoidance and Suppression, would further reduce the risk of fires. This measure includes selecting a welding site that is void of native combustible material and/or clearing such material for 10 feet around the area, and having adequate fire-suppression materials and equipment adjacent to all active work areas (refer to Section E.16, Hazards and Hazardous Materials). Because of the standard measures that would be implemented to reduce hazards that would require fire, law enforcement, and medical services access, and because impacts on traffic circulation on local roads would be limited and short term, existing fire, law enforcement, and medical services would be sufficient to respond to potential emergencies. The proposed project would have no impact on police protection, fire, or emergency services during construction.

Parks and Schools

The proposed project is located on SFPUC Watershed lands, and portions of the watershed are accessible to the public via multi-use trails or bike routes along existing roadways, as described in Section E.10, Recreation, and shown in Figure 5: Recreation. The Cañada Road segment is located within a Scenic and Recreation Easement (within the SFPUC Watershed) and crosses Sheep Camp Trail. The Cañada Road segment is also adjacent to a designated Class II bicycle lane that parallels Cañada Road and is located near the Crystal Springs segment of the Crystal Springs Regional Trail.[117] No parks are located in the vicinity of the Bunker Hill and Crystal Springs segments of the proposed project. The proposed project would not involve the expansion of these existing recreational facilities or construction of any new recreational facilities; therefore, there would be no increase in use of these facilities, and the proposed project would have no impacts on parks.

As described in Section E.3, Population and Housing, because construction of the proposed project would be short term and temporary, and all construction workers are anticipated to mobilize to the project site from the greater San Francisco Bay Area, the proposed project would not result in any population

[117] San Mateo County Parks Department. 2015. San Mateo County Trailshttps://parks.smcgov.org/crystal-springs-regional-trail. Accessed on February 19, 2015.

growth. The proposed project would not generate new students or increase the need for new or expanded school facilities. Therefore, the proposed project would have no impact on schools.

Impact C-PS-1: The proposed project, in combination with other past, present, or reasonably foreseeable projects, would not have a significant cumulative impact on public services. (No Impact)

The proposed project would not increase the demand for fire, police, or emergency services, nor would it result in cumulative impacts on parks or recreational services. Furthermore, because the proposed project would not increase population within the area, schools in the surrounding area would not be affected. No current or reasonably foreseeable projects are located within 1 mile of the project and no other projects in the vicinity of the Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project are expected to result in direct impacts on public services during construction of the proposed project. Past projects would not contribute to cumulative public service impacts because construction impacts have ended and no operational impacts are anticipated from past projects. Therefore, the proposed project, in combination with other reasonably foreseeable projects, would have a less-than-significant cumulative impact on public services.

E.13. BIOLOGICAL RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.13. BIOLOGICAL RESOURCES—Would the project:						
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒	☐

E.13.1. Regulatory Background

Federal

Endangered Species Act. The federal Endangered Species Act (ESA) of 1973 (16 United States Code [USC] 1531–1544), as amended, protects plants, fish, and wildlife that are listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries). Section 9 of the ESA prohibits the "take" of listed fish and wildlife, where "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute prohibits removing, possessing, maliciously damaging, or destroying any listed plant under federal jurisdiction and removing, cutting, digging-up, damaging, or destroying any listed plant in knowing violation of state law (16 USC 1538).

The ESA allows for issuance of incidental take permits to private parties either in conjunction with a Habitat Conservation Plan (HCP) or as part of a Section 7 consultation (which is discussed in the following paragraph). Under Section 10 of the ESA, a private party may obtain incidental take coverage by preparing an HCP to cover target species within the project area, identifying impacts on the covered species, and presenting the measures that will be undertaken to avoid, minimize, and mitigate such impacts.

Under Section 7 of the ESA, federal agencies are required to consult with the USFWS and/or NOAA Fisheries, as applicable, if their actions—including permit approvals or funding—may affect a federally listed species (including plants) or designated critical habitat. If the project is likely to adversely affect a species, the federal agency will initiate formal consultation with the USFWS and/or NOAA Fisheries and issue a biological opinion as to whether a proposed agency action(s) is likely to jeopardize the continued existence of a listed species (jeopardy) or adversely modify critical habitat (adverse modification). As part of the biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided that the action will not jeopardize the continued existence of the species or adversely modify designated critical habitat.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC Sections 703–711) protects all migratory birds, including active nests and eggs. Birds protected under the MBTA include all native waterfowl, shorebirds, hawks, eagles, owls, doves, and other common birds such as ravens, crows, sparrows, finches, swallows, and others, including their body parts (for example feathers and plumes), active nests, and eggs. A complete list of protected species can be found in 50 CFR 10.13. Enforcement of the provisions of the federal MBTA is the responsibility of the USFWS.

Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC Section 668) specifically protects bald and golden eagles and their nests from harm or trade in parts of these species. The 1972 amendments increased penalties for violating provisions of the BGEPA or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the BGEPA.

Waters and Wetlands: Clean Water Act Sections 401 and 404. The purpose of the Clean Water Act (CWA) (33 USC Section 1251 et seq.) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The definition of "waters of the United States" includes rivers, streams,

estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3).

The U.S. Army Corps of Engineers (USACE) issues permits for work in wetlands and other waters of the United States based on guidelines established under Section 404 of the CWA. Section 404 of the CWA prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, without a permit from the USACE. The USEPA also has authority over wetlands and may, under Section 404(c), veto a USACE permit.

Section 401 of the CWA requires all Section 404 permit actions to obtain a state Water Quality Certification or waiver.

State

California Endangered Species Act. Sections 2050–2098 of the California Fish and Game Code (the California Endangered Species Act [CESA]) prohibit the take of state-listed endangered and threatened species unless specifically authorized by the CDFW. The state definition of "take" is to hunt, pursue, catch, capture, or kill a member of a listed species or attempt to do so. The CDFW administers the CESA and authorizes take through permits or memorandums of understanding issued under Section 2081 of the CESA, or through a consistency determination issued under Section 2080.1. Section 2090 of the CESA requires state agencies to comply with threatened and endangered species protection and recovery and to promote conservation of these species.

Fully Protected Species under the Fish and Game Code. The Fish and Game Code designates certain fish and wildlife species as "fully protected" under Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). Fully protected species may not be taken or possessed at any time, and no permits may be issued for incidental take of these species.

Protection for Birds under the Fish and Game Code. Fish and Game Code Section 3503 et seq. states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird.

Lake and Streambed Alteration under the Fish and Game Code. Through California Fish and Game Code Sections 1600-1607, the CDFW regulates activities that may substantially modify a river, stream, or lake; substantially change or use any material from the bed, channel, or bank of these waters; or dispose of debris, waste, or other material into these waters. The regional CDFW office must be notified of projects under Section 1602, and project applicants must enter into a Lake or Streambed Alteration Agreement with the CDFW, should it determine that the activity may substantially adversely affect existing fish or wildlife resources.

Native Plant Protection Act of 1973. The Native Plant Protection Act of 1973 (Fish and Game Code Sections 1900–1913) includes provisions that prohibit the taking of endangered or rare native plants. The CDFW administers the Native Plant Protection Act of 1973 and generally regards as rare many plant species included in Ranks 1A, 1B, 2A, and 2B of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California. In addition, sometimes California Rare Plant Rank 3 and 4 plants are considered if the population has local significance in the area and is impacted by the project.

Section 1913(b) includes a specific provision to allow for the incidental removal of endangered or rare plant species, if not otherwise salvaged by the CDFW, within a right-of-way to allow a public utility to fulfill its obligation to provide service to the public.

California Species of Special Concern. Species of Special Concern (SSC) is a category conferred by the CDFW to fish and wildlife species that meet the state definition of threatened or endangered, but have not been formally listed (e.g., federally or state-listed species), or are considered at risk of qualifying for threatened or endangered status in the future based on known threats. SSC is an administrative classification only, but these species should be considered "special status" for the purposes of the CEQA analysis (see the significance criteria included in this section).

Porter-Cologne Water Quality Control Act. The State Water Resources Control Board (SWRCB) and the nine RWQCBs have jurisdiction over all surface water and groundwater in California, including wetlands, headwaters, and riparian areas. The SWRCB or applicable RWQCB must issue waste discharge requirements for any activity that discharges waste that could affect the quality of waters of the state.

The term "waters of the state" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of

California are also waters of the state, the converse is not true—in California, waters of the United States represent a subset of waters of the state.

E.13.2. Approach to Analysis

The biological resources analysis was initiated with a review of the California Natural Diversity Database (CNDDB), CNPS Database, and USFWS list of species for the U.S. Geological Survey (USGS) Woodside 7.5-minute quadrangle to develop a list of special-status species that have the potential to occur in the project area.

Several focused evaluations and field surveys were also conducted, including the following:

- **Special-status Plant Surveys.** Special-status plant surveys were conducted along the Cañada Road segment and the Crystal Springs segment in spring 2013, and along the Bunker Hill segment in spring 2013 and 2014. Specifically, the Cañada Road segment was surveyed on foot on April 16, May 2, May 16, and May 19, 2013; a survey for fragrant fritillary was conducted on March 16, 2015; a site visit was conducted on April 14, 2015; and an additional floristic survey of identified work areas, identified after the spring 2013 and 2014 surveys, was conducted on April 30, 2015. The Crystal Springs segment was surveyed on foot on April 16, May 6 and 21, and August 11, 12, and 26, 2013. The entire Bunker Hill segment, which was surveyed on foot on five occasions during the survey period (with additional focused surveys at other times), was surveyed on April 12, May 6, 7, 20, 22, 24, and 25, June 27, and August 20, 2013; February 23, March 9, 22, and 28, and April 3 and 27, 2014; and March 18, 2015. The survey areas for the proposed project segments are shown in Figure 6: Vegetation Communities. All habitats present within the survey boundaries were surveyed to inventory and document any potential occurrences of special-status plant species. Special attention was given to those areas containing habitat with high potential to support special-status plant species, such as native grasslands and areas with serpentine soils.

All plants encountered during the surveys were identified to the taxonomic level necessary for a rare plant determination.[118, 119, 120, 121, 122, 123, 124]

- **Special-status Wildlife Survey**. Reconnaissance-level surveys of the pipeline alignment were conducted along the Cañada Road segment on May 23, 2013; along the Bunker Hill segment on May 28, 2013; and along the Crystal Springs segment on May 22 and 28, 2013. Prior to the surveys, biologists conducted a background literature review, including a search of the CNDDB for recorded occurrences of special-status species within a 3-mile buffer of the proposed project areas, and a review of PG&E's Jefferson-Martin 230-kilovolt Transmission Line Project Proponent's Environmental Assessment, previous biological reports prepared for the SFPUC, and other published literature and reports. An additional desktop evaluation of the project's potential to impact special-status wildlife species in construction work areas—identified after the reconnaissance level surveys—along the Cañada Road segment was conducted in April 2015.

[118] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[119] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E

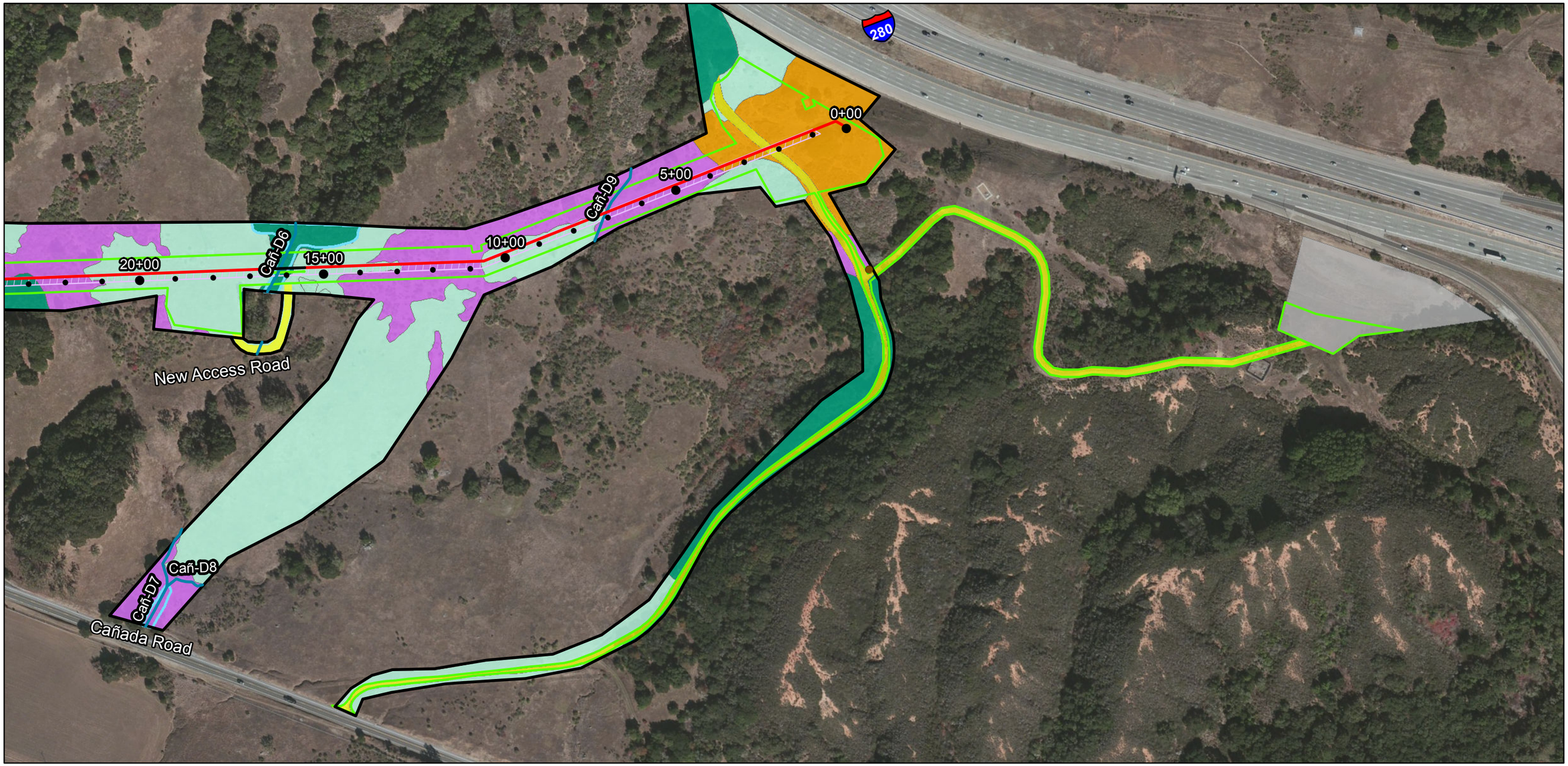
[120] Orion Environmental Associates. 2014. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

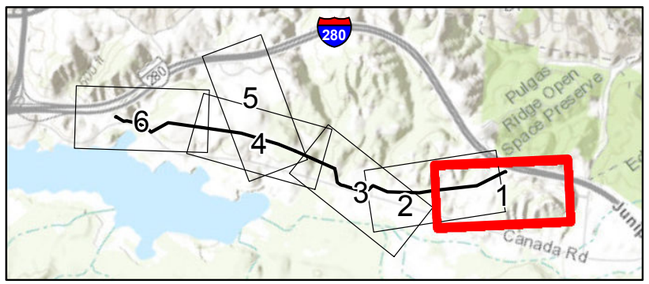
[121] CH2MHill. 2015. Memorandum: Line 109 Pre-Construction Surveys for Fragrant Fritillary; Segment 4A; Cañada Road. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[122] SFPUC. 2015. L109 Fritillaria along Trench Bunker Hill. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[123] CH2MHill. 2015. Pre-Construction Surveys for Fragrant Fritillary along Line 109 Segment 4B (Bunker Hill) in San Mateo County, California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[124] CH2MHill. 2015. Line 109 4A Cañada Road 2015 Biological Evaluations. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.





Legend

- Line 109 Cañada Road Pipeline Replacement
- Aerially Spanned Pipeline Replacement
- HDD Pipeline Replacement
- Stationing
- Construction Work Area
- Proposed Permanent Easement
- Access Roads
- Project Survey Area

Wetland Features

- Ephemeral Stream
- Non-jurisdictional Cement-lined V-ditch
- Riparian

Vegetation Communities

- Coast live oak woodland
- Coastal sage scrub
- Coyote bush scrub
- Needlegrass Grassland
- Disturbed

Special Status Plants

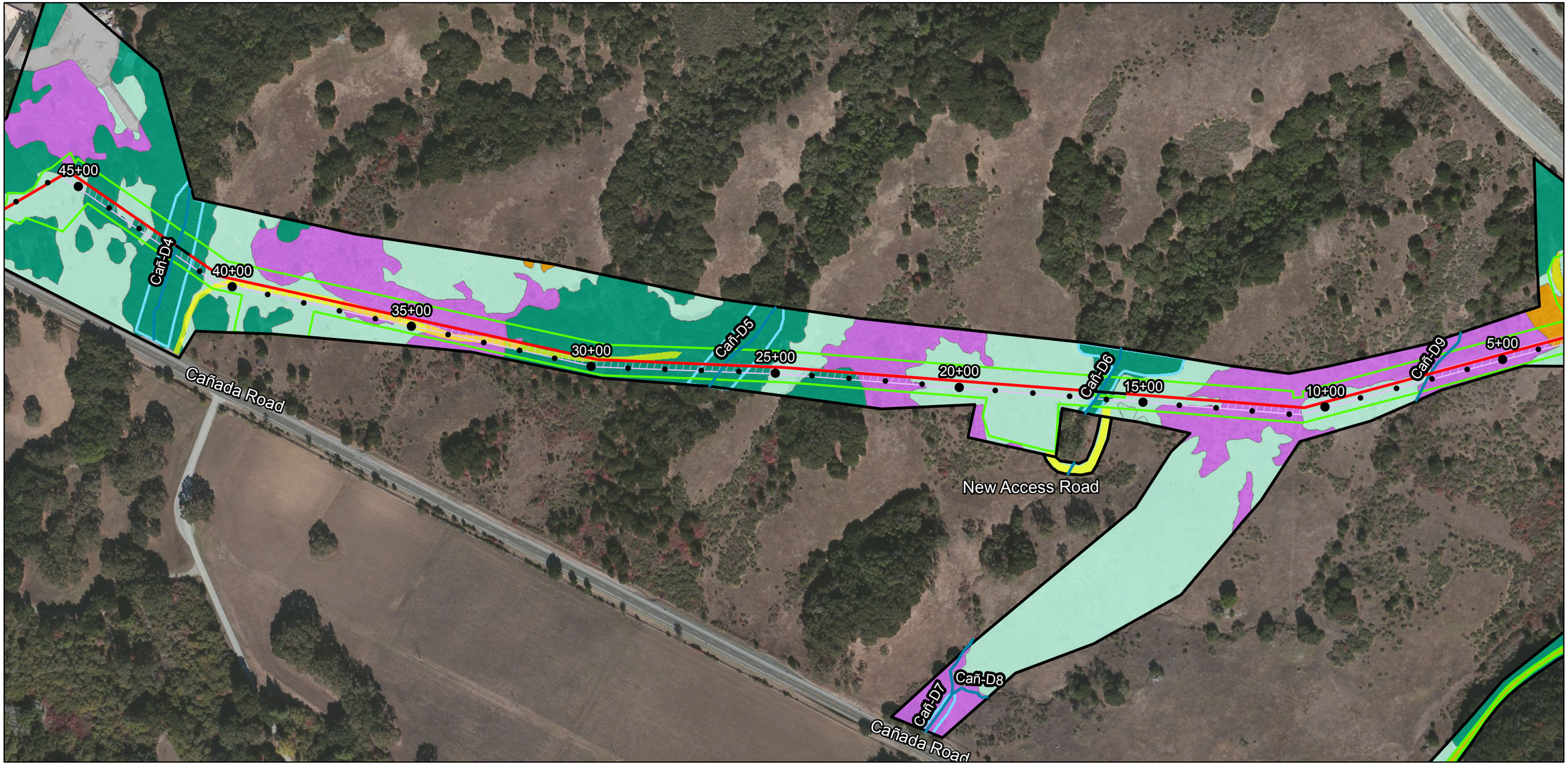
- Franciscan onion (Allium peninsulare var. franciscanum)
- Bent-flowered fiddleneck (Amsinckia lunaris)
- Bush Mallow (Malacothamnus Hallii)
- Choris' popcornflower (Plagiobothrys chorisianus var. chorisianus)
- San Francisco blue eyed mary (Collinsia multicolor)

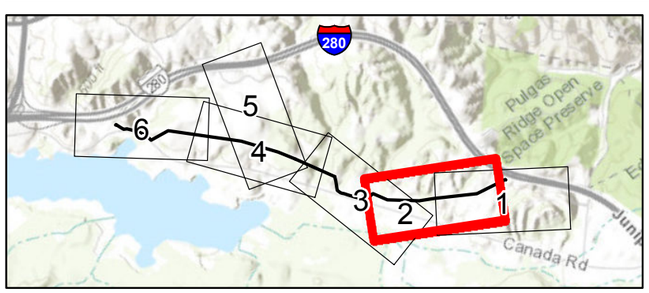
0 275 550
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, TRC 2014, PG&E 2014





Legend

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- Aerially Spanned Pipeline Replacement
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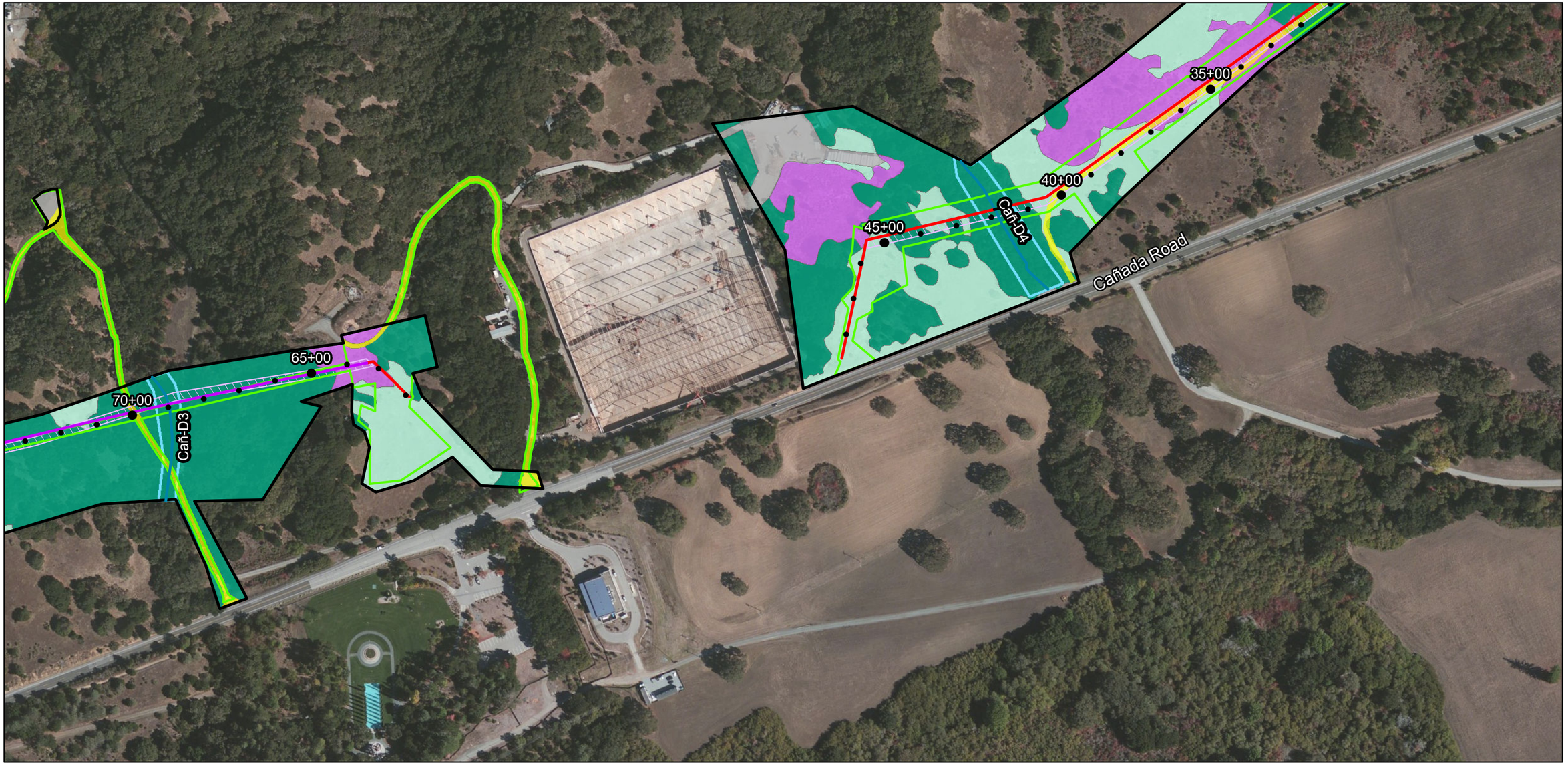
- Choris' popcornflower (Plagiobothrys chorisianus var. chorisianus)
- San Francisco blue eyed mary (Collinsia multicolor)

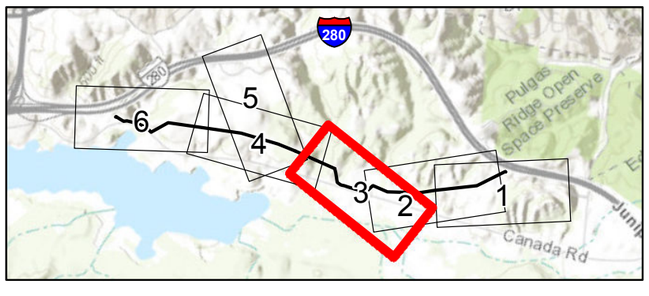
0 275 550
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, TRC 2014, PG&E 2014





Legend

- Line 109 Cañada Road Pipeline Replacement
- Aerially Spanned Pipeline Replacement
- HDD Pipeline Replacement
- Stationing
- Construction Work Area
- Proposed Permanent Easement
- Access Roads
- Project Survey Area

Wetland Features

- Ephemeral Stream
- Non-jurisdictional Cement-lined V-ditch
- Riparian

Vegetation Communities

- Coast live oak woodland
- Coastal sage scrub
- Coyote bush scrub
- Needlegrass Grassland
- Disturbed

Special Status Plants

- Franciscan onion (Allium peninsulare var. franciscanum)
- Bent-flowered fiddleneck (Amsinckia lunaris)
- Bush Mallow (Malacothamnus Hallii)
- Choris' popcornflower (Plagiobothrys chorisianus var. chorisianus)
- San Francisco blue eyed mary (Collinsia multicolor)

0 275 550
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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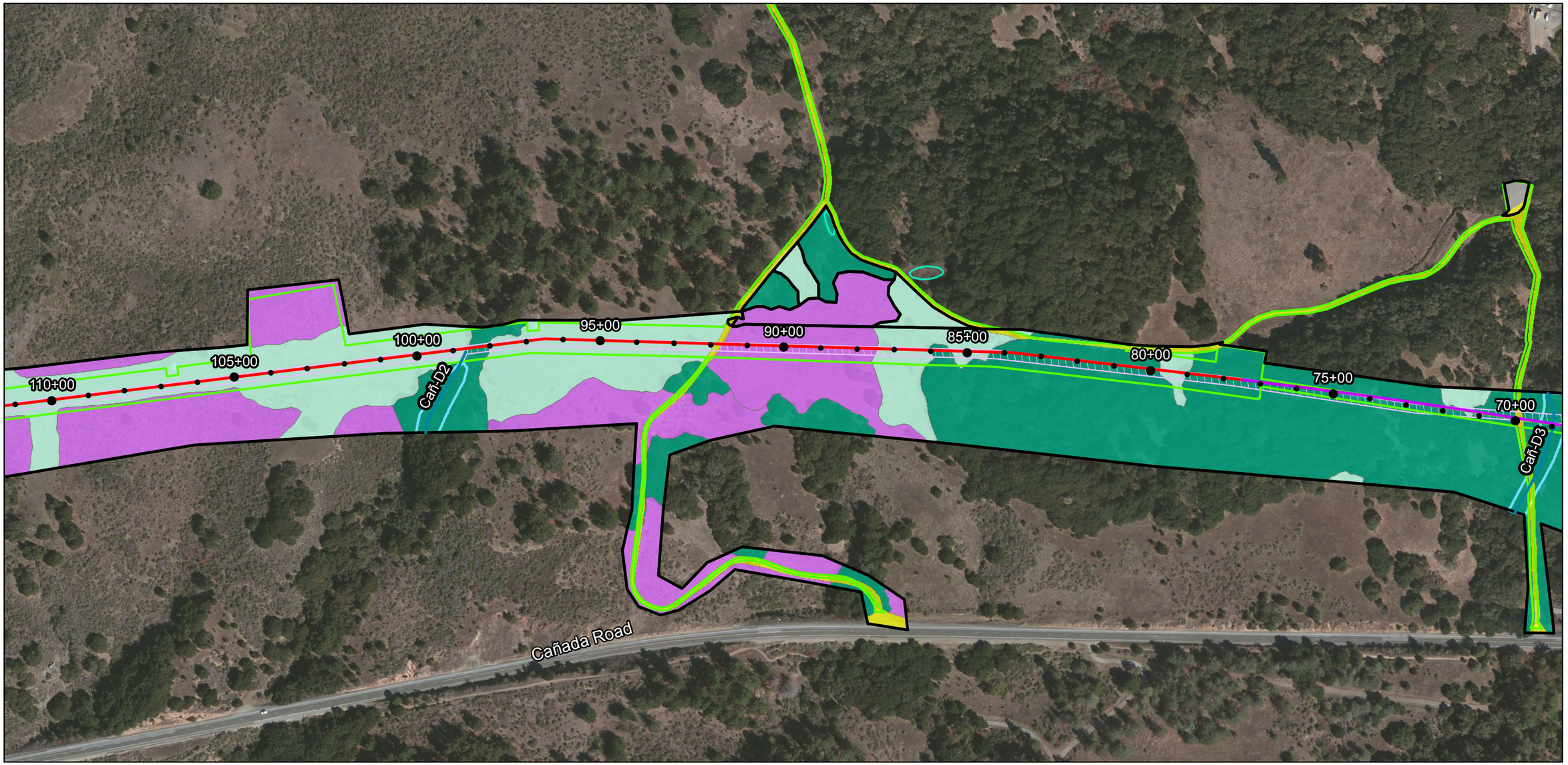

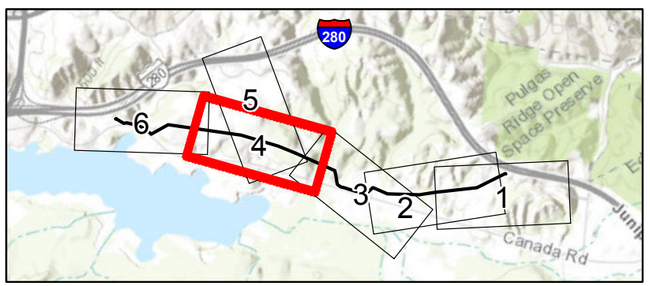

Legend

- Line 109 Cañada Road Pipeline Replacement
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Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
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Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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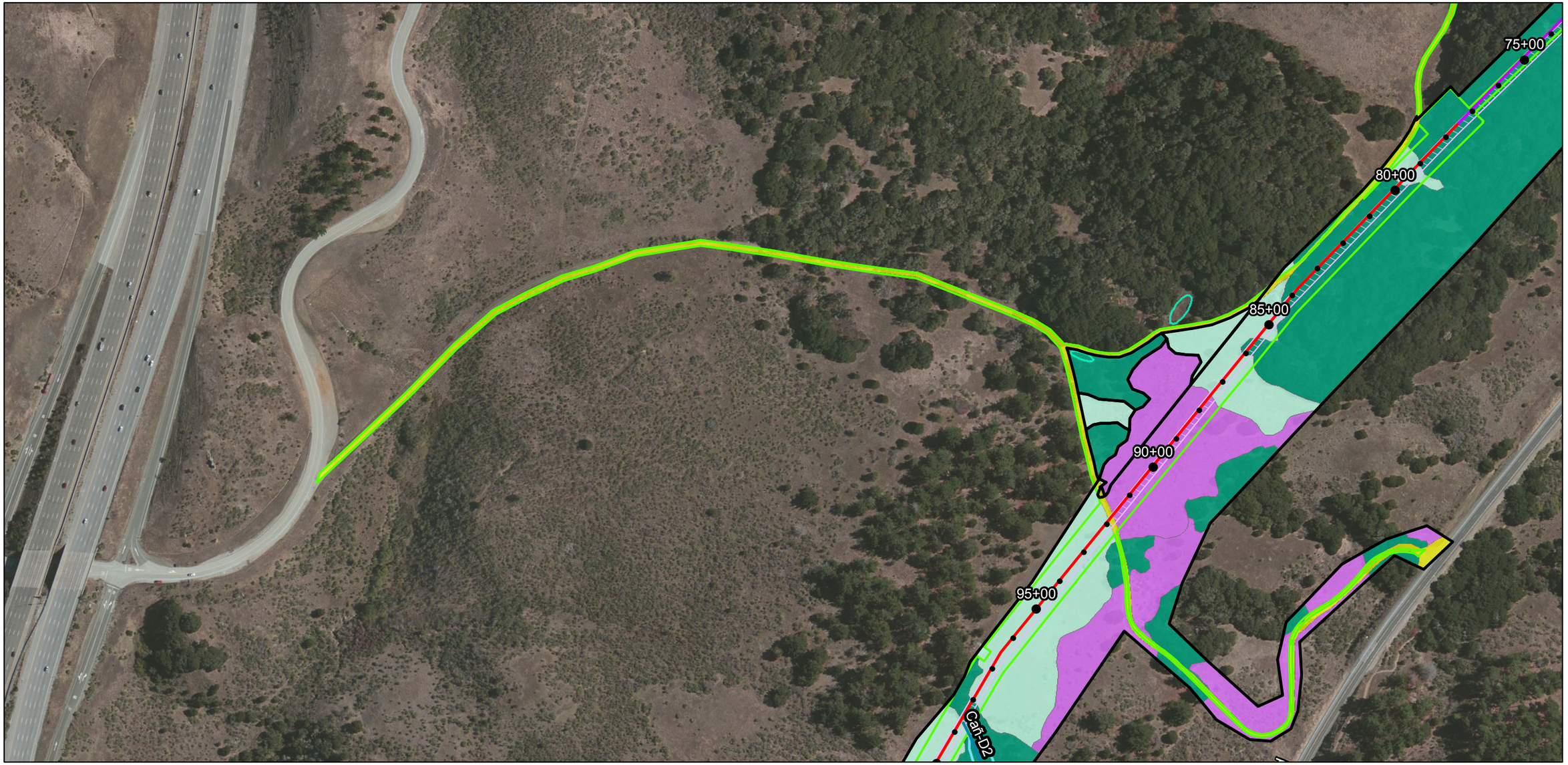

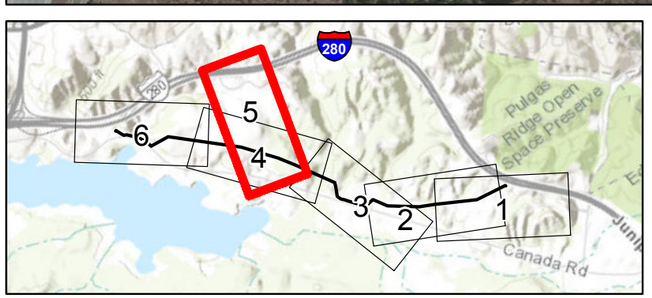

Legend

- Line 109 Cañada Road Pipeline Replacement
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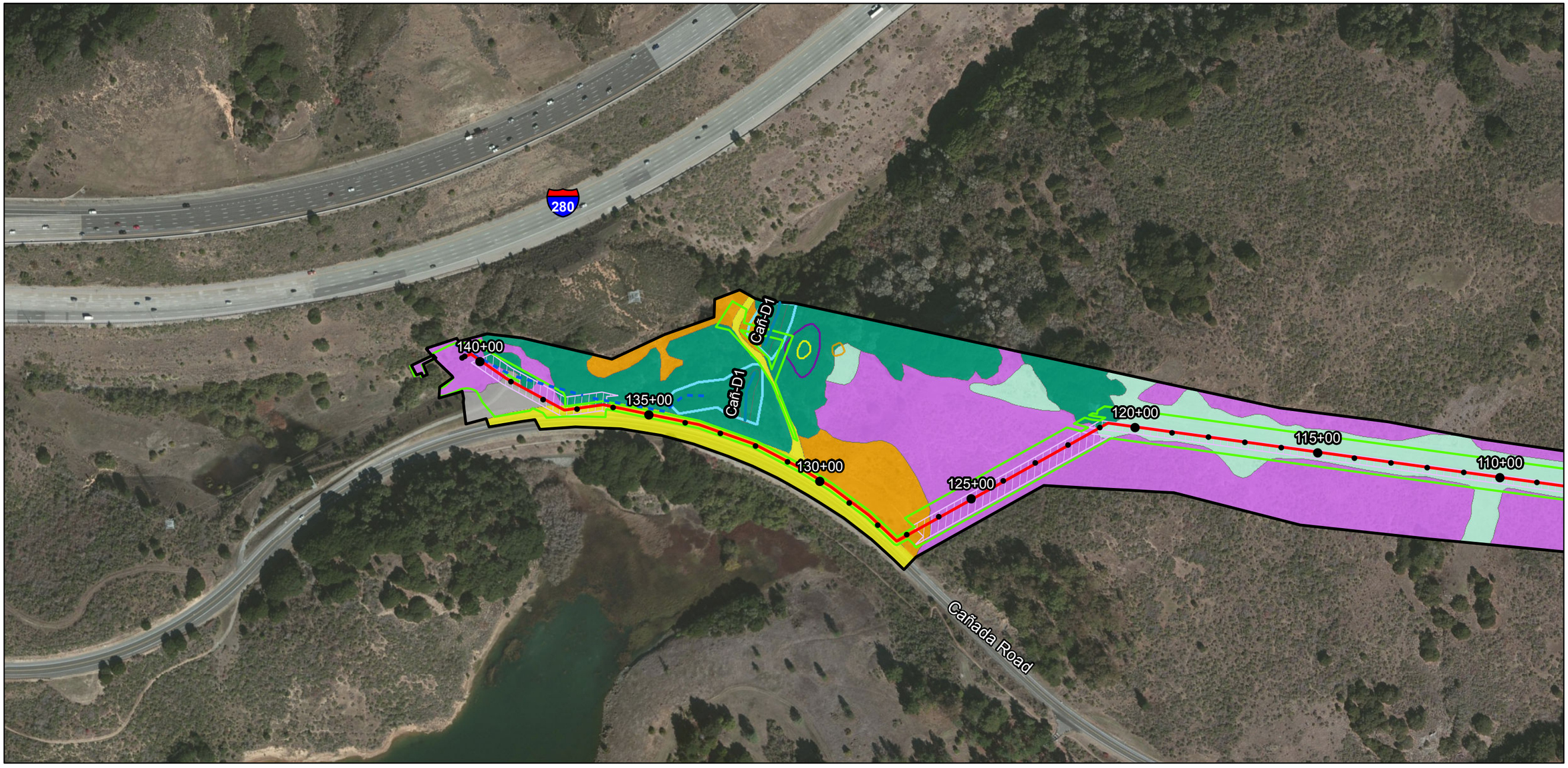
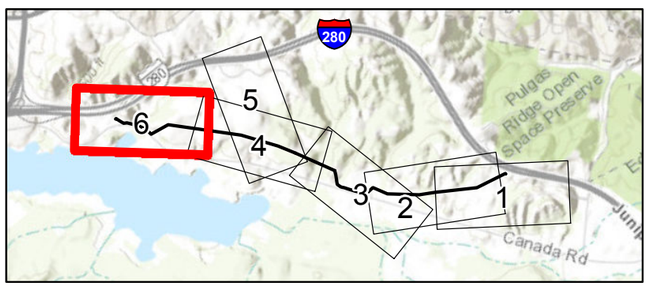
Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, TRC 2014, PG&E 2014





Legend

- Line 109 Cañada Road Pipeline Replacement
- Aerially Spanned Pipeline Replacement
- HDD Pipeline Replacement
- Stationing
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- Proposed Permanent Easement
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Wetland Features

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0 275 550
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6A
Vegetation Communities
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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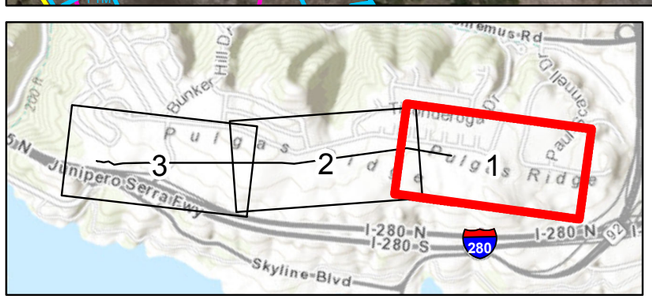

Legend

- Line 109 Bunker Hill Pipeline Replacement
- Stationing
- Construction Work Area
- HDD Area
- Proposed Permanent Easement
- Access Points
- Access Roads
- FTM Fountain Thistle Mitigation
- Invasive Plant Control Areas
- Ephemeral Swale

Vegetation Communities

- Coast live oak woodland
- Coyote bush scrub
- Serpentine bunchgrass
- Disturbed

Special Status Plants

- MWF Marin Western Flax (Hesperolinon congestum)
- Fragrant Fritillary (Fritillaria liliacea)
- CSL Crystal Springs Lessingia (Lessingia arachnoidea)
- San Francisco Wallflower (Erysimum franciscanum)

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6B
Vegetation Communities
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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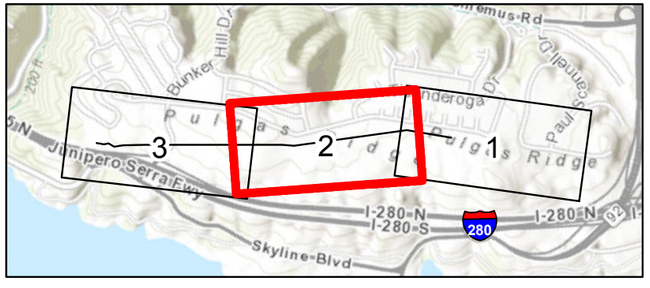

Legend

- Line 109 Bunker Hill Pipeline Replacement
- Stationing
- Construction Work Area
- HDD Area
- Proposed Permanent Easement
- Access Points
- Access Roads
- FTM Fountain Thistle Mitigation
- Invasive Plant Control Areas
- Ephemeral Swale

Vegetation Communities

- Coast live oak woodland
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- San Francisco Wallflower (Erysimum franciscanum)

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6B
Vegetation Communities
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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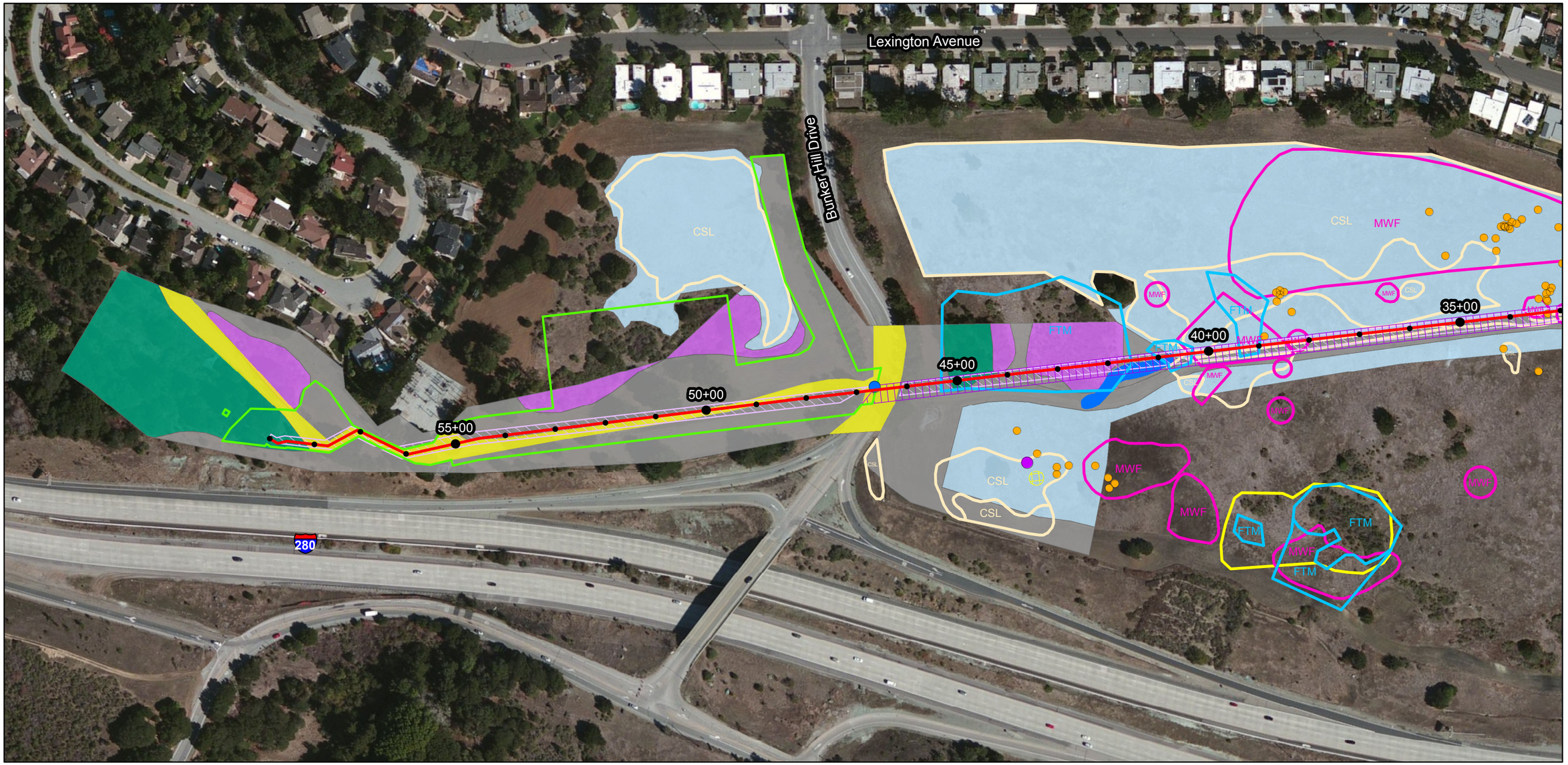

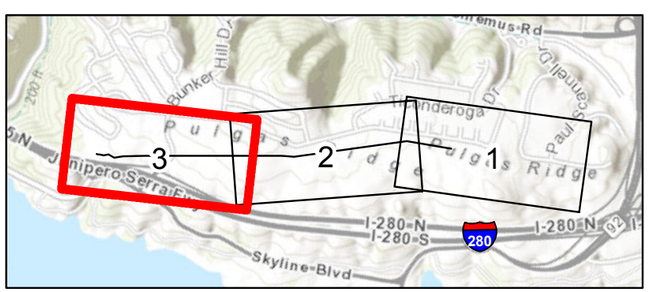

Legend

- Line 109 Bunker Hill Pipeline Replacement
- Stationing
- Construction Work Area
- HDD Area
- Proposed Permanent Easement
- Access Points
- Access Roads
- FTM — Fountain Thistle Mitigation
- Invasive Plant Control Areas
- Ephemeral Swale

Vegetation Communities

- Coast live oak woodland
- Coyote bush scrub
- Serpentine bunchgrass
- Disturbed

Special Status Plants

- MWF — Marin Western Flax (Hesperolinon congestum)
- Fragrant Fritillary (Fritillaria liliacea)
- CSL — Crystal Springs Lessingia (Lessingia arachnoidea)
- San Francisco Wallflower (Erysimum franciscanum)

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6B
Vegetation Communities
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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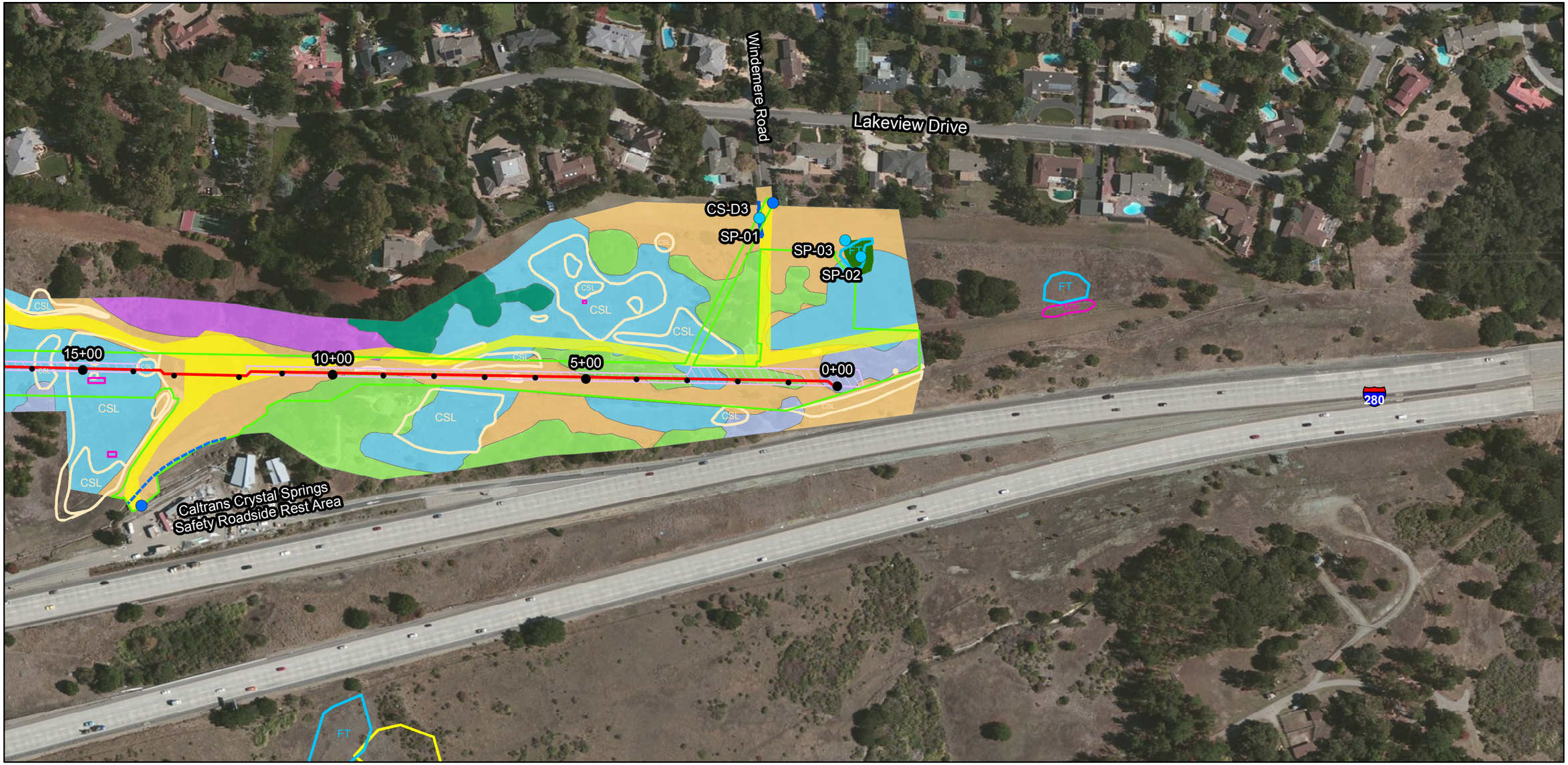

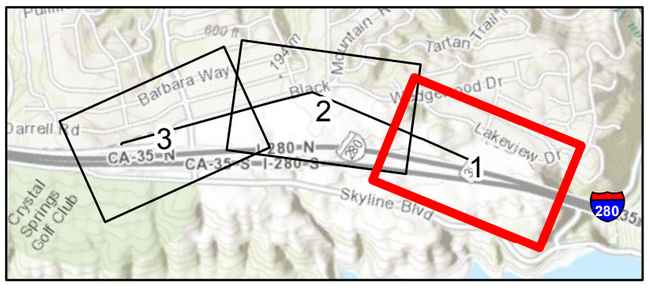

Legend

- Line 109 Crystal Springs Pipeline Replacement
- Stationing
- Construction Work Area
- Proposed Permanent Easement
- Access Points
- Access Roads
- FT Fountain Thistle Mitigation
- Invasive Plant Control Areas

Vegetation Communities

- Coast live oak woodland
- Coyote bush scrub
- Non-native grassland
- Non-native shrubland
- Non-native woodland
- Serpentine bunchgrass
- Disturbed

Wetland Features

- Ephemeral Swale
- Non-Jurisdictional Cement-lined V-ditch
- Mesic Meadow
- Non-Jurisdictional Drainage Swale

Special Status Plants

- MWF Marin Western Flax (Hesperolinon congestum)
- CSL Crystal Springs Lessingia (Lessingia arachnoidea)

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6C
Vegetation Communities
Crystal Springs Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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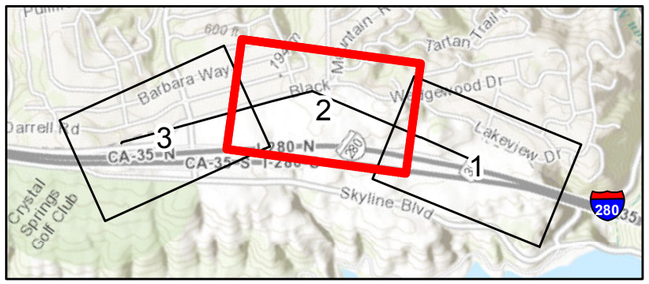

Legend

- Line 109 Crystal Springs Pipeline Replacement
- Stationing
- Construction Work Area
- Proposed Permanent Easement
- Access Points
- Access Roads
- FT Fountain Thistle Mitigation
- Invasive Plant Control Areas

Vegetation Communities

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- Coyote bush scrub
- Non-native grassland
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Wetland Features

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0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6C
Vegetation Communities
Crystal Springs Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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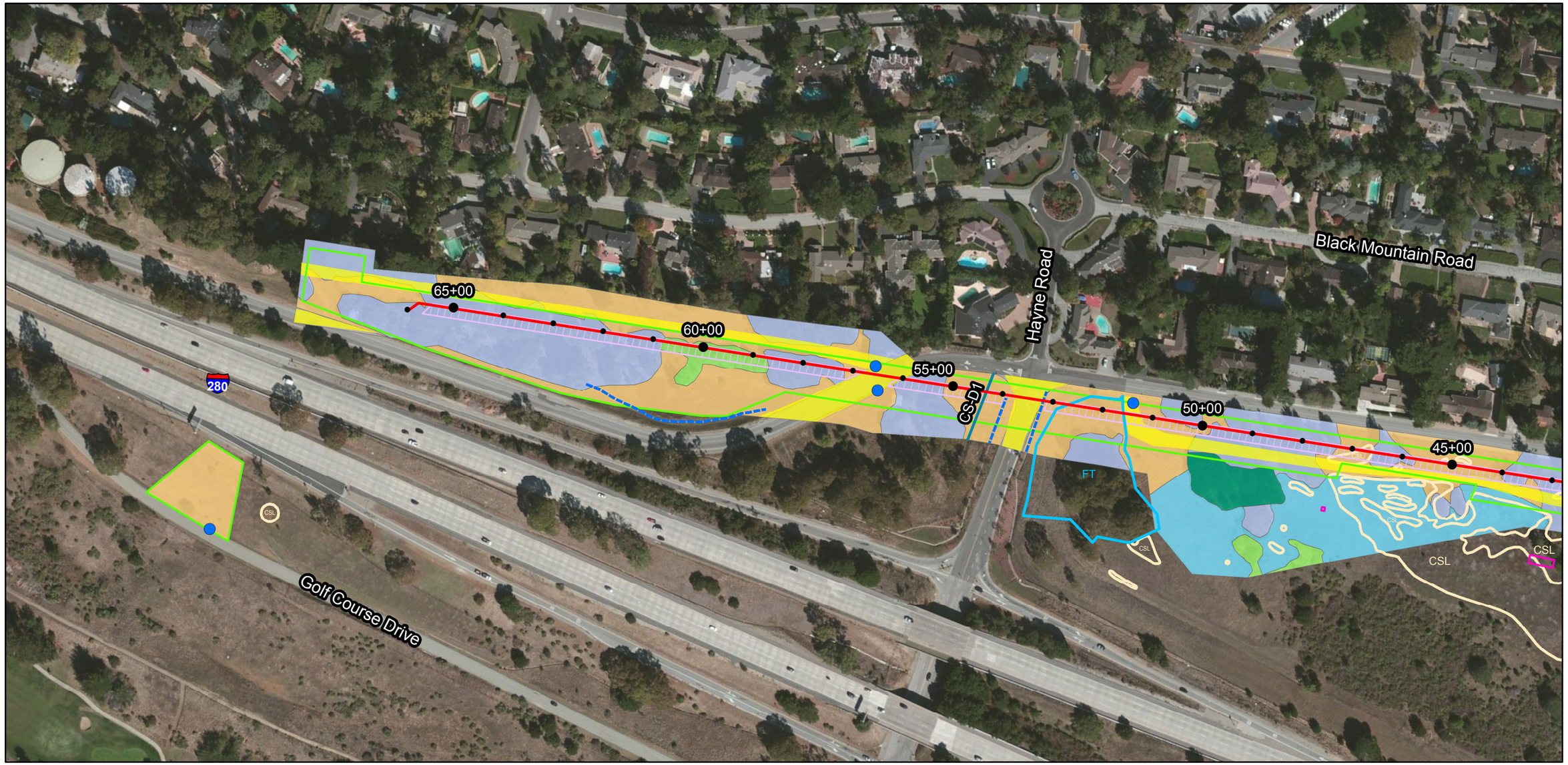

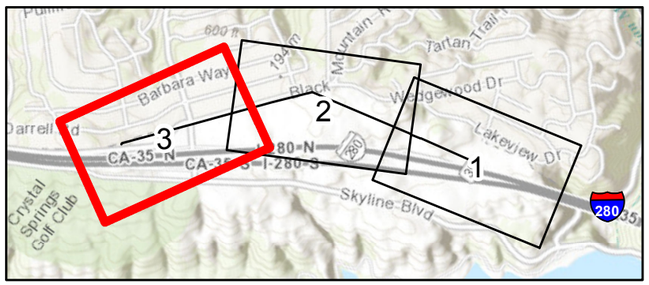

Legend

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0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 6C
Vegetation Communities
Crystal Springs Segment

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Special-status wildlife habitats and potential barriers to movement were identified, to the extent possible, using aerial photographs and USGS 7.5-minute quadrangle maps of the proposed project areas.[125,126,127,128]

- **Bay Checkerspot Butterfly Surveys.** On May 11 and 12, 2013, habitat assessments for Bay checkerspot butterfly (*Euphydryas editha bayensis*) were conducted for the Crystal Springs and Cañada Road segments. On April 30, 2015, an additional habitat assessment was conducted for construction work areas identified after the 2013 surveys of the Cañada Road segment. An area of Bay checkerspot larval food plants, Dwarf Plantain (*Plantago erecta*) and Owl's Clover (*Castilleja* sp.), is present within a proposed construction work area; however, no adult nectar plants were observed, and suitable habitat is not otherwise present along the Cañada Road segment.[129] Biologists identified and mapped the locations of larval and adult food plants of the Bay checkerspot butterfly. Degraded serpentine grassland habitat with larval and adult food plants was identified at the Crystal Springs segment, although surveys have not detected this species in the general area since the 1970s.[130] No suitable habitat for Bay checkerspot butterfly was observed within the surveyed portion of the Cañada Road proposed project area. Some additional construction work areas were identified after the surveys were completed, including existing access roads and staging areas with ruderal non-native grasslands, and hydroseeded areas that have been recently used for staging by PG&E and Caltrans.

[125] Swaim Biological, Inc. (SBI). 2014. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[126] SBI. 2013. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[127] SBI. 2014. Assessment for Special-Status Wildlife at the PG&E Line 109 Pipeline Replacement Project, Bunker Hill (Segment 4A2). This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[128] CH2MHill. 2015. Line 109 4A Cañada Road 2015 Biological Evaluations. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[129] Arnold, R.A. 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. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[130] Arnold, R.A. 2013. PG&E Line 109 Project in San Mateo & Santa Clara County, CA – Evaluation of Bay Checkerspot Butterfly Habitat at Crystal Springs. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

Because of the ruderal site conditions, these areas would not likely provide suitable habitat for the species.[131, 132] The Bunker Hill segment was also surveyed, with biologists conducting 16 site visits between March 10 and May 11, 2014. The surveyors reviewed the segment for post-diapause larvae on patches of the food plant, *Plantago erecta*, and searched throughout the area for adults. They also visited the nearby Edgewood County Park, where evidence of adult Bay checkerspot butterflies confirmed the appropriate seasonal timing of surveys. There were no observations of any life stages during surveys.[133]

- **Mission Blue Butterfly.** During the Crystal Springs segment survey, *Lupinus formusus*—a larval food plant for the endangered Mission blue butterfly (*Plebejus icarioides missionensis*)—was observed immediately south of the proposed work area between Golf Course Drive and I-280. Eggs of what were presumed to be Mission blue butterfly were observed on these plants, although the identity of the butterfly has not been confirmed.[134] Mission blue butterfly host plants were not observed within the added Cañada Road work areas during the surveys in 2015. [135]

- **Wetlands.** On May 7, June 20, and July 10, 2013, wetlands within the project area were delineated. The purpose of the field surveys was to identify potential wetlands and other waters of the United States, waters of the state, and areas under the jurisdiction of the CDFW, and to collect data on vegetation, soils, and hydrological conditions in the study area. [136, 137] Additional evaluations of

[131] Ibid.
[132] CH2MHill. 2015. Line 109 4A Cañada Road 2015 Biological Evaluations. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.
[133] Arnold, R.A. 2014. PG&E's Gasline 109 Bunker Hill in San Mateo County, CA – Presence-Absence Survey for the Threatened Bay Checkerspot Butterfly. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.
[134] Arnold, R.A. 2013. PG&E Line 109 Project in San Mateo & Santa Clara County, CA – Evaluation of Bay Checkerspot Butterfly Habitat at Crystal Springs. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.
[135] Arnold, R.A. 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. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.
[136] E2 Consulting Engineers, Inc. 2013. Draft Jurisdictional Delineation of Wetlands and Other Waters for the PG&E Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.
[137] E2 Consulting Engineers, Inc. 2014. Jurisdictional Delineation of Wetlands and Other Waters for the PG&E Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

whether potential wetlands near the Bunker Hill segment would be affected by project activities were conducted in March 2015.[138, 139] The potential for wetlands and other water features to be located within the additional construction work areas for the Cañada Road segment was evaluated during floristic surveys in 2015.[140]

- **Arborist Surveys.** The Bunker Hill segment, Cañada Road segment, and Crystal Springs segment were each surveyed and evaluated by certified arborists to identify and catalog the number, size, and species of trees, and the extent of brush to be removed from the construction work areas. The Bunker Hill survey identified 64 trees and approximately 722 units of brush (a unit of brush is 4 feet by 4 feet by 4 feet) to be removed for construction.[141] The Cañada Road survey identified 490 trees and approximately 2,975 units of brush to be removed for construction.[142] The Crystal Springs survey recommended removal of 309 trees and approximately 85 brush units for construction.[143] Each report also included recommendations for tree trimming and tree protection zones.

E.13.3. Environmental Setting

The proposed project is located within a protected watershed, and the SFPUC has ownership and management responsibility for the area. The proposed project is located within the planning area of the SFPUC Peninsula Watershed Plan. The plan contains policies to conserve and enhance botanical and wildlife resources and calls for site-specific analysis in accordance with applicable state and federal laws, statutes, and guidelines.[144]

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[138] CH2MHill, 2015. Potential Seep Evaluation for Line 109 Segment 4B (Bunker Hill) in San Mateo County, CA.

[139] CH2MHill, 2015. Swale and Fountain Thistle Evaluation for Line 109 Segment 4B (Bunker Hill) in San Mateo County, CA.

[140] CH2MHill. 2015. Line 109 4A Cañada Road 2015 Biological Evaluations. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[141] Manischalchi, D. 2014. Arborist Report, R-185, Line 109-4A, Bunker Hill. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[142] Manischalchi, D. 2014. Arborist Report, R-046, Line 109-4A, Cañada Road. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[143] Hunzeker, D. 2014. Arborist Evaluation for R-048, Crystal Springs. Line 109-4C. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[144] SFPUC. 2002. Final Peninsula Watershed Management Plan. http://www.sfwater.org/modules/showdocument.aspx?documentid=756. Accessed on October 28, 2014.

Existing conditions for vegetation communities, including sensitive natural communities, special-status plant and wildlife species, wetlands and other waters, and wildlife habitats and migratory corridors, are described in the following paragraphs.

Vegetation Communities

Vegetation communities present include grasslands, coastal sage scrub, coyote brush scrub, coast live oak woodland, oak riparian woodland, non-native shrubland and woodland, and ephemeral streams; these vegetation communities are discussed in more detail below.[145,146,147] Three sensitive vegetation communities—serpentine grasslands, needlegrass grassland (as originally described by Holland [1986]), and riparian coast live oak woodland—were identified. Figure 6: Vegetation Communities, shows the vegetation communities identified in the proposed project areas.

Following the completion of the 2013 biological surveys for the Cañada Road segment, the proposed project was modified to include the use of additional existing access roads, use of a new access road, development of a construction work area along Sheep Camp Trail, and use of an additional construction work area south of the study area near Edgewood Road. Additional surveys were conducted in April 2015 to identify vegetation cover for the new construction work areas. Vegetation communities in the Sheep Camp Trail construction work area and along the new project access road are consistent with the previously surveyed areas, and include oak woodlands and serpentine grasslands. Vegetation along the margins of existing access roads consists primarily of ruderal non-native grassland, although the proximity of native plant communities is adjacent to road shoulders in places, and special-status plant species including Choris' popcornflower (*Plagiobothrys chorisianus var. chorisianus*), Hall's bush mallow *(Malacothamnus hallii),* Crystal Springs lessingia *(Lessingia arachnoidea),* and fragrant fritillary *(Fritillaria liliacea)* are also within a few feet of some access roads. The existing access roads would require no widening or other road improvements to accommodate construction, with the exception of Sheep Camp

[145] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[146] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E

[147] Orion Environmental Associates. 2014. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

Trail, which would require blading and potentially gravelling in steep sections. The Edgewood Crossover Station work area contains a combination of ruderal non-native grassland and recently hydroseeded areas, and has been used to stage several recent Caltrans and PG&E projects.

Grasslands. Grasslands are found on the open ridges of the proposed project areas, often on less-fertile soils. Grasslands are characterized by a high proportion of native species, many perennial grasses, and low productivity. Grasslands in the proposed project areas include non-native annual grasslands, serpentine grasslands, and foothill needlegrass grassland or purple needlegrass grassland.[148, 149, 150]

Scrub. California sage scrub and coyote brush scrub are shrub-dominated communities typically found on rocky slopes. Coyote brush scrub is abundant throughout the proposed project areas, where it forms mosaics with grasslands and woodlands in upland slopes. California sage scrub is found on rocky south-facing slopes at the higher elevations.

Woodland. Coast live oak woodland is abundant on north-facing slopes and draws in the proposed project areas. Most of the existing access roads follow draws through coast live oak woodland. San Francisco dusky-footed woodrat (*Neotoma fuscipes annectans*) nests were observed in the coast live oak woodlands.[151,152,153]

Ephemeral Streams and Ditches. Nine ephemeral streams, three urban swales, and two cement-lined ditches are located within the proposed project areas. The streams and ditches provide ephemeral aquatic

[148] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[149] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[150] Orion Environmental Associates. 2014. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[151] SBI. 2013. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[152] SBI. 2014. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[153] SBI. 2014. Assessment for Special-Status Wildlife at the PG&E Line 109 Pipeline Replacement Project, Bunker Hill (Segment 4A2). This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

habitat for aquatic species and corridors for wildlife. As described in Section A, Project Description, the nine ephemeral streams would be crossed by the proposed project segments.

Riparian Coast Live Oak Woodland. Riparian coast live oak woodland is found along seven of the nine ephemeral streams in the proposed project study area. Riparian woodlands provide food, cover, and breeding habitat for wildlife. These woodlands are classified as sensitive natural communities, and are further described in the following paragraphs.

Sensitive Natural Communities (Including Wetlands)

Sensitive natural communities are natural habitats that receive regulatory recognition from municipal, county, state, and/or federal entities because of their unique constituent components, restricted distribution, distinctive soil conditions, and rarity.

Wetlands and Other Waters. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines wetlands in Section 404 of the CWA as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3).

As summarized in Table 21: Ephemeral Stream Crossing Conditions, 10 streams or swales would be impacted by the proposed project. No jurisdictional wetlands were identified within the proposed project study area. However, eight of the streams or swales are considered to be waters of the United States and/or waters of the state, as well as aquatic habitat under the jurisdiction of the CDFW pursuant to Section 1600 of the Fish and Game Code.

Several of these stream features have mature coast live oak riparian forest—which is considered a sensitive vegetation community in the Peninsula Watershed Management Plan—along their corridors. Riparian vegetation in the proposed project areas includes willows (*Salix* spp.), coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), California bay (*Umbelluria californica*), Monterey pine (*Pinus radiata*), elderberry (*Sambucus* sp.), and Pacific madrone (*Arbutus menziesii*), with understories that include California blackberry (*Rubus ursinus*), mugwort (*Artemisia douglasiana*), snowberry (*Symphoricarpos* sp.), and poison oak (*Toxicodendron diversilobum*).

TABLE 21: EPHEMERAL STREAM CROSSING CONDITIONS

Stream ID	Construction Method	Width (feet)	Substrate	Riparian Width (feet)	Description
Cañ-D2	Trenching	4	Sand and gravel	55	Erosional channel/stream that appears to convey flow into Upper Crystal Springs Reservoir.
Cañ-D3	Horizontal directional drilling	7	Sand and gravel	52	Well-defined channel that is a direct tributary to Upper Crystal Springs Reservoir.
Cañ-D4	Aerial span	7	Sand	84	Open channel that flows under Cañada Road into Upper Crystal Springs Reservoir.
Cañ-D5	Trenching	6	Sandy-loam with some gravel	105	Steep, vertical banks, flows west and north into Upper Crystal Spring Reservoir.
Cañ-D6	Aerial span	2.5	Gravel-cobble	136	Narrow, shallow channel that appears to be part of stream Cañ-D7. It flows into a 36-inch-diameter culvert under the road.
Cañ-D9	Trenching	1.5	Sandy loam	–	Small, weakly expressed low-flow channel within an erosional channel that flows into stream Cañ-D8.
CS-D1	Trenching	4	Sand and gravel	–	Constructed drainage swale for conveyance of roadside and urban storm water runoff.
CS-D2	Trenching	6	-	–	Constructed vegetated swale that conveys urban storm water runoff.
CS-D3	Trenching	10	Loam	–	Non-jurisdictional roadside swale that conveys urban runoff.
-	Horizontal directional drilling	-	-	-	Potentially jurisdictional swale over HDD of the Bunker Hill segment

Source: E2 Consulting Engineers, Inc., 2013 and 2014, and CH2MHILL 2015.

Needlegrass Grassland. Essentially all of the grasslands within the Cañada Road segment are either foothill needlegrass grassland or purple needlegrass grassland.[154] Because they are found in a fine-textured mosaic and both are natural communities of concern, they are mapped together on Figure 6: Vegetation Communities, as "needlegrass grassland." Purple needlegrass (*Nassella pulchra* = *Stipa pulchra*) grassland is ranked G3, S3 by the CNDDB, indicating that it is vulnerable to extinction or elimination both globally and at the state level. [155] These grasslands predominate in the southeastern and northwestern portions of the proposed project area, on more neutral, non-serpentine Los Gatos soils. The purple needlegrass grassland in the proposed project area is dominated by native species and contains

[154] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[155] Sawyer John O., and Keeler-Wolf Todd. 2009. A Manual of California Vegetation.

many native herbs, and is an excellent example of this natural community.[156] Foothill needlegrass (*Nassella lepida = Stipa lepida*) grassland is a provisional herbaceous alliance with a preliminary CNDDB rank of G3, S3. Foothill needlegrass is more abundant in openings in chaparral or scrub and in the more serpentine-influenced Obispo soils.

Serpentine Grassland. Much of the Bunker Hill and Crystal Springs segments support serpentine bunchgrass grassland, which is a diverse grassland type dominated by purple needlegrass with varying proportions of foothill needlegrass, big squirreltail (*Elymus multisetus*), June grass (*Koeleria macrantha*), blue wild-rye (*Elymus glaucus* ssp. *glaucus*), and a considerable variety of annual and perennial herbs 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*).[157,158] Deeper, moister soils within the Crystal Springs segment support native grass species such as California oatgrass (*Danthonia californica*) and tufted hairgrass (*Deschampsia caespitosa* ssp. *holciformis*), which in this area, is often found in association with serpentine seeps. The largest such area is located in a proposed laydown area near the gate at Windemere Road along the Crystal Springs segment. The grasslands north of Bunker Hill Drive, though mapped as serpentine bunchgrass, are somewhat less diverse, with deeper soils, more bunchgrasses, and fewer wildflowers. Low-lying areas of serpentine bunchgrass, generally outside of the survey area, have deep, black clay soils with lower grass cover and a higher proportion of native herbs, such as hayfield tarplant (*Hemizonia congesta* ssp. *luzulaefolia*), yampah (*Perideridia kelloggii*), and Marin western flax.[159] Serpentine bunchgrass is a natural community of special concern and is ranked G2, S2.2 by the CNDDB.

[156] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[157] Ibid.

[158] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E

[159] Orion Environmental Associates. 2014. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

Trees. Coast live oak woodland occurs throughout the proposed project areas. Large native oak trees are a sensitive resource, and may provide roosting and nesting sites for raptors or other birds, and nest sites for woodrats.

E.13.4. Special-status Species

Special-status species are plants and wildlife that are legally protected under state and federal Endangered Species Acts (ESAs) or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. A list of special-status plant and wildlife species was compiled based on the previously described data, the species' preferred habitats, and their potential to occur in the proposed project areas. Conclusions regarding habitat suitability and species occurrence are based on the results described in previous studies and reconnaissance surveys, as well as the analysis of existing literature and databases described previously.

Only species with a potential for occurrence are further discussed in this section. Species unlikely to occur within the proposed project areas due to lack of suitable habitat or range were eliminated from the discussion.

Special-status Plant Species

Five special-status species—Choris' popcornflower, Hall's bush mallow, Franciscan onion (*Allium peninsulare* var. *franciscanum*), bent-flowered fiddleneck (*Amsinckia lunaris*), and San Francisco collinsia (*Collinsia multicolor*)—are present adjacent and within construction work areas in the Cañada Road segment. Franciscan onion, bent-flowered fiddleneck, and San Francisco collinsia were observed in the Cañada Road segment construction work area, approximately 500 feet north of station 125+00 (refer to Figure 6A), during botanical surveys. Three other special-status plant species—Crystal Springs lessingia, fragrant fritillary, and Marin western flax (*Hesperolinon congestum*)—are present within the construction work area in the Bunker Hill segment, from approximately stations 9+00 to 45+00 (refer to Figure 6B). Crystal Springs lessingia and Marin western flax are present within the serpentine grasslands along the Crystal Springs segment from station 0+00 to 49+00 (refer to Figure 6C). The sole remaining locality of white-rayed pentachaeta (*Pentachaeta bellidiflora*) is south of the project area. There is potentially suitable serpentine habitat available for this species within the project area, but white-rayed pentachaeta was not

discovered during surveys. Table 22: Sensitive Species Potential for Occurrence, provides the species that are found along the three pipeline segments.

TABLE 22: SENSITIVE SPECIES POTENTIAL FOR OCCURRENCE

Species Name and Status	Cañada Road	Bunker Hill	Crystal Springs
Sensitive Plant Species			
Franciscan onion (CNPS 1B.2)	Present	Low	None
Bent-flowered fiddleneck (CNPS 1B.2)	Present	Low	None
San Francisco collinsia (CNPS 1B.2)	Present	None	None
Crystal Springs lessingia (CNPS 1B.2)	None	Present	Present
Fragrant fritillary (CNPS 1B.2)	Low	Present	Low
Marin western flax (FT/ST/CNPS 1B.1)	None	Present	Present
Choris' popcornflower (CNPS 1B.2)	Present	Absent	Absent
Hall's bush mallow (CNPS 1B.2)	Present	Absent	Absent
Sensitive Wildlife Species			
San Francisco dusky footed woodrat (SC)	Present	Present	Present
Bald eagle (FD/SE, FP)	Present	Present	Present
California red-legged frog (FT/SC)	High	Low	Low
San Francisco garter snake (FE/CE, FP)	High	Low	Low
Peregrine falcon (FD/SD, FP)	High	Moderate	High
Pallid bat (SC)	Moderate	None	Moderate
Western pond turtle (SC)	Low	None	None
Saltmarsh common yellowthroat (SC)	Low	None	Low
Mission blue butterfly (FE)	Low	None	Moderate
Bay checkerspot butterfly (FT)	Low	Considered extirpated	Considered extirpated

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.
FD = Delisted by the Federal Government, but protected under either the Bald and Golden Eagle Protection Act or the Migratory Bird Treaty Act
State (California Department of Fish and Wildlife)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
SC = California Species of Special Concern
SD = Delisted by the State of California
FP = California Fully Protected Species
California Native Plant Society
List 1A=Plants presumed extinct in California
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California
.2 – Fairly endangered in California

Franciscan onion is a perennial, bulb-forming herb in the onion family (Alliaceae). The habitat for Franciscan onion is reported variously as damp slopes and hard rocky ridges. It has a weak affinity for serpentine substrate. Franciscan onion is reported from Santa Clara and Monterey counties northward to Sonoma and Mendocino counties, with most records in San Mateo County. An estimated 200-250 plants were present in the Cañada Road segment. Franciscan onion was not seen elsewhere in the project area, although potentially suitable habitat was noted along the access road from Cañada Road at the southern end of the project.

Bent-flowered fiddleneck is an erect, slender annual herb in the borage family (Boraginaceae). The habitat for bent-flowered fiddleneck is grasslands and openings or edges of cismontane woodlands, often on serpentine soils. Bent-flowered fiddleneck has a fairly wide distribution in California, from Tulare and Monterey counties northward through Humboldt County.

San Francisco collinsia is a slender annual herb in the plantain family (Plantaginaceae). It is found in coastal scrub and forest (including coast live oak forest), often on steep, shaded, wooded, north-facing slopes. This species ranges from Santa Barbara to Sonoma counties, with most records from Santa Cruz, San Mateo, and San Francisco counties. There are several records in the near vicinity of the project, including in nearby Edgewood Park. An estimated 50 plants were present adjacent to the construction work area.

Choris' popcornflower is a small annual herb in the borage family (Boraginaceae). This California native species is endemic to California. It is found in coastal grasslands or shrublands, and almost always occurs under natural conditions in wetlands. Populations are distributed from Monterey County to Mendocino County. Two colonies are located along the Cañada Road segment.

Hall's bush mallow is a perennial evergreen shrub in the mallow family (Malvaceae). Individuals grow to approximately 3 meters in height, with stout, spreading branches. This species is found in open chaparral. It is distributed from Santa Clara County to Sonoma County, with most known populations occurring south of the San Francisco Bay. The nearest record is an 1891 record from Belmont. This species was observed within the Cañada Road segment.

Crystal Springs lessingia is a slender annual herb in the sunflower family (Asteraceae). This California-endemic species is found on serpentine barrens and serpentine grasslands from San Mateo County to Sonoma County, with greatest abundance near the Crystal Springs Reservoir. Most populations are

concentrated along the eastern shore of Crystal Springs Reservoir in the SFPUC Peninsula Watershed, where it is locally abundant. Populations vary in their extent and abundance from year-to-year based on temperature and precipitation. In general, it appears to thrive where there is limited competition, such as on rocky, thin soils, and along road cuts where fuelbreak mowing in late spring reduces the competition from earlier-developing grasses and forbs.[160] In 2013, its population on Buri Buri Ridge in the vicinity of the Crystal Springs segment was estimated to be 145,000 plants, including 20,400—or 14 percent of the estimated population—located within 1.1 acres of the construction work area. On northern Pulgas Ridge in the vicinity of the Bunker Hill segment, the population has been estimated at 174,000 plants, including 2,700—or approximately 2 percent of the northern Pulgas Ridge population—within 0.1 acre of the construction work area.

The flowering period for Crystal Springs lessingia is from July to October. As an annual, Crystal Springs lessingia grows readily from seed. Seed may be collected from mature plants in the fall by haying, a technique in which the plant is scythed low and stored in bales. The bales may then be broken up and redistributed over the area to be restored.

Fragrant fritillary is a perennial, bulb-forming herb in the lily family (Lilaceae). This species is generally found in clay soils, including serpentine soils. Its bulbs are found 5 to 7 inches below the soil surface. It is endemic to California and occurs in mostly small, widely scattered, isolated populations in seven central western California counties. Most of the known, extant populations are small, decreasing in population number, and/or have not been relocated since they were originally recorded. The populations in San Mateo County cluster around Pulgas Ridge, which has the greatest number of plants in the county—possibly more than 10,000—and is considered by the Natural Resources and Lands Management Division (NRLMD) to have the highest potential for protection. The San Mateo County populations are found in what was once continuous serpentine grassland centered on Pulgas Ridge; most were likely originally part of one larger population that has since been divided and impacted by the construction of roads, freeways, houses, and utility infrastructure. Approximately 1,200 fragrant fritillary individuals are found in the vicinity of the Bunker Hill segment. Detection of plants can vary because not all plants produce

[160] Orion Environmental Associates. 2013. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E

flowers each year, so it is likely that plants are missed during surveys. In addition, there can be annual variation in flowering plants based on weather patterns and herbivory pressure. The population is divided by the Highlands Fire Trail, on the east side of which is a colony of approximately 350. The surveys in March 2014 detected 214 individual plants located within the boundary of the construction work area in the Bunker Hill segment.[161] In March 2015, two separate surveys identified 333 individual plants and 371 individual plants within the boundary of the construction work area. [162, 163]

The flowering period for fragrant fritillary is from February to April. However, *fritillaria* typically reproduce vegetatively from underground bulbs. Very few plants relative to a population actually set seed, and if these germinate, they will take between 5 and 7 years to mature to flowering size. Therefore, restoration success for *fritillaria* is most likely when dormant bulbs that have not expended energy-producing seed are unearthed from dry soils, properly stored to protect them from solarization, rot and predation, and replanted prior to winter rains, between September 1 and October 31.

Marin western flax is a small annual herb in the flax family (Linaceae). It occurs in serpentine barrens and serpentine grasslands, usually on sparsely vegetated sites. It is endemic to the north-central coast of California, where its range extends from San Mateo County to Marin County. Most of the extant populations are located within San Mateo County, where it is known from Buri Buri Ridge, Pulgas Ridge, and Edgewood Park. Population numbers vary from year-to-year. The 2013 population was estimated at 500–1,000 plants at Buri Buri Ridge, 15,000–20,000 plants at Pulgas Ridge, and 6,500 plants at Edgewood Park. The flowering period for Marin western flax in San Mateo County is April to May.

SFPUC-identified Potential Fountain Thistle Mitigation Areas

The SFPUC has identified certain areas on Pulgas Ridge and Buri Buri Ridge for potential Crystal Springs fountain thistle (*Cirsium fontinale* var. *fontinale*) mitigation sites for SFPUC projects, some of which already

[161] Orion Environmental Associates. 2014. Special-Status Plant Survey Report, Pacific Gas and Electric Company Line 109 Bunker Hill Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[162] CH2MHill. 2015. Pre-Construction Surveys for Fragrant Fritillary along Line 109 Segment 4B (Bunker Hill) in San Mateo County, California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[163] SFPUC. 2015. L109 Fritillaria along trench Bunker Hill. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

support populations of the thistle (see Figures 6B and 6C).[164] The SFPUC is initiating an effort to create and enhance populations of the state- and federally endangered Crystal Springs fountain thistle on SFPUC Peninsula Watershed lands. This is a species known only from seeps and springs on serpentine substrate. Associated with this habitat is tufted hairgrass, which also requires extended periods of subsoil moisture or saturation.

Several areas supporting tufted hairgrass in and near the proposed project areas are being investigated by the SFPUC to determine whether the hydrology is suitable to support Crystal Springs fountain thistle. Such areas are typically low-lying depressions or are located along small watercourses. Five potential mitigation areas for fountain thistle are located on Pulgas Ridge, two of which currently support populations. The largest population begins approximately 500 feet downslope of the trench segment of the Bunker Hill segment of the pipeline. Of the six identified potential mitigation areas on Buri Buri Ridge, one is located next to the proposed laydown area south of the Windemere Gate, within a mesic meadow. Another area is located in an oak-brush grassland just south of the point where the pipeline alignment begins to parallel Black Mountain Road. A third area is located just south of Hayne Road.

Special-status Wildlife Species

San Francisco dusky-footed woodrat nests are found within woodland and scrub plant communities of all three of the pipeline segment areas. Bald eagles (*Haliaeetus leucocephalus*) have nested in the vicinity of Lower Crystal Springs Reservoir and they could fly over any of the three segments. California red-legged frog (*Rana draytonii*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and peregrine falcon (*Falco peregrinus anatum*) have a high potential to occur within or adjacent to the Cañada Road segment, and suitable habitat for peregrine falcon foraging exists throughout the Crystal Springs segment. Table 22: Sensitive Species Potential for Occurrence, lists the potential for these species as well as pallid bat (*Antrozous pallidus*), western pond turtle (*Emys marmorata*), and saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), to occur within all three pipeline segment areas.

Raptors or migratory birds may nest in shrubs, trees, or grasslands throughout the proposed project areas. Mission blue butterfly has the potential to occur on host plants near work areas for the Crystal

[164] SFPUC. Natural Resources Division. 2013. Map of Special-status Plants, Natural Communities, and Special Restoration Sites on the Peninsula Watershed. Maps provided to CH2MHill on July 16, 2013. 3 pages.

Springs segment west of I-280. Although the Bunker Hill segment passes through critical habitat (unit 2: Pulgas Ridge) for Bay checkerspot butterfly, presence-absence surveys did not detect this species.[165]

Impact BI-1: The proposed project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Less than Significant with Mitigation)

The proposed project has a moderate to high potential to impact the following 14 special-status species, to varying degrees, in certain segments of the project:

- Mission blue butterfly (*Plebejus icarioides missionensis*)
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)
- California red-legged frog (*Rana draytonii*)
- San Francisco dusky-footed woodrat (*Neotoma fuscipes annectans*)
- bald eagle (*Haliaeetus leucocephalus*)
- peregrine falcon (*Falco peregrinus anatum*)
- pallid bat (*Antrozous pallidus*)
- Franciscan onion (*Allium peninsulare* var. *franciscanum*)
- bent-flowered fiddleneck (*Amsinckia lunaris*)
- San Francisco collinsia (*Collinsia multicolor*)
- Crystal Springs lessingia (*Lessingia arachnoidea*)
- fragrant fritillary (*Fritillaria liliacea*)
- Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*)
- Hall's bush mallow (*Malacothamnus hallii*)

In addition, the proposed project would cause temporary impacts on critical habitat for Bay checkerspot butterfly, although there is low potential for the species to occur in the Cañada Road segment and the species is considered extirpated in the other two segments.

[165] Arnold, R.A. 2014. PG&E's Gasline 109 Bunker Hill in San Mateo County, CA – Presence-Absence Survey for the Threatened Bay Checkerspot Butterfly. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

Information on potential species impacts is presented in the following paragraphs, and discussions for species have been grouped, where appropriate. Both temporary and permanent impacts are considered for species and habitat. Impacts are considered permanent where plant communities would be disturbed by construction activities and, due to operational requirements of the pipeline, would not be restored to pre-construction conditions, and temporary where restoration would be expected to return disturbed areas to pre-construction conditions. Further, temporal impacts on species are considered based on the length of time required for habitat to recover and whether suitable habitat is available for use in adjacent areas. In general, where restoration of affected areas would be substantially completed within one season, the impact would be considered less than significant with no additional compensation required, as is consistent with conservation recommendations for other sensitive species, such as giant garter snake. [166]

Mission Blue Butterfly. For the Crystal Springs segment, construction activities at the work location between Golf Course Drive and I-280 could potentially crush larval food plants for Mission blue butterfly and possibly eggs. This would be a potentially significant impact. With implementation of Mitigation Measure M-BI-1g, Mission Blue Butterfly Protection Measures, the limits of the construction work area would be flagged or fenced, vehicles would be prevented from parking along the side of the road, and workers would receive training; therefore, this potentially significant impact would be reduced to a less-than-significant level.

Bay Checkerspot Butterfly Critical Habitat. Construction activities that cause soil disturbance, including grading and trenching, could potentially adversely affect designated critical habitat for Bay checkerspot butterfly. This is a potentially significant impact. The Bunker Hill segment passes through critical habitat (unit 2: Pulgas Ridge) for Bay checkerspot butterfly, a federally threatened species. One of 13 critical habitat units, unit 2 is approximately 179 acres and is located north of the intersection of I-280 and SR 92, east of the Crystal Springs Reservoir.[167] Bay checkerspot butterfly is considered extirpated from the proposed project area. However, the unit does contain all of the primary constituent elements, including serpentine grasslands, necessary to support the species if it were present, and it may potentially provide a

[166] USFWS. 1997. Programmatic Formal Consultation for US Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California. Appendix C. Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake (*Thamnophis gigas*) Habitat.

[167] USFWS. 2008. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*). Final Rule. Federal Register Vol. 73, No. 166, pp 50406 – 50452.

stepping stone to other nearby critical habitat units during favorable weather conditions that support expanding populations. The proposed project would result in temporary impacts on approximately 2 acres, or 1 percent, of potential habitat within the critical habitat unit. Additional serpentine grasslands are present outside of the work areas that would be available as potential habitat during the timeframe of project disturbance. With implementation of Mitigation Measure M-BI-1f, Habitat Protection Measures, restoration of disturbed herbaceous plant communities would be substantially achieved within one growing season and impacts on Bay checkerspot butterfly critical habitat would be reduced to a less-than-significant level.

San Francisco Garter Snake and California Red-legged Frog (Including Critical Habitat). Both San Francisco garter snake and California red-legged frog are known to occur in the proposed project area. The potential exists for these species to enter a construction work area and be physically injured. Adverse effects on these species could also result from permanent loss or degradation of aquatic or upland habitat. This is a potentially significant impact.

San Francisco garter snake is federally and state endangered, and a California Fully Protected species. This species has a very low potential to occur in the Crystal Springs and Bunker Hill segments due to a lack of hydrologic connectivity and barriers, such as I-280, that exist between known aquatic habitat.

Occurrences of the species have been recorded in more than 30 locations in the vicinity of the Cañada Road segment. Several garter snake records are located within a few feet of the pipeline alignment. Due to the presence of suitable aquatic habitat near the Cañada Road segment and upland grasslands within this construction work area, the potential for this species to occur is high.

California red-legged frog, a federally threatened species and California species of special concern, is known to occur in the Upper Crystal Springs Reservoir and nearby locations. As with San Francisco garter snake, this species has a very low potential to occur in the Crystal Springs or Bunker Hill segments due to a lack of hydrologic connectivity and barriers, such as I-280, that exist between known aquatic habitat.

Impacts on these species may directly occur as a result of project construction activities. Construction activities—including small equipment and construction personnel accessing the site throughout the project—may crush, bury, or disturb garter snakes or red-legged frogs as they are dispersing, aestivating, or seeking refuge in small-mammal burrows. The majority of construction would take place during daylight hours when snakes are most active; thus, equipment and vehicles may strike garter snakes,

causing death or injury. In addition, individuals of these species may get trapped in or under vehicles and equipment or within trenches or pipes. Noise and ground vibrations produced by equipment and vehicles also may disrupt foraging and resting activities, temporarily disrupting essential behaviors. Furthermore, an increase in human presence within the proposed project areas during construction would increase disturbance and may cause snakes or frogs to avoid the areas.

Impacts on San Francisco garter snake and California red-legged frog may also occur as a result of temporary habitat modifications due to construction activities in some portions of the Cañada Road segment. Specifically, clearing and grading operations would disturb approximately 28 total acres of vegetation within the Cañada Road segment, some of which is likely to be used by San Francisco garter snake and California red-legged frog. Vegetation in the staging and access areas may be scarred or damaged. Construction activities and equipment in the construction work area ~~easement~~, along the new temporary access road, and in the staging areas may also eliminate small mammal burrows within the area, potentially reducing the quantity and quality of retreat habitat for snakes and frogs. Furthermore, removal of vegetation would temporarily eliminate escape cover, potentially exposing species to increased levels of predation. Habitat also may be contaminated by use of equipment, either due to hazardous equipment leaks if equipment is not maintained properly or the spread of non-native invasive plant species if equipment cleaning is not properly performed, which would diminish vegetative cover and riparian habitat. Abundant retreat habitat exists outside of areas that would be disturbed by the project and would be available during the timeframe when temporary disturbance from the project takes place.

To accommodate operation and maintenance activities following construction, trees and brush would not be allowed to regrow within 10 feet of the centerline of the pipe, resulting in the permanent loss of 0.12 acre of riparian vegetation. This vegetation would be replaced with other dense vegetation within one growing season, and therefore, would not result in a long-term loss of cover.

Implementation of Mitigation Measures M-BI-1a, San Francisco Garter Snake and California Red-legged Frog Protection Measures, and M-BI-1f, Habitat Protection Measures, which requires general measures to reduce impacts on disturbed habitat and restoration of herbaceous vegetation that provides retreat cover, would reduce impacts on San Francisco garter snake and California red-legged frog to a less-than-significant level.

California Red-legged Frog Critical Habitat. The proposed project is located within Unit SNM-1 of federally designated critical habitat for California red-legged frog. This unit is composed of approximately 34,952 acres of land, and contains high-quality habitat that is known to be currently occupied by California red-legged frogs.[168] The proposed project would result in temporary impacts on up to approximately 0.02 acres of ephemeral aquatic and 27.28 acres of upland habitat in unit SNM-1 and from use of approximately 35.3 acres of existing access roads, staging areas, and construction rights-of-way. This temporary loss of habitat would be substantially restored within one growing season, through implementation of M-BI-1f, Habitat Protection Measures, and would result in a less-than-significant impact.

Pallid Bat. Pallid bat, a California species of special concern, has a moderate potential to occur due to the presence of foraging and roosting habitat in the proposed project areas.[169,170,171] Project activities that are limited to daytime hours would not impact foraging bats; however, roost tree removal or trimming of roost trees that are inhabited by pallid bat could have a potentially significant impact on individuals of this species. Implementation of Mitigation Measure M-BI-1b, Bat Roost Surveys and Avoidance and Minimization Measures, which requires pre-construction surveys for bat roosts prior to the removal of suitable roosting trees, Mitigation Measure M-BI-1f, Habitat Protection Measures, and Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, would reduce this impact to a less-than-significant level.

Nesting Migratory Birds and Raptors. Breeding migratory birds and raptors, including but not limited to bald eagles (federally delisted, state endangered, and California fully protected) and peregrine falcons (federally and state delisted, and California fully protected) may be present within the trees, bushes, or other vegetation within or immediately adjacent to all three segments of the proposed project. Active nests could be directly impacted by vegetation removal, and nesting birds may be sensitive to human

[168] USFWS. 2010. Endangered and Threatened Wildlife and Plants: Revised Designation of Critical Habitat for California Red-Legged Frog; Final Rule. Federal Register Vol 75, No 51, pp. 12816 – 12959.

[169] SBI. 2013. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[170] SBI. 2014. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[171] SBI. 2014. Assessment for Special-Status Wildlife at the PG&E Line 109 Pipeline Replacement Project, Bunker Hill (Segment 4A2). This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

activity and noise from construction, which could disrupt breeding activities and cause a potentially significant impact. Implementation of Mitigation Measure M-BI-1c, Pre-construction Bird Surveys, Mitigation Measure M-BI-1f, Habitat Protection Measures, Mitigation Measure M-BI-3, Protection Measures for Jurisdictional Water Bodies and Riparian Areas, and Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, would reduce this impact to a less-than-significant level.

San Francisco Dusky-footed Woodrat. San Francisco dusky-footed woodrat, a California state species of special concern, may currently inhabit or build nests in the proposed project areas, particularly in wooded riparian areas and oak woodlands. Woodrats are nocturnal and are likely to remain inside their nests during construction activities; therefore, individuals in nests outside of the proposed project areas are unlikely to be affected by the proposed project if impacts on their nests are avoided. Removal of woodrat nests that occur in the proposed project areas would be a potentially significant impact. Implementation of Mitigation Measure M-BI-1d, San Francisco Dusky-footed Woodrat, Mitigation Measure M-BI-1f, Habitat Protection Measures, and Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, would reduce project impacts on woodrats to a less-than-significant level.

Special-status Plants. Impacts on Franciscan onion (CNPS 1B.2), bent-flowered fiddleneck (CNPS 1B.2), San Francisco collinsia (CNPS 1B.2), Choris' popcornflower (CNPS 1B.2), Hall's bush mallow (CNPS 1B.2), fragrant fritillary (CNPS 1B.2), Crystal Springs lessingia (CNPS 1B.2), and Marin western flax (FT/ST, CNPS 1B.2) could result from individuals being crushed by vehicles and equipment, grading, excavation, vegetation removal, or trampling.

Franciscan onion, bent-flowered fiddleneck, San Francisco collinsia, Choris' popcornflower, and Hall's bush mallow are located immediately adjacent to or within the construction work area at the Cañada Road segment. The proximity of the colonies to access roads and temporary work spaces could result in their being crushed by vehicles and equipment, or trampled by construction workers. With implementation of Mitigation Measure M-BI-1f, Habitat Protection Measures, these colonies would be fenced for avoidance. Thus, the project would have a less-than-significant effect on Franciscan onion, bent-flowered fiddleneck, San Francisco collinsia, Choris' popcornflower, and Hall's bush mallow.

Crystal Springs Lessingia. Crystal Springs lessingia individuals that are present within the construction work areas at the Bunker Hill and Crystal Springs segments would be removed during preparation of the construction work areas. Approximately 20,400 lessingia at the Crystal Springs segment and

approximately 2,800 individuals at the Bunker Hill segment would be cleared. Removal of approximately 14 percent of the Buri Buri Ridge population and 2 percent of the Pulgas Ridge population would be a potentially significant impact. Implementation of Mitigation Measure M-BI-1f, which requires that cleared special-status plant species have seed or vegetative material containing seed collected at the appropriate time to be stored for redistribution, would reduce this impact to a less-than-significant level.

Individual lessingia outside of areas to be cleared may also be crushed by vehicles and equipment or trampling, and their habitat may be degraded by the opportunistic colonization of the construction work area by invasive species. Implementation of Mitigation Measure M-BI-1f, which includes invasive species control, fencing, topsoil segregation, propagule collection, and restoration, would reduce this impact to a less-than-significant level. Temporal impacts would be reduced through restoration monitoring and reporting requirements through a minimum period of 5 years, or until the success criteria is met.

Fragrant Fritillary. Populations of fragrant fritillary are present at the Bunker Hill segment. Removal of a colony of fragrant fritillary consisting of approximately 350 individuals during preparation of the construction work area for trenching would be a potentially significant impact. Implementation of Mitigation Measure M-BI-1e, Fragrant Fritillary Protection Measures, which requires that individuals be salvaged and the population restored following construction, would reduce this impact to a less-than-significant level. Impacts on nearby colonies caused by construction vehicles, trampling, and long-term habitat degradation would be a potentially significant impact. With implementation of M-BI-1f, these populations would be fenced to ensure avoidance, and their habitat would be restored following construction; thus, impacts on nearby fragrant fritillary colonies would be reduced to a less-than-significant level. Temporal impacts would be reduced through restoration monitoring and reporting requirements through a minimum period of 5 years, or until the success criteria is met.

Marin Western Flax. Populations of Marin western flax are located along the Bunker Hill and Crystal Springs segments. The majority of Marin western flax along the alignment would be avoided by using HDD or jack-and-bore construction techniques. However, Marin western flax colonies located within the construction work area could potentially be significantly impacted by vehicle movement or trampling by foot traffic. Implementation of Mitigation Measure M-BI-1f, which requires this species to be fenced for avoidance, would reduce this impact to a less-than-significant level.

Crystal Springs Fountain Thistle Mitigation Areas. The pipeline trench would not disrupt groundwater migration that would affect the hydrology of proposed Crystal Springs fountain thistle mitigation areas . To avoid potential hydrological interference in areas where the proposed project would pass hydrologically upgradient from the SFPUC's proposed fountain thistle mitigation areas, trench breakers that would keep subsurface water from migrating along the pipeline trench would be included. Trench breakers would be spaced at every 25 to 100 feet in areas upgradient of the SFPUC's proposed fountain thistle mitigation areas. The spacing is based on the slope of the terrain, angling of the trenchline, and locations where backfill material may cause the trench to act as a drain. The trench breakers consist of 1-cubic foot burlap sacks with rock-free earth. The breakers minimize voids in the soil and prevent the pipeline trench from conveying water down the trench and altering the native hydrologic conditions at the site. By installing the trench breakers, the proposed pipeline would have no impact on sites that are planned for the SFPUC fountain thistle mitigation program.

Mitigation Measure M-BI-1a: San Francisco Garter Snake and California Red-Legged Frog Protection Measures

To avoid and minimize potential impacts on California red-legged frog and San Francisco garter snake during construction, the following measures shall be implemented:

- Only biologists approved by the USFWS shall participate in the capture, handling, or relocation of listed species. Pre-construction surveys shall be completed within 2 weeks prior to construction.

- Before the start of construction, a qualified biologist shall conduct an environmental awareness training session for all construction workers. Environmental awareness training may be provided by recorded video or via webinar. The training shall be repeated as new workers join the project. The training shall include a description of California red-legged frog and San Francisco garter snake (including photographs and their habitats), as well as other species that have the potential to be impacted by the project; general measures—as they relate to proposed project activities—that shall be implemented to conserve these species; penalties for non-compliance; and the limits of the construction work area. Construction workers shall sign a log indicating that they have received this training. No work (including material staging, fence installation, parking, excavation, or driving) shall be performed by individuals who have not received this training.

- A qualified biologist shall be present on site during all project activities at the Cañada Road segment and during vegetation clearing and grading activities from station 47+00 to the north end of the Bunker Hill segment that is closest to San Mateo Creek. The biological monitor shall have the authority to stop any action that may result in take of listed species or unanticipated impacts on their habitats, provided that it does not risk the safety of the construction crews or the public.

- Before the start of work, a USFWS-approved biologist shall identify acceptable locations to which California red-legged frog may be relocated if the species is encountered in a project work location.

- Each morning before the start of work at the Cañada Road segment, a biological monitor shall inspect proposed project work locations—including those for staged materials and equipment, excavations, and fencing—to verify that no listed species are present within designated work areas.

- Before moving vehicles and equipment that have been parked on site for more than 30 minutes, operators at the Cañada Road segment shall check beneath these vehicles/equipment and notify the biological monitor if any reptile or amphibian is observed.

- Before the start of any ground-disturbing activities at the Cañada Road segment, ground-level vegetation that may provide cover for California red-legged frog and San Francisco garter snake shall be removed from excavation areas, including trench and HDD work locations. Immediately before removal, the biological monitor shall visually survey the area. Vegetation from station 125+00 to station 140+00 shall be cut using hand tools (including weed whackers and chain saws), and loose vegetation shall be removed to increase visibility. The biological monitor shall then visually survey the location a second time to verify that no listed species are present.

- Vegetation cleared from construction locations along the Cañada Road segment, from station 125+00 to station 140+00, shall be loaded into containers. On-site chipping may be allowed, subject to approval by the landowner. No cleared vegetation in this area shall be stored on site, unless in a container.

- All rodent burrows, soil crevices, and other potential subterranean retreats between stations 125+00 and 140+00 at the Cañada Road segment shall be inspected for the presence of California red-legged frog and San Francisco garter snake. After inspection, a USFWS-approved biologist shall excavate burrows, soil crevices, and other potential subterranean retreats by hand—or as otherwise directed by the USFWS—to verify that no California red-legged frogs or San Francisco garter snakes are present. Burrow excavation shall take place between April 1 and October 15.

- At least 30 days prior to commencement of project activities, a Wildlife Exclusion Plan for the Cañada Road segment shall be submitted to the SFPUC for review.

- As detailed in the Wildlife Exclusion Plan, 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. The fencing, which can be made of wood, geotextile fabric, or other durable material, shall be a minimum of 3 feet in height and shall be buried at least 6 inches underground. In areas where this is infeasible, (such as on asphalt), alternative measures will be developed. Gates shall be installed to allow vehicles to enter from access roads. These gates shall be kept closed to the extent practicable during construction activities, and they shall be closed at the end of each workday. Exit funnels shall be installed every 100 feet, or where appropriate (determined by the PG&E biologist), to allow small vertebrates to leave work locations unharmed. A qualified biological monitor shall be on site during installation of the fencing to ensure that the fencing is installed as required. Relocation of federally listed species can only be done if authorized by the USFWS. Relocation of state-listed species can only be done if authorized by the CDFW. Once exclusion fencing is in place, it shall be maintained by PG&E via their contractor until all work within the enclosure has been completed. During construction activities, the biological monitor shall inspect the exclusion fencing each morning before the start of work and again at the end of each workday. Any damaged areas shall be reported to PG&E and shall be repaired by the contractor as soon as practicable. After construction is complete, the exclusion fencing shall be removed under supervision of a qualified biologist.

- Vegetation removal within San Francisco garter snake habitat along the Cañada Road segment shall take place between June 1 and October 15, to the extent feasible, so that any San Francisco garter snakes present can find a suitable alternative winter retreat before the onset of cold-weather conditions. Once these activities are completed, temporary wildlife exclusion fencing shall be installed around construction work areas and shall be maintained to prevent the re-entry of California red-legged frog and San Francisco garter snake.

- Prior to dewatering trenches along the Cañada Road segment, these locations shall be visually surveyed by the biological monitor for the presence of San Francisco garter snake and California red-legged frog adults, egg masses, and tadpoles. Pumps used for dewatering shall be equipped with a mesh screen to help prevent the entrainment of California red-legged frog and San Francisco garter snake. Dewatering shall not take place during the California red-legged frog breeding season (December through March) if egg masses are present in aquatic habitats. Thirty days prior to commencement of project activities, PG&E shall submit a plan detailing the water-diversion method to the SFPUC for review.

- The limits of the access roads shall be staked and flagged or fenced so that vehicle traffic is confined to the designated areas.

- Speed limit signs shall be posted along the access roads within the entrances to designated construction work areas. All vehicles must adhere to a 15 mile-per-hour (mph) speed limit on access roads within the proposed project areas, or as otherwise required through agency or SFPUC permits.

- Signs shall be posted notifying all personnel of the potential presence of sensitive species on the access roads for the Cañada Road segment.

- The total area of construction activities shall be limited to the minimum necessary within the designated construction work areas to achieve the goal of the proposed project. All environmentally sensitive areas outside of designated construction work areas and access routes shall be avoided.

- All steep-walled excavations more than 2 feet deep shall be either covered at the end of each work day or equipped with one or more escape ramps positioned at no greater than a 45-degree angle, so that wildlife will not become entrapped. All open excavations shall be inspected for wildlife at the beginning of each day, before the start of work. Other entrapment hazards that are shallower than 2 feet will be identified by the biological monitor, and measures will be taken to prevent entrapment (i.e., installation of covers or placement of escape methods, such as a branched object).

- All fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any riparian habitat or water body, unless a shorter distance is agreed to by the regulatory agencies or SFPUC due to specific site conditions. Before the start of project construction, PG&E shall develop a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and the appropriate measures to take if a spill occurs.

- 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.

- Following the completion of construction activities, areas with listed species habitat that are subject to ground disturbance will be restored pursuant to the Vegetation Restoration Plan identified in Mitigation Measure M-BI-1f, Habitat Protection Measures.

- If a San Francisco garter snake is found in a work location during proposed project activities, the individual shall be allowed to move out of the area on its own volition, as determined and monitored by the biological monitor.

- If a California red-legged frog is found inside an exclusion fence or in another work location where it may be harmed, it shall be moved to a previously identified relocation area under the procedure outlined in permits obtained from regulatory agencies. Only USFWS-approved biologists shall be allowed to handle, transport, and relocate California red-legged frogs.

- The USFWS-approved biologist shall ensure that any California red-legged frogs are relocated to an area where they are not imperiled by predators or other dangers.

Mitigation Measure M-BI-1b: Bat Roost Surveys and Avoidance and Minimization Measures

The Crystal Springs and Cañada Road segments contain trees and habitat that are potentially suitable for use as daytime roosting and foraging for pallid bats. To avoid potentially adverse impacts on pallid bats, trees shall be evaluated for their potential to serve as maternity or daytime roosts. A qualified biologist (i.e., one familiar with the identification of bats and signs of bats) shall identify trees that might be potential day or maternity roosts. Prior to start of construction, a qualified biologist shall perform a survey for roosting bats or maternity colonies at the proposed project sites. Surveys shall focus on trees slated for removal and shall evaluate the probability for trees to host roosting bats. If day-roosting bats are found or evidence of use by bats is present, the following procedures shall be implemented before felling the tree:

- Trees shall be removed under warm conditions. Noise and vibrations—including running a chainsaw and making shallow cuts in the trunk (where bark has been), and striking the tree base with fallen limbs or tools, such as hammers—shall be created on the tree itself. Disturbance shall be near-continuous for 10 minutes, and then another 10 minutes shall pass before the tree is felled. When cutting sections of the trunk, if any hollows or cavities (such as woodpecker holes) are discovered, they shall be carefully checked for the presence of bats. Cutting shall be done slowly and carefully at all times. If possible, the trunk shall be sectioned near cavities to focus noise and vibrations, and hollows shall be opened by sectioning off a side.
- Additional measures may include monitoring trees, excluding bats from a tree until it is removed and/or restricting the timing of tree removal, and using a construction buffer to avoid disturbance of breeding colonies or disturbance of young before they are able to fly (for pallid bats, this period is between April and August).

Mitigation Measure M-BI-1c: Pre-construction Bird Surveys

Nesting birds and their nests shall be protected during construction by implementation of the following measures:

- Construction activities, including vegetation and tree removal, shall be conducted outside of the bird nesting season (February 1 to August 30), to the extent feasible.

- If construction will occur during the bird nesting season, a qualified wildlife biologist shall conduct pre-construction surveys within 7 days of the start of construction or after any construction breaks of 14 days or more to identify active nests. A nest is defined to be active for raptors if a pair of raptors is displaying reproductive behavior (i.e., courting) at the nest and/or if the nest contains eggs or chicks. Surveys shall be conducted for the nesting birds and suitable habitat within 100 feet of the proposed project sites to locate any active passerine nests, and within 300 feet of the proposed project sites to locate any active raptor nests.

- If active nests are located during the pre-construction bird nesting survey, the wildlife biologist shall evaluate whether the schedule of construction activities could affect the active nest and the following measures shall be implemented based on their determination:

    - Construction determined not likely to affect the active nest may proceed without restriction; however, the wildlife biologist shall regularly monitor the nest to confirm that there is no adverse effect, and may revise their determination at any time during the nesting season.
    - If construction may affect the active nest, the biologist shall establish a no-disturbance buffer. The biologist shall determine the appropriate buffer to be in compliance with the Migratory Bird Treaty Act and Fish and Game Code 3503, taking into account the species involved, the presence of any obstruction—such as a building—within line-of-sight between the nest and construction, and the level of project and ambient activity (i.e., adjacent to a road or active trail). No-disturbance buffers for passerines typically vary from 25 feet and greater, and for raptors from 300 feet and greater. Active nests shall be monitored and exclusion buffer sizes increased if the monitoring biologist determines this is necessary based on disturbance behavior exhibited by nesting birds in proximity to project construction. For bird species that are federally and/or state-listed sensitive species (i.e., threatened, endangered, fully protected, or species of special

concern), a PG&E representative, supported by the wildlife biologist, shall consult with the USFWS and/or CDFW regarding nest buffers.

- Inactive passerine nests may be removed at any time, but inactive raptor nests shall not be removed unless approved by the USFWS and/or CDFW.
- Removing or relocating active nests shall be coordinated by the PG&E representative with the USFWS/and or CDFW, as appropriate, given the nests that are found at the site.
- Any birds that begin nesting within the proposed project areas and survey buffers amid construction activities are assumed to be habituated to construction-related or similar noise and disturbance levels, and no work exclusion zones shall be established around active nests in these cases.

Mitigation Measure M-BI-1d: San Francisco Dusky-footed Woodrat

Prior to and during construction, before any clearing of, or work within, riparian, oak woodland, or coyote brush scrub habitat, a qualified biologist shall conduct a survey for San Francisco dusky-footed woodrat nests no more than 30 days prior to the start of construction in that area. Where nests are found, the following procedures shall be observed:

- If practicable, exclusion fencing shall be installed and a buffer of at least several feet around nests shall be maintained, and moving or bumping the nests—or logs or branches on which the nests rest—shall be avoided.
- If avoidance of nests is not practicable, CDFW shall approve any relocation and post monitoring plan. This plan shall include the following, although CDFW could require additional measures:
    - Woodrat houses shall be live-trapped each night until the project is complete.
    - If no woodrat are captured at a given house, the house will be slowly dismantled by hand so that it is not reoccupied.
    - Captured woodrat will be contained in shaded traps while the stick house is dismantled and the artificial shelter is installed. Each artificial shelter will be

installed within approximately 50 to 200 feet of the capture location. Only occupied woodrat houses will be replaced with an artificial shelter, however all stick houses will be disassembled to prevent woodrat occupation of unused houses.

- At the request of CDFW, remote cameras will be used to monitor five of the artificial shelters for at least one week; if the site is secure, the cameras may be left for approximately 30 days.

- A post-construction survey will be made at approximately one month following the trapping effort to determine activity at each artificial shelter. Within 60 days of the first post-construction survey, a report will be prepared for the ERO and CDFW in standard CDFW format that details the results of the live-trapping and initial monitoring of the artificial shelters, including results from the camera monitoring.

- ~~If avoidance is not practicable, nests shall be dismantled and the nesting material moved to a new location outside of the proposed project's impact areas so that it can be used by woodrats to construct new nests.~~

- ~~Prior to nest dismantling, all understory vegetation shall be cleared within the proposed project site or in the area immediately surrounding the nest, but the nest itself should not be removed at this stage. No trapping is allowed unless specifically permitted by the CDFW.~~

- ~~A location for the replacement nest material shall be identified by attempting to locate other woodrat nests in the area. Generally, replacement nest material should be placed outside of the construction work area and approximately 100 feet away.~~

- ~~Whether the active nest is on the ground or in a tree, the nest shall be nudged/shaken by a qualified wildlife biologist to cause the woodrats to leave the nest and seek refuge out of the impact area. For tree nests, a tarp shall be placed below the nest, and hand tools shall be used to dismantle the nest (either from the ground or from a lift). Dismantling the nest must be done by hand. If woodrat pups are found, nest disassembly shall be halted, the nest shall be reconstructed at the original location,~~

~~and no work may occur until young are confirmed to be out of the nest, typically within a few weeks.~~

- ~~For dismantled nests, the existing nest material shall be piled at the base of a nearby hardwood tree (preferably an oak, willow, or other appropriate tree species, with refuge sites among the tree roots), outside of the impact area. If nearby habitat outside of the impact area lacks suitable structure, logs (approximately 4 feet long and 6 inches in diameter) shall be placed in undisturbed riparian or oak woodland habitat nearby, and the sticks from the dismantled nests shall be placed among these logs. Ideally, the spacing distance between the newly placed piles of sticks should not be less than 100 feet, unless a qualified wildlife biologist has determined that a specific habitat can support higher densities of nests.~~
- ~~The biologist shall report findings – including the number of nests dismantled and reconstructed, as well as the number of woodrats observed – to the CDFW.~~

Mitigation Measure M-BI-1e: Fragrant Fritillary Protection Measures

A qualified biologist shall conduct surveys for fragrant fritillary within suitable habitat of the Cañada Road and Bunker Hill segments in the same year prior to construction and during the appropriate blooming period, to ensure that any plants that were not blooming during previous surveys are identified, as well as to obtain specific locations of previously identified plants. Prior to surface-disturbing activity, the locations of individuals within the construction work area shall be flagged and documented in the field using a sub-meter accuracy global positioning system (GPS) unit. The extent of the colonies shall be staked and marked in the field, and their boundaries collected using a sub-meter accuracy GPS.

Bulbs and seeds shall be collected by hand prior to mechanical topsoil salvage. Biologists shall record the approximate average depth at which bulbs are collected so that they can be replanted at the same average depth during site restoration. Topsoil salvaged from these areas shall be stored separately from other materials. Any bulbs exposed during the stripping of topsoil, as described in M-BI-1f, Habitat Protection Measures, shall be collected and stored until construction is complete. After collection, bulbs and seeds shall be stored in a cool and dry location.

Colonies removed during construction shall be restored. The restoration area for a colony shall be the extent of the removed colony, unless otherwise specified through agreement between the SFPUC and PG&E prior to restoration. If bulbs and seeds cannot be replanted by November 1, they will be properly stored and replanted the following fall, September 1 to October 31.

The Vegetation Restoration Plan, as required in Mitigation Measure M-BI-1f, shall contain the following specific monitoring and performance criteria for the restoration of fragrant fritillary:

- Areas replanted with fragrant fritillary bulbs and seeds shall be monitored for a minimum period of 5 years.
- Flowering fragrant fritillary shall be censused annually within the work area and an adjacent reference population. The number of detectable fragrant fritillary in leaf and/or flower is expected to vary in the work area and in the reference site from year to year, depending on precipitation, herbivory and other ecological variables.
- Restoration will be considered to have been a success if, in addition to success criteria identified for the overall vegetation restoration area, for the final period of 2 years of monitoring, the number of individual fragrant fritillary in the restoration area is at least 70 percent of the number censused in the construction work area during the 2015 blooming season (350 plants), as adjusted annually based on reference site plant counts. The numbers of fragrant fritillary counted in the reference population each year will be compared to the 2015 pre-construction reference population number to adjust the yearly plant targets. For example, if only half of the plants known to occur in the undisturbed reference population are present in any given year, the target number of plants for the reestablished population in the work area will be adjusted (lowered) proportionately.
- If the number of plants does not reach the performance criterion or if data from earlier years suggest the site is not on a trajectory to meet this success criterion, then adaptive management actions will be developed and supplemental activities may be performed. These could include supplemental salvage and transplantation, seed collection and plant propagation (on site only), or seed collection and direct sowing.

Mitigation Measure M-BI-1f: Habitat Protection Measures

The following general habitat protection measures shall be implemented for the proposed project:

- Prior to construction, PG&E shall coordinate with the SFPUC to prepare and implement an Invasive Weed Control Plan that will include measures to reduce the potential introduction or spread of noxious weeds. The plan will ensure that all equipment and material arriving on site is clean and free of soils and plant material, and will include tire-wash requirements for equipment that has been driven off-road prior to arriving at the proposed project sites.

- Riparian and other wetland areas within the proposed project sites shall be denoted as environmentally sensitive areas and will be avoided during construction, to the extent practicable, or as otherwise directed by the regulatory agencies.

- Special-status plant colonies that have been identified for avoidance shall be fenced to prevent encroachment by construction activities.

- Crystal Springs lessingia individuals that cannot be avoided in areas to be cleared or grubbed shall have seed or vegetative material containing seed collected at the appropriate time, to be stored and distributed on top of the salvaged topsoil when it is redistributed.

- The topsoil from trenching through grasslands, and other plant communities with predominantly native plant species, shall be salvaged and stockpiled separately in upland construction work areas. Topsoil shall be stored in such a way that it is protected from invasive propagules, but does not overheat and kill off the native plant propagules. This shall include placing the stored topsoil where it is not in contact with non-native grassland soil and protecting it with weed-free straw mulch or other suitable cover. Following construction, the salvaged topsoil will be spread over the disturbed area from which it was removed, and the area will be graded to match the pre-construction natural grade. Once the salvaged topsoil has been spread and the area returned to the pre-existing topography, the area will be revegetated with locally collected (where possible) native grassland species. If topsoil in grasslands has a substantial population of non-native plant species, as shall be

identified in the Vegetation Restoration Plan, it may be buried below the subsoil during backfill, and the serpentine soils from deeper in the trench placed on the surface.

- Existing topography shall be restored to pre-project conditions to the extent possible. For herbaceous and grass-dominated riparian areas, it is expected that revegetation will naturally occur once the topography is restored using topsoil salvage requirements. Riparian areas will be revegetated with an appropriate mix of native plants, including species such as creeping wild rye, meadow barley, blue wild rye, arroyo willow, California bay, and coast live oak, as shall be detailed in the Vegetation Restoration Plan.

- Prior to the start of construction, PG&E shall develop a Vegetation Restoration Plan in coordination with the SFPUC and the appropriate resource agencies. PG&E shall submit the Vegetation Restoration Plan to CDFW and SFPUC for review and approval. The Vegetation Restoration Plan shall include the following measures:

    - Mitigation shall consist of a minimum 1:1 ratio of on-site restoration of sensitive habitats and plant communities, including needlegrass grassland, serpentine grassland, riparian areas, coast live oak woodland, and shrublands. Tree replacement ratios shall be 3:1 for native oak trees.
    - The plan will identify specific areas of topsoil to be salvaged during construction for re-spreading, as well as areas where topsoil carries a greater percentage of non-native species; in the latter areas, topsoil may be buried under fresher material. PG&E shall develop seed mixes for each plant community, consisting of locally collected native species. Following construction, the sites will be prepared and stabilized with coir or weed-free rice straw (or jute netting material in steeper areas), and vegetation will be restored using the defined seed mixes appropriate to each area.
    - Additional plantings of shrubs and tree propagules will be completed in the appropriate plant communities during the fall or winter immediately following construction. Replacement shall occur within the temporary construction work spaces ~~easements~~ and adjacent areas, as determined in coordination with the

SFPUC Natural Resources and Lands Management Division and other applicable resource agencies.

- Non-native trees, such as Monterey pine, Monterey cypress, and eucalyptus, shall be replaced with native tree species if they meet the definition of "Significant" trees in the San Mateo County Significant Tree Ordinance (see Impact BI-1e).
- To minimize the temporal loss of trees and shrubs, when site conditions permit, a variety of native trees and shrubs with different growth rates shall be planted to ensure that nest and roost sites will be available in the short term for birds and bats.

PG&E will be responsible for ensuring that the Vegetation Restoration Plan is implemented under the guidance of a qualified biologist. The plan shall be designed such that it meets the following success criteria, or other equally protective success criteria, as approved by the resource agencies ~~through the permitting process~~:

- The restored site is composed of a mix of appropriate native species appropriate for each site, as outlined in the Vegetation Restoration Plan
- Cover of non-native invasive weed species shall not exceed 20 percent within serpentine grassland areas. This criterion may be revised, if approved by CDFW, if it is deemed that achieving 20 percent cover is not reasonable due to the presence of high levels of non-native invasive weeds adjacent to the project area.
- The restored site has at least 75 percent of the ~~absolute cover of~~ preconstruction baseline cover. ~~baseline vegetation present in reference sites that reflect the composition of the pre-construction corridor.~~
- After revegetation and restoration are completed, monitoring shall be conducted by a restoration specialist or biologist for a minimum of 5 years. The sponsor can choose to continue monitoring for an additional year for each year of below-average precipitation during the monitoring period. If by the end of monitoring the approximately 5.8 acres of serpentine grasslands temporarily disturbed by construction fails to meet the restoration success criteria, then PG&E shall provide for additional off-site mitigation at a ratio of two acres for each acre of serpentine grassland that fails to achieve success criteria, unless otherwise

approved by the applicable regulatory agencies. Serpentine grasslands shall be evaluated as separate units based on their location along a given pipeline segment (i.e., Bunker Hill), or obvious breaks in the continuity or composition of the serpentine grassland communities within a given pipeline segment. Serpentine units for the purposes of monitoring the success criteria shall be identified in the Vegetation Restoration Plan.

- Off-site mitigation could include funding of serpentine grassland restoration, such as through the Presidio Trust Stewardship Program in San Francisco.[172] Funding would be tied to the number of acres of serpentine grasslands restored through actions that may include tree and brush removal, exotic species management, grassland cover management (i.e., mowing, grazing, rotational tarping, and reseeding), and monitoring.

- ~~Functions and values of the restored habitat are comparable to the baseline as characterized during the pre-project surveys. After revegetation and restoration are completed, monitoring shall be conducted by a restoration specialist or biologist for a minimum of 5 years to ensure that the success criteria, as identified in the Vegetation Restoration Plan, are met, and to identify any necessary remedial actions during the monitoring period. At a minimum, the success criteria shall be met for the final 2 years of the monitoring period. Remedial action—such as additional planting or seeding—shall be identified and implemented by PG&E, in coordination with the SFPUC, if any of the previously listed criteria are not met by the end of the monitoring period, and additional monitoring shall be required until the success criteria are met. Annual restoration monitoring reports shall be submitted to the SFPUC.~~

Mitigation Measure M-BI-1g: Mission Blue Butterfly Protection Measures

The following protection measures shall be implemented for the Crystal Springs segment work area west of I-280:

[172] National Park Service and Presidio of San Francisco. 2001. Vegetation Management Plan and Environmental Assessment.

- Not more than 2 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 work space perimeter, and for 100 feet along Golf Course Drive on each side of the work space, 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.

Impact BI-2: The proposed project would have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. (Less than Significant with Mitigation)

Removal of approximately 33 acres of natural vegetation for temporary construction access and permanent conversion of 3.42 acre of native woodland and shrubland to grassland would be a potentially significant impact (see Table 23: Impacts on Vegetation). The proposed project would remove native trees and permanently convert approximately 3.4 acres of woodland and shrubland, including 0.12 acre of riparian woodland, to annual grassland in a 20-foot-wide area centered along the pipeline to allow for pipeline inspection during operation of the pipeline. The area 5 feet from either side of the centerline of the pipeline would be kept free of shrubs and trees. The area between 5 feet and 10 feet from either side of the centerline would be kept free of trees, but shrubs would be allowable. Temporary impacts on needlegrass grassland and serpentine grassland would occur. The grassland, woodland, and shrubland vegetation that is covering the existing pipeline corridor would be allowed to regrow over the retired pipeline corridor. Sensitive communities along the new pipeline alignment where scrub or woodland habitat would be converted to herbaceous cover for pipeline safety reasons would be offset by re-planting and restoring habitat along the retired pipeline area or in other portions of the temporary work area ~~easement~~, as appropriate. Removing vegetation from the proposed project area may increase the construction work areas' ~~easement's~~ vulnerability to invasive weeds, interfere with the area seed bank, and increase erosion.

TABLE 23: IMPACTS ON VEGETATION

Vegetation Type	Temporary Impact (Approximate Acres)	Permanent Impact (Acres)
Needlegrass grassland	12.6	–
Serpentine grassland	5.8	–
Non-native and ruderal grassland	16.5	–
California sage scrub	1.7	0.2
Coyote brush scrub	6.3	1.4
Non-native shrubland	0.4	0.5
Coast live oak woodland	5.8	1.7
Riparian woodland	0.48	0.12
Non-native woodland	2.1	2.5
Total	**51.68**	**6.42**
Sources: Orion, 2013; E2 Consulting Engineers, Inc., 2013		

Mitigation Measure M-BI-1f, Habitat Protection Measures, would require PG&E to prepare and implement an Invasive Weed Control Plan, avoid sensitive riparian habitats to the extent possible, preserve the seed bank through segregation and protection of topsoil, and prepare a Vegetation Restoration Plan to restore vegetation and habitat impacted by construction. Permanent impacts on shrubland and woodland would be mitigated at a minimum 1:1 ratio, with locations to be determined through consultation with the SFPUC and relevant resource agencies.

Native trees removed in riparian and oak woodland habitat that are greater than 4 inches diameter at breast height (dbh) would be replaced on a minimum 1:1 basis, and a minimum 3:1 basis for native oaks or trees that meet the definition of "Heritage" or "Significant" in San Mateo County. Replacement would occur in the appropriate plant communities within the temporary construction work area ~~easements~~ and in adjacent areas, as detailed in coordination with SFPUC.

In addition to the replacement of individual trees, sensitive communities would be restored on site at a minimum 1:1 ratio. The sensitive communities temporarily impacted by construction activities would be restored at the same location. Sensitive communities along the new pipeline alignment where scrub or woodland habitat would be converted to herbaceous cover for pipeline safety reasons would be offset by re-planting and restoring habitat along the retired pipeline area, other nearby areas, or through off-site mitigation. Identification of specific locations for off-site mitigation would require further review under CEQA.

Implementation of this mitigation measure would reduce proposed project impacts on riparian habitat or sensitive natural communities to a less-than-significant level.

Impact BI-3: The proposed project would have a substantial adverse effect to wetlands and Other Waters of the United States and Waters of the State as defined by Section 404 of the Clean Water Act. (Less than Significant with Mitigation)

Approximately 0.1 acre of federally and state-protected streams and 0.5 acre of state-protected riparian areas would be temporarily impacted by the proposed project (see Table 24: Impacts on Jurisdictional Streams and Riparian Areas). Approximately 0.1 acre of riparian woodland would be permanently removed. Two jurisdictional streams (Cañ-D4 and Cañ-D6) would be spanned by the pipeline, three streams (Cañ-D2, Cañ-D5, and Cañ-D9) and two swales (CS-D1 and CS-D2) would be trenched, and one stream (Cañ-D3) would be crossed by HDD.

TABLE 24: IMPACTS ON JURISDICTIONAL STREAMS AND RIPARIAN AREAS

Stream ID	Construction Method	Temporary Impacts (acres)		Permanent Impact (Riparian only)
		Stream	Riparian	
Cañ-D2	Trenching	0.01	–	–
Cañ-D3	Horizontal directional drilling	–	–	–
Cañ-D4	Aerial span	0.03	0.16	0.04
Cañ-D5	Trenching	0.03	0.25	0.06
Cañ-D6	Aerial span; access road crossing	0.01	0.07	0.02
Cañ-D9	Trenching	0.01	–	–
CS-D1	Trenching	0.01	–	–
CS-D2	Trenching	0.03	–	–

In addition to the pipeline span, Cañ-D6 would also be crossed by an access road using a forestry bridge. The proposed project could, therefore, have a potentially significant adverse effect on state and federal jurisdictional water bodies.

Implementation of Mitigation Measure M-BI-3, Protection Measures for Jurisdictional Water bodies and Riparian Areas, and Mitigation Measure M-BI-1f, Habitat Protection Measures, in addition to compliance with the requirements of the CWA Section 404 Nationwide Permit 12 (Utility Line Activities) and, if required, Nationwide Permit 33 (Temporary Construction, Access, and Dewatering), RWQCB Section 401 Permit, and CDFW Streambed Alteration Agreement, would address impacts by limiting construction

work areas within streams and riparian areas, protecting channels and banks from potential erosion, providing for restoration of streams and riparian areas, and requiring that installation of spans would not impact water flow. Furthermore, implementation of the SWPPP would further reduce potential impacts on water quality. With implementation of these mitigation measures, impacts on wetlands and other waters of the United States and waters of the state would be reduced to a less-than-significant level.

Mitigation Measure M-BI-3: Protection Measures for Jurisdictional Water Bodies and Riparian Areas

The following measures shall be implemented during project design, construction, and post-construction, as relevant:

- Design and installation of pipeline spans and temporary bridges shall be such that the water flow (velocity and low-flow channel width) is not impaired.
- Prior to construction, the construction work area shall be flagged or fenced to identify its limits within the stream. Vegetation shall not be removed or intentionally damaged beyond these limits.
- Any materials placed in or adjacent to the stream that could be washed downstream shall be removed prior to the rainy season.
- Equipment shall not be operated in jurisdictional areas without prior written approval of the relevant resource agencies.
- Within 3 days following construction, all disturbed channels shall be restored to their original condition.
- No construction shall occur outside of the dry season (April 15 through October 15), unless approved by a relevant resource agency, as appropriate.
- The contractor shall stabilize exposed slopes within 3 days of completion of construction/installation activities. Erosion-control measures shall be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas.

Impact BI-4: The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)

The watershed creeks are used as wildlife corridors for many species, including frogs and snakes.[173] Western pond turtle may make overland movements through the area in search of egg-laying sites.[174,175,176] Raptors, including bald eagle and peregrine falcon, may forage throughout the proposed project areas. Likewise, migratory birds may forage or migrate through the proposed project areas. Breeding birds may nest in trees, shrubs, and grasslands throughout the proposed project areas. Pipeline construction would result in a temporary disruption to wildlife movement across the linear pipeline construction work areas, and wildlife could be blocked by or fall into the open trench. Trenches would be ramped and backfill would typically be conducted within 3 days of pipeline installation, as described in Section A.4.1, Pipeline Replacement Procedure. Therefore, the proposed project would not interfere substantially with movement of native resident wildlife species or with established wildlife corridors, or impede the use of nursery sites.

Impact BI-5: The proposed project would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant with Mitigation)

Local policies or ordinances protecting oak woodlands and for tree preservation in the proposed project areas are provided by California Public Resources Code and San Mateo County Ordinance Code, as further described in the following paragraphs. The proposed project would remove approximately 863 trees, including approximately 547 native trees, 16 of which are greater than 48 inches dbh. Therefore, the proposed project could have a potentially significant adverse effect on tree preservation in San Mateo County.

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[173] SFPUC. 2002. *Final Peninsula Watershed Management Plan.* http://www.sfwater.org/modules/showdocument.aspx?documentid=756. Accessed on October 28, 2014.

[174] SBI. 2013. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Crystal Springs Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[175] SBI. 2014. Wildlife Constraints Analysis Report for Pacific Gas & Electric's Line 109 Cañada Road Pipeline Replacement Project. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[176] SBI. 2014. Assessment for Special-Status Wildlife at the PG&E Line 109 Pipeline Replacement Project, Bunker Hill (Segment 4A2). This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

California Public Resources Code 21083.4 (Senate Bill 1334), Oak Woodland Conservation

This legislation became effective on January 1, 2005, and contains three elements: (a) counties must determine whether a project may result in the conversion of oak woodland (an "oak" is defined as oak trees 5 inches or more in dbh); (b) if so, the county must determine if the conversion would have a significant impact on the environment; and (c) if there is a conversion and it is determined to be a significant impact, the county must impose one or more of the following mitigation measures:

- Conserve oak woodlands through the use of conservation easements
- Plant an appropriate number of trees, including maintaining plantings and replacing dead trees
- Maintain planted oak trees for 7 years
- The planting of oak trees shall not fulfill more than one-half of the mitigation requirements for the project
- Contribute funds to the Oak Woodlands Conservation fund
- Other mitigation measures developed by the county

Although the Oak Woodland Conservation Act (Public Resources Code Section 21083.4 [Senate Bill 1334]) grants local jurisdictions the authority to enforce oak woodland conservation requirements by imposing mitigation measures to reduce, or compensate for, the loss of oak woodlands, San Mateo County has not adopted ordinances to implement this law. Therefore, the proposed project would not conflict with implementation of Public Resources Code Section 21083.4.

San Mateo County Tree Ordinances

San Mateo County Tree Ordinance Codes are in place for the protection of Heritage Trees and Significant Trees. Section 11,000 is the Regulation of the Removal and Trimming of Heritage Trees. Heritage Trees are defined in Section 11,050 as several tree species found in the county based primarily on their dbh, which is considered to be 4.5 feet above the ground. Section 11,052 states that the Planning Director may issue permits for the removal of Heritage Trees where certain criteria are met, including proximity to existing or proposed structures and interference with utility services.[177]

[177] San Mateo County Ordinance Section 11,000. Regulation of the Removal and Trimming of Heritage Trees. http://publicworks.smcgov.org/sites/publicworks.smcgov.org/files/Regulation%20of%20the%20Removal%20and%20Trimming%20of%20Heritage%20Trees%20on%20Public%20and%20Private%20Property.pdf. Accessed on March 5, 2015.

Section 12,000 is called the Significant Tree Ordinance. Section 12,012 defines a Significant Tree as "any live woody plant rising above the ground with a single stem or trunk of a circumference of 38 inches … and having the inherent capacity of naturally producing one main axis …" Section 12,016 defines a "Community of Trees [as] a group of trees of any size which are ecologically or aesthetically related to each other such that loss of several of them would cause a significant ecological, aesthetic, or environmental impact in the immediate area." Section 12,023 states that a tree cutting or trimming permit may be approved if one or more of various findings are made. Such findings include that the trees would be replaced by plantings approved by the Planning Director or Design Review Administrator, unless special conditions indicate otherwise, or the action is necessary to utilize the property in a manner which is of greater public value than any environmental degradation caused by the action.[178]

Oak and Riparian Woodlands. Tree trimming and removal would be required for construction. Trees in the proposed project area include coast live oak, valley oak (*Q. lobata*), California bay laurel (*Umbellularia californica*), California buckeye, madrone, blue gum (*Eucalyptus* sp.), Monterey pine, Canary Island pine (*P. canariensis*), Persian silk tree (*Albizia julibrissin*), acacia (*Acacia sp.*), Monterey cypress (*Cupressus macrocarp*a), and others. Coast live oak, valley oak, California bay laurel, California buckeye, and madrone trees are native to the area, and all other than the buckeye may be classified as Heritage Trees in the project areas if they have a 48-inch dbh or greater. Eucalyptus, Persion silk, Canary Island pine, and acacia are non-native to California. Monterey pine and Monterey cypress are native to California but have been introduced to the area, so are considered non-native to the area. The non-native or introduced species would not meet the criteria as Heritage Trees, but some would be considered Significant Trees under the ordinance. The San Mateo County ordinances do not prohibit the removal or trimming of Heritage or Significant Trees, but rather define standards by which permits may be issued for the removal of such trees. Because trees are being removed to avoid interference with utility service, and removed trees would be replaced, the proposed project meets the standards for tree removal and trimming, and would not result in inconsistencies with local policies or ordinances.

[178] San Mateo County Ordinance Section 12,000. Significant Tree Ordinance. http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/43/13/390508716significant%20tree%20ordinance.pdf. Accessed on March 5, 2015.

Approximately 0.2 acre of introduced trees and coast live oak would be removed during construction of the Bunker Hill segment, for a total of approximately 64 trees, 30 of which are coast live oak. Tree trimming would also be required along access roads for safe vehicular transport.

Along the Crystal Springs segment, approximately 309 trees would be removed. Of these, 85 are native oak or bay trees ranging from 4 inches to 72 inches dbh. Two oak trees slated for removal are greater than 48 inches dbh. Trees along the Crystal Springs segment form a mosaic with open grasslands and sage scrub, not a continuous woodland or closed canopy, and with patches of oak woodland interspersed within non-native woodland. The majority of trees to be removed or trimmed are introduced Monterey pine and Monterey cypress, with some non-native eucalyptus.

Along the Cañada Road segment, approximately 490 trees and approximately 2,975 units of brush would be removed. The majority of the trees slated for removal are coast live oak. Also planned for removal are valley oak, California bay laurel, California buckeye, and madrone. Non-native trees include pine, cypress, and acacia. Twelve coast live oaks and two California bay trees are greater than 48 inches dbh. Coast live oak woodlands are fairly dense on the slopes between Cañada Road and I-280, and most of them are east of the project area. Within the project area, a large stretch of oak woodland occurs north of the Pulgas Balancing Reservoir, with smaller patches on slopes adjacent to the various streams that are crossed. Coast live oaks and California bay laurel are also important components of the riparian woodland communities in the area.

Of the approximately 863 trees that would be removed, approximately 547 would be native trees, and the majority of these (approximately 455 trees) would be removed from the Cañada Road segment. Pipeline construction would require tree removal within the limits of the construction work areas, although native tree removal would be limited to the extent practicable. Minimal trimming on some low-hanging branches may be needed, but no major trimming or tree removal would be required along access roads or in staging areas. After construction, a 20-foot-wide right-of-way centered above the pipeline would be kept permanently clear of trees for pipeline safety reasons. Shrubs would be kept permanently clear within a 10-foot-wide right-of-way centered on the pipeline. Native trees and shrub cover would be allowed to re-establish in the remaining temporarily disturbed areas. Approximately 5.4 acres of oak and riparian woodland would be considered a long-term but temporary impact of the proposed project due to the extended time necessary for trees to reach maturity. Approximately 0.4 acre would be permanently kept clear of trees. Approximately 445 acres of oak woodland exists on the slopes between Cañada Road

and I-280, and forms a more or less contiguous woodland group adjacent to the project area.[179] The impact on approximately 5.8 acres constitutes approximately 1 percent of this woodland group.

Implementation of Mitigation Measure M-BI-5, Pre-construction Tree Surveys and Tree Removal, which requires minimization of tree removal and trimming, to the extent feasible, and tree replacement at ratios identified in San Mateo County Ordinances, along with Mitigation Measure M-BI-1f, Habitat Protection Measures, which requires that any native trees removed be replaced at a minimum mitigation ratio of 1:1,would reduce the impact on tree preservation in San Mateo County to a less-than-significant level.

Mitigation Measure M-BI-5: Pre-construction Tree Surveys and Tree Removal

A qualified arborist shall conduct a pre-construction tree survey of the riparian and oak woodland areas, identifying each tree to species and providing diameter at breast height. Any tree removal, pruning, or work within the drip line of trees—other than in paved areas—will be reviewed and approved by a PG&E arborist or their designee. All trimming and removal shall be conducted by a PG&E arborist.

Tree trimming and removal shall be minimized to what is required to implement the proposed project, and PG&E will evaluate the feasibility of further minimizing impacts on native trees through selective narrowing of construction work areas or other construction practices, and/or through a contractor incentive program to avoid trees. PG&E will clearly show Tree Protection Zones on project drawings. Any Significant or Heritage Trees, as defined in the San Mateo County Tree Ordinances, that cannot be avoided will be documented and replaced at a minimum 3:1 ratio. Tree replacement, maintenance, and monitoring requirements shall be included with the Vegetation Restoration Plan described in Mitigation Measure M-BI-1f, Habitat Protection Measures. <u>The newly planted trees shall be monitored for a minimum of 7 years.</u>

[179] 2014 USDA Forest Service, CALVEG Zone 6. Vegetation layers obtained for oak woodlands in the area.

Impact BI-6: The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (No Impact)

The proposed project is located within the planning area of the Peninsula Watershed Management Plan.[180] A secondary goal of the plan is to preserve and enhance the ecological resources of the watershed. The plan contains policies to conserve and enhance botanical and wildlife resources and calls for site-specific analysis in accordance with applicable state and federal laws, statutes, and guidelines. The proposed project, with the incorporation of the mitigation measures contained herein, would be consistent with these policies and there would be no impact. The proposed project does not cross any land covered by an HCP or Natural Community Conservation Plan.

Impact C-BI-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the proposed project area, could result in significant cumulative biological resource impacts. (Less than Significant with Mitigation)

The geographic scope of cumulative biological resource impacts encompasses the proposed project sites and nearby biologically linked areas that contain the same types of biological resources. ~~Five~~ Eight projects listed in Table 4: Past, Present, and Reasonably Foreseeable Actions—including the Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project, Crystal Springs Dam Bridge Replacement Project, Line 109 San Mateo Creek Pipeline Replacement Project, Line 109 Edgewood Gas Transmission Line Replacement Project, ~~and the~~ Line 109 4B Replacement Project, Line 109 Farm Hill Boulevard Gas Transmission Line Replacement Project, Line 109 Sharon Heights Gas Transmission Line Replacement Project, and Line 109 San Francisquito Creek Gas Transmission Line Replacement Project—are located in natural lands that support some of the same special-status species that are found in the proposed project areas. None of the other projects listed in Table 4 would contribute to cumulative biological impacts because these other projects would be located within developed areas of San Mateo County that do not support natural habitat. When impacts of the proposed project are considered in combination with impacts of other projects, as indicated in Table 4, there is a potential for two types of cumulative impacts on sensitive biological resources within the biologically linked area—temporary and permanent.

[180] San Francisco Public Utilities Commission. 2002. Final Peninsula Watershed Management Plan. http://www.sfwater.org/modules/showdocument.aspx?documentid=756. Accessed on October 28, 2014.

The Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project is adjacent to serpentine grassland habitat and habitat for California red-legged frog, San Francisco garter snake, San Francisco dusky-footed woodrat, and bats. The Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project would result in the loss of up to 0.5 acre of riparian vegetation, 0.8 acre of wetlands, and up to 335 oak trees on approximately 2.7 acres. Temporary impacts on riparian vegetation and wetlands would amount to approximately 0.7 acre. No direct impacts on California red-legged frog or San Francisco garter snake are anticipated to occur, as no breeding populations were found in the impact areas. The project includes proposed measures to mitigate for indirect impacts on these species, including creation and enhancement of movement corridors for aquatic species. In addition, on-site restoration along with off-site mitigation has been proposed at the Pulgas Ridge Open Space Preserve to compensate for the loss of riparian, wetland, and oak habitat. Though this project was proposed in 2000, the schedule for it is currently unknown[181] as it has not yet been funded and may be delayed indefinitely.[182]

The Crystal Springs Dam Bridge Replacement Project on SR 35/Skyline Boulevard would replace the bridge on top of the recently upgraded Crystal Springs Dam. This project would be adjacent to areas that contain habitat for bay checkerspot butterfly, California red-legged frog, and San Francisco garter snake. This project would result in approximately 0.29 acre of permanent impact on potential low-quality upland habitat, and 0.06 acre of temporary impact on pond habitat for California red-legged frog. Although San Francisco garter snake is not expected to utilize the pond that would be temporarily impacted, the species could occur in vegetated uplands of the project area on rare occasions. Take avoidance measures for the cumulative project, including worker training, pre-construction surveys, biological monitoring, and exclusion fencing, have been proposed for California red-legged frog and San Francisco garter snake. In addition, the temporarily impacted pond would be restored, and San Mateo County would implement an enhancement plan for approximately 0.25 acre of California red-legged frog breeding habitat and San Francisco garter snake foraging habitat as part of this cumulative project. Bay checkerspot butterfly host plants were identified in atypical (non-serpentine) grassland habitat in the project area. Avoidance measures—including surveys and exclusion fencing—have also been proposed

[181] Caltrans. 2000. Route 92 Uphill Slow Vehicle Lane/Safety Improvements. Initial Study (CEQA)/ Environmental Assessment (NEPA).
[182] Hurley, Joe. Director, Transportation Authority Program San Mateo County Transit District. Telephone communication with Greg Drosky, TRC. July 30, 2015.

for the butterfly. The majority of this work has been completed and the final bridge installation is anticipated to be complete by 2017.[183]

The Line 109 4B Replacement Project resulted in impacts to approximately 20 Crystal Springs lessingia plants. This project was completed in 2012, and PG&E's plans included restoration of the temporarily impacted areas.

The Line 109 Farm Hill Boulevard Gas Transmission Line Replacement Project, located in Woodside approximately 2.5 miles south of the Cañada Road segment, was completed in 2014 and included approximately 1.64 miles of pipeline replacement. Restoration is in progress for 6.21 acres of serpentine grassland, 0.5 acre of danthonia prairie, and 4.65 acres of non-native grassland. Approximately 830 Marin western flax plants were impacted during construction. The 4.9 acres of impacts to serpentine grassland from the proposed project would be in addition to the impacts to serpentine grassland from the Farm Hill project. Because these impacts are temporary and restoration is underway to return disturbed areas to near preconstruction conditions, the cumulative impacts on serpentine grassland would be less than significant. Marin western flax is found along the Bunker Hill and Crystal Springs segments of the proposed project. As shown in Figures 6B and 6C, Marin western flax plants do not occur directly in line with the trenched pipeline locations; rather, they are adjacent to, along the edge of, or outside of work areas. The species would be fenced for avoidance in accordance with Mitigation Measure M-BI-1f. Therefore, cumulative impacts on Marin western flax would be less than significant.

The Line 109 Sharon Heights Gas Transmission Line Replacement Project, located in Menlo Park approximately 5.5 miles south of the Cañada Road segment, was completed in 2014 and included approximately 1.29 miles of replacement. The Line 109 San Francisquito Creek Gas Transmission Line Replacement Project, located in Menlo Park approximately 7.2 miles south of the Cañada Road segment, was also completed in 2014 and included approximately 0.27 mile of replacement. These projects did not result in impacts to sensitive habitats or species.

The Line 109 Edgewood Gas Transmission Line Replacement Project includes approximately 0.79 mile of pipeline replacement approximately 1.3 miles south of the Cañada Road segment, and likely crosses

[183] County of San Mateo. 2009. Crystal Springs Dam Bridge Replacement Project. Initial Study with Proposed Mitigated Negative Declaration.

habitat for the bay checkerspot butterfly, which has been reintroduced to Edgewood Park. The specific amount of potentially suitable butterfly habitat that would be affected by this project is not known. However, for the purposes of this analysis, it is conservatively estimated that this project would temporarily disturb up to approximately 10 total acres[184] of land during construction. No work is currently scheduled for this project.

The Line 109 San Mateo Creek Pipeline Replacement Project includes replacing approximately 0.51 mile of pipeline north of the Bunker Hill segment, and crosses habitat for San Francisco garter snake, California red-legged frog, and San Francisco dusky-footed woodrat. The specific amount of potentially suitable habitat for California red-legged frog or San Francisco garter snake that would be impacted by the Line 109 San Mateo Creek Pipeline Replacement Project is not known. However, for the purposes of this analysis, it is conservatively estimated that this project would temporarily disturb approximately 6 total acres[185] of land during construction. Based on the location of this project, impacts would likely be restricted to areas near aquatic habitat. Construction is expected to begin in 2017.

Similar to the proposed project, these two other pipeline projects—the Line 109 Edgewood Gas Transmission Line Replacement Project and Line 109 San Mateo Creek Pipeline Replacement Project—involve the replacement of existing underground infrastructure. These projects would result in temporary impacts on habitat for special-status species—including habitat loss, food source loss, and injury and mortality—that are similar to those of the proposed project. Plant communities and habitats undergo a regular process of cyclic succession following disturbances that may have natural or man-made causes, and ecosystems have an ability to restore themselves after disturbance if it is not too drastic.[186,187] Temporary impacts on habitats from utility projects are normally substantially replaced within one growing season following construction, and are monitored to ensure that restoration success criteria are met over time. To the extent that sensitive species are present on or adjacent to the existing Line 109 pipeline alignments, repopulation of temporarily disturbed areas from the surrounding undisturbed plant communities would be expected following restoration. Due to safety precautions, oak and scrub woodland would not be permitted to grow over the pipelines, and the plant communities

[184] Based on the length of the pipeline to be replaced and standard pipeline replacement construction activities.
[185] Based on the length of the pipeline to be replaced and standard pipeline replacement construction activities.
[186] Barbour, Michael G., Burk, and Pitts. 1987. Terrestrial Plant Ecology. Second Edition.
[187] Miller, Tyler G. 1985. Living in the Environment. An Introduction to the Environmental Science. Fourth Edition.

along the right-of-way may be converted. Nonetheless, the converted plant communities would continue to provide habitat for sensitive wildlife and plant species, including bay checkerspot butterfly, California red-legged frog, and San Francisco garter snake, all of which can be found in upland grasslands. Because of the temporary nature of the impacts of these projects and the abundance of available upland habitat in the areas immediately surrounding the pipeline and general vicinity, these impacts would not cumulatively impact species' populations in the area.

In addition, the impacts on Crystal Springs lessingia from the Line 109 4B Replacement Project were considered temporary. Therefore, with the implementation of restoration for both the Line 109 4B Replacement Project and the proposed project, the cumulative impacts on this species would be less than significant.

Temporary impacts of approximately 0.7 acre of riparian and wetland habitat from the Route 92 Uphill Slow Vehicle Lane/Safety Improvements, and 0.06 acre of pond habitat from the Crystal Springs Dam Bridge Replacement Project would be restored on site, as would temporary impacts resulting from the two other pipeline projects. Considering the temporary nature and limited extent of impacts on potentially suitable upland habitat for California red-legged frog and San Francisco garter snake (a portion of the estimated 6 total acres for the Line 109 San Mateo Creek Pipeline Replacement Project and approximately 28 acres for the proposed project), along with the implementation of mitigation measures, the cumulative impacts on California red-legged frog and San Francisco garter snake would be less than significant. The temporary nature and limited extent of impacts on bay checkerspot butterfly habitat from the Line 109 Edgewood Gas Transmission Line Replacement Project—which would be a portion of the estimated 10 total acres of the project—and the approximately 2 acres of temporary impacts from the proposed project, the cumulative impacts on bay checkerspot butterfly and its habitat would be less than significant.

Therefore, the cumulative impacts from temporarily disturbed habitats would be less than significant.

Because the previously described pipeline projects would restore all habitat that is temporarily disturbed, the Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project and the Crystal Springs Dam Bridge Replacement Project are the only projects within the undeveloped I-280 corridor or around Crystal Springs Reservoir that would result in permanent habitat loss. On-site restoration and off-site mitigation that have been proposed for the Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project, and

plans for restoration and habitat enhancement for the Crystal Springs Dam Bridge Replacement Project would ensure no net loss of habitat for California red-legged frog or San Francisco garter snake. The SFPUC Peninsula Watershed—where the proposed project, Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project, and Crystal Springs Dam Bridge Replacement Project are located—is managed under the SFPUC's adopted Peninsula Watershed Management Plan to conserve and enhance botanical and wildlife resources. As a result, the habitat for sensitive species will be maintained and improved over time. Therefore, the cumulative impacts from permanent habitat loss would be less than significant.

Impacts from the Route 92 Uphill Slow Vehicle Lane/Safety Improvements Project and Crystal Springs Dam Bridge Replacement Project would include permanent loss of 2.7 acres of oak woodland, 0.5 acre of riparian habitat, 0.8 acre of wetland, and 0.29 acre of low-quality upland habitat for California red-legged frog. These impacts would be mitigated through off-site mitigation at the Pulgas Ridge Open Space Preserve to compensate for the loss of riparian, wetland, and oak habitat; and through enhancement of approximately 0.25 acre of California red-legged frog breeding habitat and San Francisco garter snake foraging habitat. The approximately 547 native trees removed from the proposed project would be replaced at a 3:1 ratio. The two cumulative pipeline replacement projects and the proposed project would have short-term impacts and the project areas would be restored to conditions that would continue to provide functional habitat for sensitive species. Each of these projects are located along existing linear facilities and would not result in development incursions into previously undisturbed plant communities. Therefore, with implementation of the mitigation measures, the proposed project—together with these other projects—would not result in significant cumulative impacts on biological resources in the region through loss of habitat and injury or mortality during construction.

E.14. GEOLOGY AND SOILS

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.14. GEOLOGY AND SOILS— Would the project:					
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐	☐
iv) Landslides?	☐	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐	☐
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☒	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐	☒
f) Change substantially the topography or any unique geologic or physical features of the site?	☐	☐	☒	☐	☐
g) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐	☐

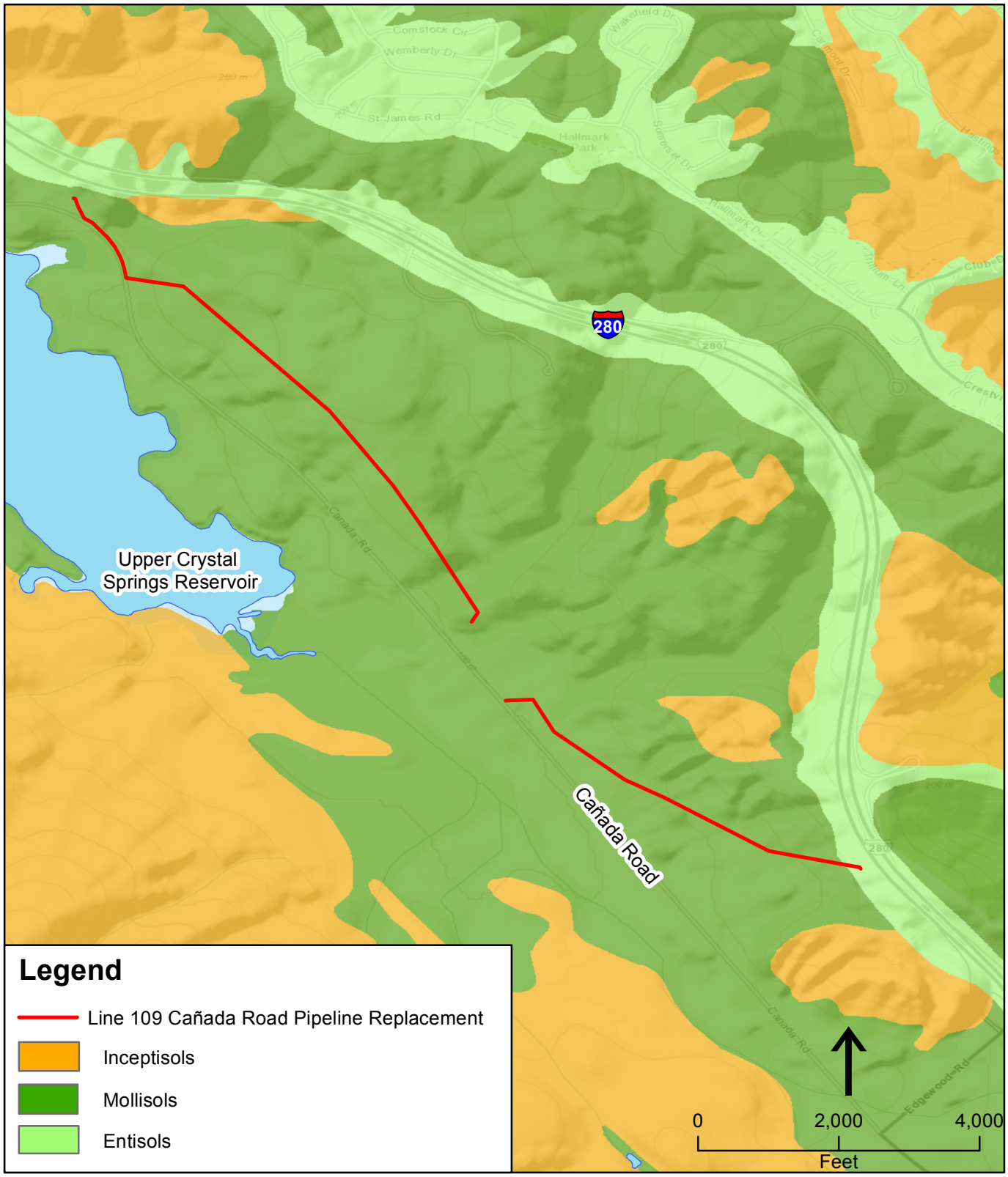
Although the proposed project is located in a seismically active area, it is not located within an Alquist-Priolo Earthquake Fault Zone.[188] The nearest fault zoned active in accordance with the State Geologist's standards is the San Andreas Fault, which parallels the three segments of the proposed project to the west, with the closest active zone located approximately 0.5 mile away from the Crystal Springs segment. Septic tanks or alternative wastewater disposal systems are not elements of the proposed project. Furthermore, no unique geologic or physical features are present at the site. For these reasons, significance criteria E.14(a)(i), and E.14(e) are not applicable and are not discussed further.

The terrain in the vicinity of the proposed project areas consists of rolling hills with locally steep slopes. The proposed project areas are located in the Franciscan Terrain of the Coast Range geomorphic province. This portion of the Coast Range is characterized by Franciscan mélange that is a jumble of various rock types generated by material scraped off deep ocean crust during subduction under the continental crust. The regional Franciscan deposits are of Jurassic to Cretaceous age, whereas other formations are much more recent, ranging from Eocene to Quaternary in age. Various soil types (inceptisols, mollisols, and entisols) underlie the proposed project sites, including Fagan loam (mollisol), Los Gatos loam (mollisol), Candlestick (mollisol) Variant loam, Obispo clay, and orthent (entisol; urban cut and fill) (see Figures 7A, 7B, and 7C: Soils).[189] Fagan loam, which is located on 15 to 50 percent slopes, underlies most of the proposed project areas. This is a deep, well-drained soil formed from weathered soft sandstone and shale. Soil compositions underlying the proposed project are discussed by project segment in the following paragraphs.

E.14.1. Cañada Road Segment

As discussed previously, the primary soil composition under the Cañada Road segment of the proposed project is Fagan loam. Approximately one-quarter of the pipeline segment is underlain by Los Gatos loam soils, which are considered a "residuum" soil, weathered in place from underlying sandstone bedrock. Los Gatos loam is a lean-clayey to silty soil, typically containing a significant sand and trace gravel component, with limited potential for expansion or compression.

[188] California Geological Survey. 1974. Special Studies Zones, San Mateo Quadrangle. http://www.quake.ca.gov/gmaps/ap/ap_maps.htm. Accessed on April 18, 2014.
[189] National Resource Conservation Service. 2013. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed on March 5, 2015.



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014
Source: USDA Natural Resources Conservation Service

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 7A
Soil Map
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014
Source: USDA Natural Resources Conservation Service

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 7B
Soil Map
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community TRC 2014, PG&E 2014
Source: USDA Natural Resources Conservation Service

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 7C

Soil Map

Crystal Springs Segment

The northern terminus of the segment is underlain by Obispo clay soils, which are found on 30 to 75 percent hill slopes, and are considered a "residuum" soil, weathered in place from underlying serpentinite bedrock. This soil is typically well drained and in the "silt to lean-clay" range, as defined by the U.S. Soil Classification System, with some sand and trace (less than 5 percent) gravel, with a moderate to significant potential for soil expansion and compression. Candlestick Variant loam is found underlying a small segment of the southern portion of the route with 2 to 15 percent slopes. This unit is a very deep, well-drained soil formed on alluvial fan deposits.

E.14.2. Bunker Hill Segment

The vast majority of the Bunker Hill segment of the proposed project is underlain by Fagan loam on 15 to 50 percent slopes. Two very small portions of the segment—one at the southern terminus and one at the northern terminus—are underlain by urban land orthents (cut and fill complex) on 5 to 75 percent slopes. This is a well-drained unit with mixed composition. A small segment of the northernmost terminus of the Bunker Hill segment is underlain by Los Gatos loam on 30 to 75 percent slopes.

E.14.3. Crystal Springs Segment

The entire pipeline alignment for the Crystal Springs segment is underlain by Fagan loam on 15 to 50 percent slopes. The small portion of the proposed project area located west across I-280 is composed of a mixture of Obispo clay on 5 to 15 percent slopes and orthents (cut and fill) on 5 to 75 percent slopes; however, this area does not contain the pipeline and only contains a project survey area.

E.14.4. Paleontological Resources

The Society of Vertebrate Paleontology has established criteria for rating the paleontological potential of rock units, indicating that rock units where fossil resources have not been recovered in the past have a low paleontological potential; this would include igneous and most volcanic rocks due to their subsurface or high temperature origin. [190] Rock units where vertebrate fossils or significant suites of invertebrate fossils have been recovered in the past (anywhere within their geographic extent) are generally

[190] Society of Vertebrate Paleontology, 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines, Society of Vertebrate Paleontology News Bulletin, Vol. 163, p. 22-27.

considered to have a high paleontological potential. This generally includes most sedimentary rock units dating older than Holocene (i.e., more than 10,000 years old) that have not been substantially metamorphosed.[191]

As summarized in Table 25: Geologic Units, the geological units that would potentially be affected by the proposed project or that lie within 500 feet of the project area boundary are Quaternary alluvial/fluvial sediments and the Eocene Whiskey Hill Formation.[192]

TABLE 25: GEOLOGIC UNITS

Geological Period	Unit	Paleontological Sensitivity
Quaternary Undivided	Qhaf1: Holocene and Late Pleistocene alluvial and fluvial deposits	Quaternary Undivided
Early to Middle Eocene	Tw: Whiskey Hill Formation	Early to Middle Eocene
Other	fsr: sheared rock	Other
Source: Brabb, E. E., R. W. Graymer, and D. E. Jones. 1998. Geology of the Onshore Part of San Mateo County, California: a digital database. U.S. Geological Survey Openfile Report OFR 98-137. Menlo Park.		

Rocks of the Franciscan mélange also occur in the area, but they lie more than 500 feet from the project corridor. The paleontological sensitivity of Quaternary alluvial/fluvial sediments depends on their depositional environment. Hill-slope alluvium and colluvium is generally coarse-grained and subaerially deposited, and not paleontologically sensitive. However, some Pleistocene sediments in the area can yield the fossils of extinct megafauna,[193] such as fluvial sediments potentially present in the streams crossed by the pipeline corridor. The following three areas along the Cañada Road segment contain Quaternary alluvial/fluvial sediments: (1) near the northern end of the southern section, (2) at the southern end of the northern section, and (3) near the northern end of the northern section. These areas possess unknown paleontological sensitivity, meaning they can potentially yield scientifically significant fossil material, but not enough is known about these specific localities to assign a higher level of sensitivity.

[191] Altered under high heat and pressure over millions of years.
[192] Brabb, E. E., R. W. Graymer, and D. E. Jones. 1998. Geology of the onshore part of San Mateo County, California: a digital database. U.S. Geological Survey Openfile Report OFR 98-137. Menlo Park. http://geo-nsdi.er.usgs.gov/metadata/open-file/98-137/metadata.faq.html. Accessed on March 5, 2015.
[193] Ibid.

The Eocene Whiskey Hill Formation possesses fine-grained members, such as siltstones and claystones, that are potentially fossiliferous. However, a database search and internet queries reveal no scientifically significant paleontological records for the Whiskey Hill Formation. The University of California Museum of Paleontology online search engine[194] lists more than 120 localities for the Whiskey Hill Formation (including the "Butano Sandstone"); however, these are all microfossil sampling localities, and not fossil records relevant to assessing paleontological sensitivity. One exception exists, an invertebrate collection, but the accession number suggests a very old record of dubious utility. There is no detail (such as a list of specimens) for this accession record.

Finally, the sheared rock in the area has been so mechanically altered as to be of no paleontological sensitivity; any fossils within it would have been destroyed.

Impact GE-1: The proposed project would expose people or structures to potential substantial adverse effects, including strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. (Less than Significant)

The proposed project is located within a seismically active area of northern California. According to the earthquake hazard model for the San Francisco Bay Area, there is a 33 percent chance of a major earthquake (greater than moment magnitude [M] 6.7) on the North San Andreas Fault in the next 30 years; however, most of the slip accommodated on the fault was believed to be released during abrupt fault rupture in past earthquakes.[195] The Working Group for California Earthquake Probabilities (WGCEP) model considers the most likely rupture scenario for the San Andreas Fault in the vicinity of the proposed project to be a repeat of the 1906 M 7.9 earthquake. Furthermore, the WGCEP has estimated a 72 percent probability within the next 30 years for one or more M 6.7 or greater earthquakes capable of causing extensive damage and loss of life in the San Francisco region.[196] With rupture on any of the San Francisco Bay Area faults, seismic ground shaking would likely occur within the proposed project area, and thus, seismic ground shaking is likely to occur over the useful life of the pipeline. However, the proposed project would not include structures for human occupancy.

[194] University of California Museum of Paleontology. n.d. University of California Museum of Paleontology. http://ucmpdb.berkeley.edu/. Accessed on March 5, 2015.
[195] USGS. 2015. UCERF3: A New Earthquake Forecast for California's Complex Fault System. http://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf. Accessed on May 15, 2015.
[196] Ibid.

The soil compositions underlying the majority of the proposed project segments are characterized as having very low to low liquefaction potential. The Fagan loam deposits that underlay the Bunker Hill and Crystal Springs segments of the proposed project are categorized as having very low liquefaction potential. Deposits that underlay the Cañada Road segment are also primarily characterized as Fagan loam with very low liquefaction potential, with relatively small areas of Los Gatos loam classified as moderate liquefaction potential, and a small section of Obispo clay at the northern terminus of the segment classified as having low liquefaction potential.

The Cañada Road segment of the proposed project crosses San Mateo Creek, downstream of Crystal Springs Dam. The creek crossing consists of a shallow mixture of coarse- and fine-grained sediment with standing water that may be potentially liquefiable, as identified by the United States Geological Survey (USGS) regional liquefaction hazard maps. The potentially liquefiable layers encountered in the Cañada Road segment of the proposed project appear to be discontinuous. Therefore, differential settlement due to liquefaction along the pipeline alignment may exist. This type of settlement could cause tensile and compressive stresses in the pipeline, depending on its location relative to the liquefiable soils. However, the two sections of the Cañada Road segment would avoid potentially liquefiable soils through the use of an aerial spanning from stations 15+50 to 16+50 and 41+50 to 41+75.

If strong seismic ground shaking or seismic-related ground failure—including liquefaction—were to occur, the proposed project could potentially expose people and structures to loss, injury, or death through pipeline rupture, as the Pulgas Water Temple and historic Filoli Estate are located adjacent to the Cañada Road segment, and residential homes are located adjacent to the Bunker Hill and Crystal Springs segments of the proposed project. However, the new alignment would be located primarily within the existing utility corridor, and as such, would not expose people or structures to potential adverse effects beyond current conditions. The proposed project would also allow for the use of an automated "pig" to conduct in-line inspections of the natural gas pipeline to identify anomalies that require remediation, thereby reducing the risk of gas leaks and enhancing the safety of the pipeline system. The pipeline would also be designed and constructed in accordance with all applicable regulations regarding pipeline design and safety, including CFR 49 Part 192, Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards, and CPUC No. 112-E, which supplements CFR 49 Part 192. Compliance with CPUC General Order No. 112-E would ensure proper pipeline design and construction to withstand seismic events, as previously described. CFR 49 Part 192 prescribes minimum safety requirements for pipeline facilities and the transportation of gas. The federal code includes specific

guidelines and requirements for pipeline design; design of pipeline components such as connections, bends, and welds; general construction requirements; test requirements; pipeline operation and maintenance; and pipeline integrity and management. PG&E would comply with all federal and state regulations described in these codes. Pipes are also designed for lateral and axial stresses, per design requirements in the CFR. The joints on the pipeline would be made from material with a higher yield strength than the steel, and when installed properly, the joints are stronger than the pipe. The pipelines are designed to stay together with ground movement and move with the ground during a seismic event. Therefore, impacts associated with strong seismic ground shaking or seismic-related ground failure—including liquefaction—would be less than significant.

The proposed project area is located in an area of low landslide hazards. The USGS[197] and Association of Bay Area Governments (ABAG)[198] rainfall-induced landslides distribution maps depict the Bunker Hill and Crystal Springs segments of the proposed project as being located in areas of few landslides. The majority of the Cañada Road segment is located within an area of few landslides, with a portion near the southern terminus of the segment partially lying within an area of flat land. A historic landslide area, known as the Edgewood Landslide, encompasses the southern terminus of the Cañada Road segment.

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.[199] The report indicated that the landslide was dated as occurring between 11,000 and 2,000,000 years ago, and is confirmed as inactive. Soils within the landslide area consist of Fagan loam, Obispo clay, Candlestick variant loam, Maymen gravelly loam, Los Gatos loam, and orthents cut and fill, with the depth to bedrock observed at approximately 10 feet below ground surface (bgs). The report indicated that the slope is stable in low and high groundwater conditions, and is also 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

[197] USGS. Summary Distribution of Landslides and Earthflows. 1997. http://pubs.usgs.gov/of/1997/of97-745/sm-sef.pdf. Accessed on March 5, 2015.

[198] ABAG. Rainfall-Induced Landslides. 1998. http://gis.abag.ca.gov/website/LandslideDistribution/index.html. Accessed on March 5, 2015.

[199] Infraterra, Inc. 2014. Geotechnical Conditions Assessment, Proposed PG&E Pipeline Realignment, Edgewood Landslide, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No.2013.1761E.

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.

Permanent cut-and-fill slope design criteria would be developed to satisfy the stability design criteria (i.e., minimum slope safety factors) for the various anticipated loading conditions. Site geotechnical and hydrological information would be used, and the design would be in accordance with current standards and construction practices. If necessary, surface and/or internal drainage systems would be installed to reduce erosion. Existing landslide hazards along the rest of the route are minimal because surface gradients generally are moderate and the presence of shallow, intact bedrock precludes significant slope failure. Impacts related to landslides would be less than significant.

Impact GE-2: The proposed project would not result in substantial soil erosion or the loss of topsoil. (Less than Significant)

Proposed project construction is not expected to be a significant source of erosion. The primary construction method would be open trenching, with excavated soils stored on site and subject to erosion. However, excavated soils would be stored in accordance with the project-specific SWPPP (see Section E.15, Hydrology and Water Quality, for a detailed discussion) to prevent erosion and sedimentation. Furthermore, excavated soils would typically be backfilled within 72 hours of pipeline installation and all excess excavated soil not used as backfill would be spread over temporary work areas. Furthermore, HDD drilling techniques would be used for portions of the Cañada Road and Bunker Hill segments, which would minimize the disturbance of soils in those locations. For each portion of HDD operations, construction access pits would be excavated on either side of the HDD segment. Soils excavated from the pits would be stockpiled adjacent to the pits, in accordance with the SWPPP, to minimize erosion. Following construction, soils would be backfilled to meet pre-construction conditions. Rain of sufficient intensity could dislodge soil particles from the soil surface. However, with the exception of the previously described small area listed as the Edgewood Landslide, which is inactive, the proposed project is not located in an area of significance for rainfall-induced landslides or erosion.[200]

[200] ABAG. Rainfall-Induced Landslides. 1998. http://gis.abag.ca.gov/website/LandslideDistribution/index.html. Accessed on April 14, 2014.

A subsequent geotechnical investigation was conducted for the Bunker Hill HDD span to explore and evaluate the geologic and subsurface conditions to provide recommendations in support of the HDD design.[201] A main geotechnical construction consideration is providing stability for excavation pits at each end of the HDD bore alignment. The two proposed pits are located within weathered bedrock of the Franciscan complex overlaid by a 2- to 3-foot-thick layer of clayey sediments, and pit walls would require shoring or sloping back. A previous geotechnical investigation included a geologic hazards study of the area in 2013, and it was determined that there are no apparent slope stability or site erosion issues in the vicinity of the proposed HHD excavation pit locations.

Construction-related soil disturbance—including clearing, grading, excavating, and stockpiling—during the summer could also result in soil loss because of wind erosion. However, the SWPPP (see Section E.15, Hydrology and Water Quality, for a detailed discussion) would require implementation of erosion-control measures and BMPs to reduce the potential impacts from soil erosion and the loss of topsoil due to wind erosion. With implementation of the SWPPP and erosion-control measures, the potential for substantial soil erosion or loss of topsoil would be less than significant.

Impact GE-3: The proposed project would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and could result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. (Less than Significant with Mitigation)

With the exception of the Edgewood Landslide area described previously in Impact GE-1, the proposed project would not be located in areas prone to landslides. Because the pipeline route is underlain by shallow bedrock, the potential for ground subsidence is considered low. As the primary method of construction would be open trenching, unstable soils could be encountered during trenching and grading activities, and soft or loose areas may be encountered that could be unsuitable for pipeline bedding; these areas could cause buckling, surfacing, or displacement of the pipeline. A geotechnical investigation would be used to evaluate the potential for unstable soils and, as described in Mitigation Measure M-GE-3, Site Preparation, PG&E would adopt appropriate measures to avoid, improve, replace, or overcome

[201] Infraterra, Inc. 2014. Geotechnical Conditions Assessment, Proposed PG&E Undercrossing, Bunker Hill Road, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No.2013.1761E.

unstable soils. With implementation of Mitigation Measure M-GE-3, the impact from risks related to unstable geologic units and soils would be less than significant.

Mitigation Measure M-GE-3: Site Preparation

Areas that will receive fill shall be stripped of existing surface vegetation, organic topsoil, debris, and any other deleterious materials prior to over-excavation or placement of engineered fill. Any stripped organic materials or debris will not be reused as engineered fill.

Initial site grading shall include a reasonable search to locate soil disturbed by previous activity, undocumented fill soils, abandoned underground structures, and/or existing utilities that may exist within the areas of construction. Any loose or disturbed soil, void spaces made by burrowing animals, or undocumented fill shall be over-excavated to expose firm soil.

Impact GE-4: The proposed project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property. (Less than Significant with Mitigation)

Characteristics of the on-site soils are variable because of the differences in the type and amount of soils found throughout the proposed project areas. However, the primary soil type identified throughout the proposed project areas is Fagan loam soil. This is a well-drained unit that has a shallow depth to bedrock, which was identified at approximately 2 to 2.5 feet bgs during drillings for the geotechnical report for the Bunker Hill HDD section.[202] Due to the shallow depth to bedrock, it is not anticipated that expansive soils would be encountered; however, if these soils were encountered during construction, appropriate measures to avoid, improve, replace, or overcome any expansive or unstable soils would be implemented. With the implementation of Mitigation Measure M-GE-3, Site Preparation, impacts due to expansive soils would be reduced to a less-than-significant level.

[202] Infraterra, Inc. 2014. Geotechnical Conditions Assessment, Proposed PG&E Undercrossing, Bunker Hill Road, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No.2013.1761E.

Impact GE-5: The proposed project would not substantially change the topography or any unique geologic or physical features of the site. (Less than Significant)

The topography in the region consists of rolling hills with locally steep slopes. The topography of the proposed project areas would be temporarily modified due to clearing and grading activities necessary in preparation of the 85-foot-wide construction work areas and staging areas. A total of approximately 19 acres for the Cañada Road segment, 7 acres for the Bunker Hill segment, and 11 acres for the Crystal Springs segment of the proposed project would be temporarily graded for temporary construction work areas, staging areas, and access roads~~, and temporary easements~~. All graded soils would be stored on site and in accordance with the SWPPP. Following construction, work areas and staging areas would be re-graded and restored to as close to pre-construction contours as feasible. Furthermore, PG&E would develop and implement a Vegetation Restoration Plan in coordination with the SFPUC, and follow the Final Stabilization Plan under the SWPPP for post-construction restoration. Because impacts on local topography of work areas would be temporary, and impacted areas would be restored to pre-construction conditions, impacts would not be considered substantial and would be less than significant.

Impact GE-6: The project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Less than Significant with Mitigation)

Any construction activity involving subsurface soil excavation has the potential to disturb or destroy paleontological resources. However, the probability for impacts on paleontological resources depends on both the paleontological potential of the underlying geology and the magnitude and depth of excavation that would be required at any one site. As largely buried resources, the exact location or presence of fossils within unexposed and undisturbed geologic units cannot be determined, but the relative likelihood of encountering fossils can be estimated based on the paleontological potential of the rock unit.

The geologic units within the proposed project are Quaternary deposits and the Eocene Whiskey Hill Formation. The paleontological sensitivity of Quaternary deposits depends on the depositional environment. Three areas of the proposed project possess unknown paleontological sensitivity. For the Whiskey Hill Formation from the Eocene, although there are no known vertebrate fossil specimens, it does contain known microfossil localities and the potential for fossils exists. Therefore, this geologic formation is considered to be paleontologically sensitive, and project-related earthmoving activities in this formation could result in damage to or destruction of unique paleontological resources. However,

with the implementation of Mitigation Measure M-GE-6, Unanticipated Discoveries for Paleontological Resources, this impact would be reduced to a less-than-significant level.

Mitigation Measure M-GE-6: Unanticipated Discoveries for Paleontological Resources

If construction crews discover fossils or fossil-like material during excavation and/or earthmoving operations, all earthwork and other types of ground disturbance within 50 feet, or as recommended by the paleontologist, of the find shall stop immediately until a qualified paleontologist—as defined by the Society of Vertebrate Paleontology guidelines—can assess the nature and importance of the find. Based on the uniqueness of the find, the qualified paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation of a report describing the finds. Fossil remains collected during monitoring and/or salvage shall be cleaned, repaired, sorted, cataloged, and deposited in a scientific institution with permanent paleontological collections, and a paleontological report shall be written. The paleontologist's recommendations shall be subject to review and approval by the ERO or designee.

Impact C-GE-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a significant cumulative impact on geology and soils. (Less than Significant with Mitigation)

Geologic impacts are generally considered site specific, and depend on localized geologic and soil conditions. Geologic and soil conditions inherent at the proposed project sites would not contribute to geologic and soil conditions or related hazards at other cumulative project sites. Other planned and proposed projects in the vicinity could be affected by the Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project if adverse geologic and soils conditions are not addressed. However, implementation of the SWPPP (refer to Section A.4.7, Best Management Practices) and Mitigation Measure M-GE-3, Site Preparation, would address the site's expansive, erodible, and unstable soils, and would reduce the potential for impacts resulting from site-specific geologic and soil conditions. With implementation of this mitigation measure, the proposed project's contribution to a significant cumulative geology and soils impact would be reduced to less than cumulatively considerable.

E.15. HYDROLOGY AND WATER QUALITY

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.15. HYDROLOGY AND WATER QUALITY— Would the project:						
a)	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site?	☐	☒	☐	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☒	☐	☐	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map?	☐	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☐	☒
j)	Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☒	☐	☐	☐

The proposed project does not involve the construction of housing, nor is it located within a 100-year flood hazard area;[203] therefore, significance criteria E.15(g) and E.15(h) are not applicable to the proposed project and are not discussed further. The proposed project is not located within a potential dam failure inundation zone; therefore, significance criterion E.15(i) is not applicable and is not discussed further.

The proposed project is located on SFPUC Peninsula Watershed lands, east of the Lower and Upper Crystal Springs reservoirs, within the San Mateo Creek Watershed. Waters from the project area flow into West Union Creek, which drains to the Upper Crystal Springs Reservoir. The proposed project areas contain nine ephemeral streams and swales, three urban swales, and two cement-lined ditches (see Appendix A, Project Overview Maps), including three that are identified as being located within high-vulnerability zones for water quality by the Peninsula Watershed Management Plan; the remaining streams are within moderate-vulnerability zones for water quality.[204] The plan maps also show that much of the proposed project is located within a moderate-sensitivity zone for erosion and land instability. The proposed project is not located within a designated groundwater basin, although a shallow alluvial aquifer may be present downslope of the project areas.[205]

E.15.1. Regulatory Framework

Water Quality Standards

In accordance with statewide water quality policy, and under direction of the SWRCB, the nine RWQCBs throughout California adopt and implement water quality control plans (Basin Plans) that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The project falls under the jurisdiction of the San Francisco Bay RWQCB. The region's Basin Plan designates beneficial uses and establishes water quality objectives protective of these uses; together these compose the water quality standards for most inland surface waters. Essentially all surface drainages (e.g., creeks, swales, streams, and rivers) are protected by a Basin Plan.

[203] County of San Mateo Planning and Building. 2012. San Mateo County Hazards/FEMA Flood Zones. http://planning.smcgov.org/documents/san-mateo-county-hazards-fema-flood-zones. Accessed on March 3, 2015.
[204] SFPUC. 2002. Peninsula Watershed Management Plan.
[205] California Department of Water Resources. 2003. California's Groundwater. Bulletin 118.

National Pollutant Discharge Elimination System Permits

Included in the Federal Clean Water Act is the following provision: the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Subsequent regulations expanded the NPDES program to address stormwater discharges, including those from construction activities that disturb a land area equal to or greater than 1 acre. For stormwater discharges associated with construction activity in the State of California, the 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 SWPPP. Implementation of the SWPPP would help stabilize disturbed areas to reduce erosion and sedimentation, and would prescribe BMPs designed to prevent pollutants from contacting stormwater and migrating off site into receiving waters. All SWPPP BMPs would be implemented prior to construction and during the first day of construction, and would be inspected before and after each storm event, maintained regularly, and replaced as necessary throughout the course of construction. Furthermore, as part of the SWPPP, a monitoring program overseen by a qualified SWPPP practitioner would also be established to ensure that the prescribed BMPs are followed during proposed project construction (refer to Section A.4.7, Best Management Practices, for a description of potential SWPPP elements). The proposed project would disturb more than 1 acre of soil, and thus, would be subject to the provisions and requirements of the Construction General Permit.

Impact HY-1: The project would violate water quality standards or waste discharge requirements. (Less than Significant with Mitigation)

Proposed project construction activities—including clearing, grading, excavating, stockpiling soils, and placing fill—could cause erosion of surface soils and sedimentation of water bodies. Fluids, such as fuel or oils, leaking from vehicles and construction equipment during construction could impair water quality.

If encountered during construction activities, excavation water would be managed via tanker trucks, portable storage tanks underlain with pop-up berms, and aboveground conveyance pipes or hoses. Excavation water encountered during construction would be beneficially discharged under the Construction General Permit for construction purposes (including active dust control and backfill slurry

mix) within the temporary construction work area ~~easement~~. If excessive water is encountered and the associated quality meets applicable waste discharge requirements, it may be discharged into nearby sanitary sewer inlets under permit with the associated agency. If excavation water would be applied to land or discharged to surface water, erosion-control measures would be implemented at the discharge point to reduce erosion potential. The project would not violate any water quality standards or waste discharge requirements as a result of dewatering, and the impact would be less than significant.

If construction activities for the Cañada Road segment occur during the wet season, any precipitation events could result in potentially significant impacts on water quality.

As described in Table 26: Ephemeral Stream and Swale Crossing Sensitivity Summary, the proposed project would span two ephemeral streams, trench through six ephemeral streams and swales, and drill below one ephemeral stream using HDD methods. The two aerial spans would be constructed by accessing the area from both sides of the stream. Vegetation removal in the two approximately 85-foot-wide by 100-foot-long (approximately 50 feet long on each side of the stream) temporary construction areas along the stream would disturb soils and could accelerate soil erosion rates and downstream sedimentation, causing potentially significant adverse impacts on surface water quality. Similar to spanning, the HDD activities would require clearing and grading of construction areas on both sides of the channel to accommodate the drilling equipment, which would disturb soils and could accelerate soil erosion rates and downstream sedimentation, causing potentially significant adverse impacts on surface water quality. Implementation of the SWPPP, along with implementation of Mitigation Measure M-BI-1f, Habitat Protection Measures, which requires development and implementation of a Vegetation Restoration Plan, and Mitigation Measure M-BI-3, Protection Measures for Jurisdictional Water Bodies and Riparian Areas, which provides protection measures for water bodies and riparian areas, would reduce this impact to a less-than-significant level. The project-specific SWPPP would include an Erosion Control and Grading Plan, which describes backfilling, returning to original grade, and re-establishing a vegetative cover in previously vegetated areas or implementing other equivalent stabilization measures. The Vegetation Restoration Plan would also discuss re-establishing vegetative cover after construction. Six ephemeral streams and swales would be trenched to allow replacement of the gas pipeline.

TABLE 26: EPHEMERAL STREAM AND SWALE CROSSING SENSITIVITY SUMMARY

Stream and Swale ID	Construction Method	Vulnerability for Water Quality	Sensitivity for Erosion and Land Instability
Cañada Road Segment			
Cañ-D2	Trenching	Moderate	Moderate
Cañ-D3	Horizontal Directional Drilling	High	Moderate
Cañ-D4	Aerial span	High	Moderate
Cañ-D5	Trenching	Moderate	Moderate
Cañ-D6	Aerial span	Moderate	Moderate
Cañ-D9	Trenching	Moderate	Moderate
Crystal Springs Segment			
CS-D1	Trenching	Moderate	Moderate
CS-D2	Trenching	Moderate	Moderate
CS-D3	Trenching	Moderate	Moderate
Source: SFPUC. 2002. Peninsula Watershed Management Plan.			

The trenches would measure approximately 6.5 to 8 feet deep and 4 to 6 feet wide, and would temporarily alter the channel topography, which would be a potentially significant adverse impact. Implementation of Mitigation Measure M-HY-1a, Trench Plugs, would minimize the downslope flow of water by reducing the voids in the soil to prevent water from being conveyed down the pipeline trench and altering the native hydrological conditions of the site.

A frac-out, or inadvertent return of drilling lubricant—which could degrade water quality as a result of drilling muds being discharged into the stream or swale—is possible during HDD activities, and would be a potentially significant impact. Implementation of Mitigation Measure M-HY-1b, HDD Fluid Release Contingency Plan, would further reduce potential impacts resulting from the discharge of drilling mud that could potentially result in adverse impacts on water quality.

Mitigation Measure M-HY-1a: Trench Plugs

Trench plugs (1-cubic-foot burlap sacks with rock-free earth) will be spaced at every 25 to 100 feet along the alignment. The spacing of the trench plugs will be based on the slope of the terrain, sharp changes (greater than 5 degrees) along the trench line, and locations where backfill material may cause the trench to act as a drain.

Mitigation Measure M-HY-1b: HDD Fluid Release Contingency Plan

PG&E shall prepare and implement an HDD Fluid Release Contingency Plan. The plan shall include specific frac-out contingency measures, material required to contain a frac-out or fluid

spill, and control measures to ensure that drilling mud is contained. PG&E shall submit the HDD Fluid Release Contingency Plan to the CDFW for review (if required by that agency) at least 30 days prior to the commencement of project activities. If an HDD Fluid Contingency Plan is not required by the CDFW, PG&E shall submit the plan to the ERO at least 30 days prior to commencement of project activities. HDD-related project activities may not start until PG&E has received written notification either from the CDFW that the HDD Fluid Release Contingency Plan has been accepted, or from the ERO. PG&E shall ensure that all material necessary to contain a frac-out or fluid spill shall be on site and immediately available prior to the commencement of HDD activities.

With implementation of these mitigation measures, the proposed project would not violate water quality standards or waste discharge requirements, and impacts on water quality would be reduced to a less-than-significant level.

Impact HY-2: The project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. (No Impact)

Groundwater throughout the project area appears to be encountered at discontinuous depths. Geotechnical investigations were conducted for the two proposed HDD sections; one report was completed for the Cañada Road segment, in the area of the historic Edgewood Landslide,[206] and the other report was completed for the Bunker Hill segment, in the area of the HDD crossing beneath Bunker Hill Road.[207] Groundwater was encountered at approximately 10 feet bgs along the Cañada Road segment boring, and approximately 8 and 16 feet bgs, respectively, for the two borings along the Bunker Hill segment. However, based on a 2014 groundwater investigation and monitoring report completed for a leaking underground storage tank (LUST) case located approximately 600 feet southeast of the Bunker Hill segment, groundwater was encountered at approximately 5 feet bgs.[208] Because open trenches would

[206] Infraterra, Inc. 2014. Draft Geotechnical Conditions Assessment, Proposed PG&E Pipeline Realignment, Edgewood Landslide, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No.2013.1761E.

[207] Infraterra, Inc. 2014. Draft Geotechnical Conditions Assessment, Proposed PG&E Undercrossing, Bunker Hill Road, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No. 2013.1761E.

[208] Atlas Engineering Services Inc. 2014. Additional Groundwater Investigation Report and Semi-annual Monitoring. http://geotracker.waterboards.ca.gov/esi/uploads/geo_report/8190904736/T0608176562.PDF. Accessed on November 21, 2014.

be excavated to a depth of approximately 6.5 to 8 feet bgs (and cross approximately six ephemeral streams and swales), and HDD bores would reach depths between approximately 50 and 90 feet bgs, groundwater is likely to be encountered during proposed project construction. As discussed above under Impact HY-1, groundwater encountered during trenching and HDD boring operations would be pumped out and stored in proximal storage tanks for reuse for construction purposes within the temporary construction work area ~~easement~~, or would be disposed of off site. For trenching activities, PG&E would prepare and implement a Dewatering Plan (refer to Section A.4.7, Best Management Practices) that would include PG&E groundwater dewatering guidance, which would specify containment/settling, screening, filtration and associated flow rates appropriate to the excavation groundwater yield. Where practical, accumulated groundwater would be beneficially reused under the Construction General Permit for construction purposes (including active dust control and backfill slurry mix) within the temporary construction work area ~~easement~~; if excessive water is encountered and the associated quality meets applicable waste discharge requirements, it may be discharged into nearby sanitary sewer inlets under permit with the associated agency. Run-on and runoff management BMPs would be implemented, as specified in the SWPPP (refer to Section A.4.7, Best Management Practices, for a description of potential SWPPP elements).

Two groundwater basins—used for water supply withdrawal—are located in the vicinity of the proposed project. However, there is no such water supply basin underlying the project areas, and as such, the proposed project would not deplete or interfere with any groundwater supply. The San Mateo Plain Groundwater Basin covers approximately 40 square miles and is located approximately 1.5 miles east of the proposed project areas at the closest point. The Westside Basin runs from approximately Burlingame to San Francisco, and is located approximately 0.5 mile northwest of the Crystal Springs segment at the closest point.[209] Furthermore, no new impervious surfaces would be added to the environment. Because the proposed project would not interfere with overall groundwater recharge in the project area, there would not be a deficit in aquifer volume, and therefore, no impacts on groundwater would result.

[209] Aspen Environmental 2003. PG&E Jefferson-Martin 230 kV Transmission Project Final EIR. D.7 Hydrology and Water Quality. http://www.cpuc.ca.gov/environment/info/aspen/jefferson_martin/jeffmartin.htm. Accessed on November 25, 2014.

Impact HY-3: The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on site or off site. (Less than Significant with Mitigation)

As discussed under Impact HY-1, the proposed project would not result in substantial permanent alteration of topography and would avoid impacting drainage patterns. Nine streams and swales would be crossed by the pipeline alignment; however, temporary impacts on these streams and swales would be mitigated to a less-than-significant level through the implementation of the project-specific SWPPP and Mitigation Measure M-BI-1f, Habitat Protection Measures, which requires impacted streams and swales to be returned to their pre-construction conditions after construction is completed.

Impact HY-4: The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site. (Less than Significant with Mitigation)

For the same reasons as described under Impact HY-3, the impact of the proposed project on drainage patterns, the course of streams, and the resulting potential for flood events would be mitigated to a less-than-significant level with implementation of the project-specific SWPPP and Mitigation Measure M-BI-1f, Habitat Protection Measures.

Impact HY-5: The project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (No Impact)

Located primarily within non-urbanized areas, the proposed project areas lack flood-control channels and piped storm drain systems, and instead, precipitation that exceeds infiltration rates flows over the ground surfaces toward natural swales or channels. As discussed under Impact HY-1, the proposed project would not result in substantial alteration of topography, and thus, there would be no permanent increase in runoff as a result of the project. As identified in the discussion under Impact HY-1, BMPs would be implemented to ensure that runoff is not increased during construction and restoration. Therefore, there would be no impact.

Impact HY-6: The project would otherwise substantially degrade water quality. (Less than Significant with Mitigation)

As previously described in the discussion under Impact HY-1, proposed project construction activities—such as clearing, grading, excavating, stockpiling soils, and placing fill—could cause erosion of surface soils and sedimentation of water bodies. In addition, fluids—such as fuel or oils—leaking from vehicles and construction equipment during construction has the potential to impair water quality. However, implementation of the SWPPP, along with Mitigation Measure M-BI-1f, Habitat Protection Measures, and Mitigation Measure M-BI-3, Protection Measures for Jurisdictional Water Bodies and Riparian Areas, which provides protection measures for riparian areas, would reduce potential impacts to a less-than-significant level.

Also, as previously discussed under Impact HY-1, a frac-out during HDD activities could degrade water quality as a result of drilling mud being discharged into the drainage. Implementation of Mitigation Measure M-HY-1b, HDD Fluid Release Contingency Plan, would reduce potential impacts resulting from the discharge of drilling mud that could potentially result in adverse impacts on water quality.

Other than the potential water quality impacts discussed under Impact HY-1, the proposed project would not otherwise substantially degrade water quality.

Impact HY-7: The project would expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. (Less than Significant with Mitigation)

The project area is located inland, and therefore, is not at risk from a tsunami. The Upper Crystal Springs Reservoir is believed to be large enough to pose significant seiche potential; however, the lowest project elevation is more than 50 feet higher than the reservoir's spillway elevation.[210] Thus, the proposed project would not expose people or structures to risk from seiche.

Mudflows may be triggered by massive landslides. As discussed in Section E.14, Geology and Soils, the pipeline alignment crosses the northern lateral margin of an existing slide mass (Edgewood Landslide). The USGS has identified debris-flow source areas upslope of the pipeline alignment as having potential

[210] San Mateo County. 1986. General Plan, Natural Hazards Element.

to produce debris flows.[211] Two of the proposed stream crossings—Cañ-D3 and Cañ-D4—cross a drainage downstream of a debris source area, and are potentially in the path of a mudflow.

As discussed in Section E.14, Geology and Soils, a site-specific geotechnical study of the Edgewood Landslide area in was conducted in 2014, to evaluate landslide activity, and stability.[212] The report indicated that the slide occurred between 11,000 and 2,000,000 years ago, and is confirmed as inactive. The report indicated that the slope is stable in low and high groundwater conditions, and is also anticipated to be stable during a characteristic seismic event on the San Andreas Fault. Geotechnical hazards along this section of the alignment were found to be minimal, and the conclusion was made that construction of the new proposed project alignment through the Edgewood Landslide area would not be subject to undue geotechnical hazards.

Through compliance with CFR 49 Part 192, Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards, and CPUC General Order No. 112-E, which supplements CFR 49 Part 192, all buried pipelines would be constructed either to move with the ground or be of sufficient strength to resist ground movement (refer to Section E.14, Geology and Soils, for a more detailed description of pipeline design and code requirements). With implementation of Mitigation Measures M-GE-1, Pipeline Design, and M-GE-3, Site Preparation, risk from mudflow would be reduced to a less-than-significant level.

Impact C-HY-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a significant cumulative impact on hydrology and water quality. (Less than Significant)

The geographic context for the cumulative impacts associated with surface water hydrology and water quality is the watershed area contributing to the same receiving waters as the proposed project. Projects in the cumulative scenario include projects within the San Mateo Creek Watershed, which encompasses

[211] S.D. Ellen, R.K. Mark, G.F. Wieczorek, C.M. Wentworth, D.W. Ramsey, and T.E. May. 1997. San Francisco Bay Region Landslide Folio Part E -Map Of Debris-Flow Source Areas in the San Francisco Bay Region, California. Open-File Report 97-745 E. http://pubs.usgs.gov/of/1997/of97-745/of97-745e.html. Accessed on March 3, 2015.

[212] Infraterra, Inc. 2014. Geotechnical Conditions Assessment, Proposed PG&E Pipeline Realignment, Edgewood Landslide, San Mateo California. This document is on file and is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case File No.2013.1761E.

projects in San Mateo County and the surrounding cities (refer to Table 4: Past, Present, and Reasonably Foreseeable Actions).

Hydrologic and water quality effects of these projects could possibly include sedimentation or non-point source pollution in downstream receiving waters, particularly during the construction phases, or could cause effects on the underlying groundwater aquifer, including decreases in recharge areas or degradation of groundwater quality in the event of a contaminant release. In the absence of regulatory controls, the primary cumulative effect of these projects would be to significantly alter the natural hydrology of the region through increases in the area covered by impervious surfaces and increases in the potential for the release of non-point source pollutants (i.e., motor fuels, trash, and sediment). This would be a significant cumulative impact on hydrology and water quality.

However, the proposed project, along with other projects occurring in the area, would be required to comply with applicable federal, state, and local water quality regulations. The proposed project, along with all other projects in the cumulative scenario, would be required to obtain coverage under the NPDES Construction General Permit and/or implement water quality BMPs that effectively control erosion and sedimentation and other construction-related pollutants.

The proposed project would not violate water quality standards or waste discharge requirements, permanently alter existing drainage patterns, or contribute runoff that would exceed drainage capacities. Additionally, project construction would be of short duration and water quality BMPs would be implemented during construction. Therefore, the proposed project's contribution to any cumulative impact on hydrology and water quality would not be cumulatively considerable.

E.16. HAZARDS AND HAZARDOUS MATERIALS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.16.	**HAZARDS AND HAZARDOUS MATERIALS— Would the project:**					
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	☐
h)	Expose people or structures to a significant risk of loss, injury or death involving fires?	☐	☒	☐	☐	☐

The proposed project is located entirely on SFPUC land, and is not located within 2 miles of a public airport or within the vicinity of a private airstrip; therefore, significance criteria E.16(e) and E.16(f) are not applicable.

All three segments of the proposed project are located within SFPUC Watershed lands in unincorporated San Mateo County. The Cañada Road segment is bordered on the east by I-280, on the west by Cañada Road and the Crystal Springs Reservoir, on the north by SR 92, and on the south by Edgewood Road. The segment is surrounded by SFPUC Watershed lands, with Pulgas Ridge Open Space and residential uses east across I-280. The Bunker Hill segment is bordered on the east by residential neighborhoods along Lexington Avenue, on the west by undeveloped land and I-280 (and the Lower Crystal Springs Reservoir

further west), on the north by residential neighborhoods and Laurel Hill Court, and on the south by undeveloped land and SR 92. The Crystal Springs segment is bordered on the east by residential neighborhoods along Lakewood Drive, Wedgewood Drive, and Black Mountain Road; on the west by I-280 (and the Lower Crystal Springs Reservoir further west); on the north by residential uses; and on the south by undeveloped land (and SR 92 further south).

The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, hazardous material means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety and/or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.[213]

A search of the California Department of Toxic Substances Control (DTSC) EnviroStor and SWRCB GeoTracker online databases was conducted to identify hazardous material sites within 1,000 feet of the proposed project segments.

The DTSC EnviroStor database documented one listing in the vicinity of the proposed project—a closed case listed as "The PG&E San Mateo Pipeline, Cañada Road, Belmont, California, 94941"—located approximately 0.4 mile east-northeast of the Cañada Road segment.[214] This was a previous case for a volunteer cleanup that was completed in 2004. No EnviroStor listings were found for the Bunker Hill or Crystal Springs segments.

The SWRCB GeoTracker database documented an open site—listed as "The San Mateo County Hillcrest Juvenile Facility, 222 Paul Scannell Drive, San Mateo, CA, 94402"—located approximately 600 feet

[213] California Health and Safety Code, Chapter 6.95, Section 25501 (m)
[214] DTSC. 2014. EnviroStor. http://www.envirostor.dtsc.ca.gov/public/. Accessed on April 18, 2014.

southeast of the Bunker Hill segment. [215] No GeoTracker listings were found for the Cañada Road or Crystal Springs segments of the pipeline.

Impact HZ-1: The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant)

The proposed project would involve the storage, use, and transport of minor amounts of hazardous materials (e.g., fuels, oils, and lubricants) during construction activities, and small quantities of these could be stored on site. Any hazardous materials needed for construction would be stored and used in accordance with the applicable regulations that specify hazardous materials storage and handling requirements, such as proper container types, spill containment, and usage methods for minimizing the potential for release and harmful exposure. If required by CFR 40 Part 112, PG&E would prepare and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan for the proposed project that would include engineered and operational methods for preventing, containing, and controlling potential releases, and provisions for quick and safe cleanup. If no SPCC Plan is required, oil spill prevention and response measures would be included in the SWPPP. PG&E would use, store, and transport hazardous materials in compliance with federal and state regulations during proposed project construction. Furthermore, PG&E would implement its standard equipment maintenance and refueling practices, which require all equipment be maintained so that no leaks of automotive fluids (e.g., fuels, solvents, or oils) occur, and that all refueling and maintenance of vehicles and other construction equipment be restricted to designated staging areas located at least 100 feet from any down-gradient aquatic habitat (refer to Section A.4.7, Best Management Practices, for a more detailed discussion). These practices would further reduce the risk of exposure of the environment, the public, or project workers to potentially hazardous materials during proposed project construction. Because PG&E would transport, handle, and store hazardous materials in accordance with all applicable regulations, and because the SPCC Plan or SWPPP and PG&E's standard equipment maintenance and refueling practices would be implemented, impacts related to the routine, use, transport, or disposal of hazardous materials would be less than significant.

[215] SWRCB. 2014. GeoTracker. http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Ca%F1ada+Road%2C+Belmont%2C+California%2C+94941. Accessed on April 18, 2014.

Impact HZ-2: The project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)

Proposed project construction would increase the potential for small accidental releases of hazardous materials (i.e., fuel, oil, and lubricant) associated with the use of motorized equipment. In addition, the SWRCB GeoTracker database indicates a known hazardous materials release site involving a LUST case located approximately 600 feet southeast of the Bunker Hill segment of the proposed project. The contamination was the result of an apparent release from a former gasoline tank, which affected soil and groundwater in the vicinity of the former tank. The LUST site is not located within temporary work areas, and based on a 2014 groundwater investigation and monitoring report,[216] the flow of shallow groundwater at the release site is generally towards the south, away from temporary work areas associated with the proposed project. However, based on the monitoring report, the depth of the groundwater encountered in the vicinity of the former tank is approximately 6 feet and, due to the LUST site's proximity to the proposed project, there is potential for contamination to have migrated to the proposed project area via groundwater. As described in Section A, Project Description, the proposed project involves the excavation of trenches that would be between 6.5 and 8 feet deep. Therefore, construction activities could result in exposure of workers and the environment to hazardous materials—such as polychlorinated biphenyls (PCBs) and/or total petroleum hydrocarbons (TPH)—associated with the nearby LUST site.

Because the proposed project involves excavation activities, unknown hazardous materials have the potential to be encountered during construction. If any stained or odiferous soils are encountered during project-related excavation activities, PG&E would implement Mitigation Measure M-HZ-2, Treatment of Unanticipated Hazardous Materials, which would require PG&E to halt work if any such soils are encountered during project-related excavation activities. Furthermore, PG&E would implement and comply with all existing federal and state hazardous materials regulations. Specifically, PG&E would implement an SPCC Plan, if required, for preventing, containing, and controlling potential releases, as described in the discussion under Impact HZ-1. Because the proposed project would involve the use of relatively minor quantities of hazardous materials, would comply with existing hazardous materials laws

[216] Atlas Engineering Services Inc. 2014. Additional Groundwater Investigation Report and Semi-annual Monitoring. http://geotracker.waterboards.ca.gov/esi/uploads/geo_report/8190904736/T0608176562.PDF. Accessed on November 21, 2014.

and regulations, and because Mitigation Measure M-HZ-2 would be implemented, the impact would be less than significant.

Mitigation Measure M-HZ-2: Treatment of Unanticipated Hazardous Materials

If any stained or odiferous soils that may be considered hazardous materials are encountered during project-related excavation activities, PG&E shall immediately halt work and properly characterize the material, and shall take appropriate measures specific to the materials to protect human health and the environment.

PG&E will comply with all existing federal and state hazardous materials regulations. If the results of soil testing indicate that the project spoils are hazardous, PG&E shall manage and dispose of the waste through a separately contracted vendor certified through the Contractors State Licensing Board for hazardous waste removal, and send the waste to an appropriate Class 1 disposal facility. Hazardous spoils awaiting disposal shall be appropriately labeled and shall be contained or stockpiled with plastic encapsulation to prevent sedimentation.

Impact HZ-3: Construction of the proposed project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. (Less than Significant with Mitigation)

Two schools are located within 0.25 mile of the proposed project, as measured from the nearest location of the school property to the project site. West Hillsborough Elementary School is located approximately 0.15 mile northeast of the northern portion of the Crystal Springs segment, and Highlands Elementary School is located approximately 0.15 mile northeast of the Bunker Hill segment. Construction activities would involve the use of minor amounts of hazardous materials (e.g., fuels, oils, and lubricants). These materials are commonly used during construction, are not acutely hazardous, and would be used in small quantities such that an accidental spill or release would be unlikely to result in significant impacts on the schools. PG&E would implement and follow an SPCC Plan or SWPPP to reduce the risk of impacts related to accidental spills or releases. Furthermore, implementation of Mitigation Measure M-HZ-3, Notify and Consult with Affected Schools, would require that PG&E notify the schools regarding potential project-related hazards and hazardous materials prior to the start of construction activities. With implementation of Mitigation Measure M-HZ-3, the impact on schools within 0.25 mile would be reduced to less than significant.

Mitigation Measure M-HZ-3: Notify and Consult with Affected Schools

PG&E shall provide written notification of the proposed project to schools located within 0.25 mile of the project site, including West Hillsborough Elementary School and Highlands Elementary School. PG&E also shall consult with appropriate school or district personnel about the types of construction activities that shall occur and the estimated timing of such activities, as well as provide examples of the types of hazardous materials that could be used during construction activities.

Impact HZ-4: The project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; and could create a hazard to the public or the environment. (Less than Significant with Mitigation)

Pursuant to Government Code Section 65962.5, a search of the California DTSC EnviroStor,[217] RWQCB GeoTracker,[218] and USEPA[219] online databases was conducted to identify hazardous material sites within 1,000 feet of the proposed project sites.

As noted previously, a closed case site is located within the Cañada Road segment of the proposed project. The case was listed as "The PG&E San Mateo Pipeline, Cañada Road, Belmont, California, 94941." The site is listed as a voluntary cleanup area for PCBs, diesel, and motor oil in soil. The database indicated that a total of approximately 40 cy of contaminated soil were detected, which were then excavated and transported off site for proper disposal. A Remedial Action Certification Form was issued in 2004, and cleanup was confirmed at that time.

The SWRCB GeoTracker database depicted an open site—listed as "The San Mateo County Hillcrest Juvenile Facility, 222 Paul Scannell Drive, San Mateo, CA, 94402"—located approximately 600 feet southeast of the Bunker Hill segment. The site is listed as an open site assessment for a LUST as of December 2006, with petroleum as the pollutant of concern. Due to the proximity to the proposed project

[217] DTSC. 2014. EnviroStor. http://www.envirostor.dtsc.ca.gov/public/. Accessed on April 18, 2014.
[218] SWRCB. 2014. GeoTracker. http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Ca%F1ada+Road%2C+Belmont%2C+California%2C+94941. Accessed on April 18, 2014.
[219] USEPA. 2012. Cleanup Sites in California. http://www.epa.gov/region9/cleanup/california.html#s. Last updated on March 19, 2014. Accessed on April 18, 2014.

site and the depth of the shallow groundwater flow, it is possible that contamination could have migrated on site and soil and/or groundwater could contain TPHs and volatile organic compounds.

If any stained or odiferous soils are encountered during project-related excavation activities, PG&E would implement Mitigation Measure M-HZ-2, Treatment of Unanticipated Hazardous Materials, which would require PG&E to halt work and properly characterize the material. With implementation of Mitigation Measure M-HZ-2, impacts associated with hazardous material sites that could result in a hazard to the public or the environment would be reduced to a less-than-significant level.

Impact HZ-5: The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (No Impact)

The proposed project is located entirely within SFPUC Watershed lands. As noted in Sections E.12, Public Services, and E.5, Transportation and Circulation, an extensive local road network is not present in the vicinity of the Cañada Road segment of the proposed project, and the project is not anticipated to result in a significant increase in traffic in this area. Residential areas with more substantial local road networks parallel the eastern side of the Bunker Hill and Crystal Springs segments of the proposed project. However, any increase in traffic would be minor, limited to the duration of construction, and coordinated with local authorities. The types of activities and amount of equipment required would not cause noticeable impacts on public services. No road closures are anticipated, and construction activities and facilities—including staging areas—would be located off of main roadways within SFPUC land and in designated project staging areas, and would not block any local roadways, streets, or driveways. Furthermore, PG&E would be required to maintain an on-site Health and Safety Plan as a routine construction measure, and emergency access and evacuation procedures would be developed and implemented as part of the plan (refer to Section A.4.7, Best Management Practices, for a description of the Health and Safety Plan). Therefore, the proposed project would not impair implementation of or physically interfere with any emergency response or evacuation plans, and there would be no impact.

Impact HZ-6: The project would expose people or structures to a significant risk of loss, injury, or death involving fires. (Less than Significant with Mitigation)

The proposed project site is located within SFPUC Watershed lands designated as Parks/Open Space. As identified by CAL FIRE, the proposed project is located within a State Response Area that ranges in designation from moderate to very high fire hazard severity zones.[220] The project site is undeveloped; however, it is located adjacent to wildland/urban interface. The proposed project includes replacing an existing natural gas pipeline—which is regulated by the U.S. Department of Transportation and the CPUC—and would be designed to comply with all applicable regulations. Specifically, pipeline replacement is mandated under CPUC General Order 112E, which incorporates, in its entirety, CFR 49 part 192, "Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards." All aspects of construction, commissioning, and acceptance testing would be inspected by professional pipeline inspectors. Throughout the duration of construction, PG&E would implement Mitigation Measure M-HZ-6, Fire Avoidance and Suppression, to reduce the risk of fires. Such measures include selecting welding sites that are free of native combustible material and/or clearing such material for 10 feet around the area, and having adequate fire-suppression materials and equipment adjacent to all active work areas. In the unlikely event of a fire, fire protection services would be provided by CAL FIRE. Fire protection measures would also be implemented in accordance with requirements prescribed in the SFPUC Access Permit, which establishes work procedures that minimize the potential of a fire caused by hot activities. An on-site PG&E Construction Supervisor would also ensure that an internal PG&E hot work permit is issued. The hot work permit would not be issued if any of the following conditions exist:

- The work cannot be performed safely
- Adequate fire watch is not available, when applicable
- Appropriate firefighting equipment is not available
- Combustible or flammable materials are located within 35 feet of the hot work and cannot be moved or protected
- Wind conditions prevent the safe management of the hot work area

In part because of regulatory oversight, gas pipelines are not subject to frequent leaks. However, in rare instances, gas leaks can result in an explosion that could expose people or structures to significant risk of

[220] California Department of Forestry and Fire Protection. 2007. Fire Hazard Severity Zones in State Response Areas, Adopted by the California Department of Forestry and Fire Protection, San Mateo County.

loss, injury, or death from fire. As described in Section A.2, Project Background and Purpose, the existing pipeline would undergo upgrades to ensure that proper pipeline inspection activities may be completed, thereby reducing the risk of gas leaks. Specifically, automated pipeline inspection gauges would be used to conduct in-line inspections of the natural gas pipeline, and would identify anomalies that require remediation. They are used in conjunction with direct pipeline assessments and pipeline pressure tests to ensure constant pipeline safety and reliability, thus improving the safety and reliability of the existing pipeline system. Because the proposed project involves replacing and modernizing an existing pipeline and would not introduce a new pipeline into the network, it would not increase the risk of exposure to loss, injury, or death involving fires, and the replaced pipeline would continue to be subject to PG&E monitoring programs and regulatory oversight. With the implementation of Mitigation Measure M-HZ-6, Fire Avoidance and Suppression, and the enhanced inspection capabilities during operation of the pipeline, the proposed project would not expose people or structures to an elevated significant risk of loss, injury, or death involving fires, and impacts would be less than significant.

Mitigation Measure M-HZ-6: Fire Avoidance and Suppression

PG&E shall clear trees and shrubs in accordance with utility corridor standards, which include no structures or trees within a 20-foot pipe zone (10 feet on each side of the pipeline). On-site chipping may be allowed, subject to approval by the landowner. If chipping is allowed, all debris less than 6 inches in diameter shall be chipped by the PG&E contractor if the site is within 100 feet of a service road. Chips shall be broadcast or hauled away. All wood from trimming and removals that is larger than 16 inches in diameter may be left on site in lengths of 8 feet or less. Tree debris less than 16 inches in diameter that is not chipped shall be hauled away. Project personnel shall be directed to drive on areas that have been cleared of vegetation; park away from dry vegetation; and carry water, shovels, and fire extinguishers in times of high fire hazard. PG&E shall also prohibit trash burning, and no smoking is permitted within SFPUC Watershed lands. Additionally, clearly marked fire-suppression materials and equipment shall be stored adjacent to all work areas and within staging areas.

The project sponsor and/or its contractor shall contact the SFPUC Natural Resources and Lands Management Division (NRLMD) Watershed Forester 24 hours in advance of work to confirm that conditions are suitable for construction. In addition, the project sponsor and/or its contractor shall submit fire prevention measures, particularly for any hot work (e.g., welding), to the NRLMD Watershed Forester for review and approval. During construction, the project sponsor

and/or its contractor shall contact the National Weather Service daily to confirm that local weather conditions are suitable for construction activity. The project sponsor and/or its contractor will cease all construction activities during red flag days (high fire hazard periods) or if directed to do so by the NRLMD Watershed Forester.

Impact C-HZ-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a significant cumulative impact related to hazards and hazardous materials. (Less than Significant with Mitigation)

Impacts related to hazards are generally site-specific and typically do not result in cumulative impacts. Any hazards at surrounding development sites would be subject to federal, state, and local regulations and requirements similar to those that the proposed project is subject to. Nonetheless, construction sites typically involve the use of hazardous materials that could result in upset or accident conditions, creating a significant hazard to the public or the environment, and unknown contamination could migrate down-gradient to affect larger areas. As a result, cumulative impacts could occur. As detailed previously in the discussion under Impact HZ-3, the listed DTSC voluntary cleanup site is closed and a Remedial Action Certification Form was issued in 2004. PG&E would also implement Mitigation Measure M-HZ-2 for any stained or odiferous soils encountered during excavation activities. Furthermore, the project sites are not found elsewhere on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5. Construction along the Bunker Hill and Crystal Springs segments of the proposed project would have the potential to expose schools within 0.25 mile of the project to hazardous materials; however, implementation of Mitigation Measure M-HZ-3 would require advanced notification and consultation with the affected schools. The projects outlined in Table 4: Past, Present, and Reasonably Foreseeable Actions, along with the proposed project, could create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. However, these impacts would be substantially reduced through compliance with applicable federal, state, and local regulations. Furthermore, implementing Mitigation Measures M-HZ-2, M-HZ-3, and M-HZ-6 would ensure that the proposed project's contribution to hazardous materials impacts would be less than cumulatively considerable.

E.17. MINERAL AND ENERGY RESOURCES

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.17. MINERAL AND ENERGY RESOURCES— Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☐	☒
c) Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	☐	☐	☒	☐	☐

According to the San Mateo County General Plan, major mineral resources in the San Francisco Bay Area include limestone and shells, salines, sand and gravel, crushed and broken stone, and oil and gas. None of the three segments of the proposed project are located within any area classified as a mineral resource zone (MRZ), as denoted by the San Mateo County General Plan. The most important zone with respect to the presence of mineral resources is MRZ-2. This zone is applied to areas with known mineral deposits or where well-developed lines of reasoning (based on economic geologic principles and adequate data) demonstrate that the likelihood for occurrence of significant mineral deposits is high. [221] The proposed project segments are not located in or near an MRZ-2 area, and implementing the proposed project would not result in the loss of availability of a locally important resource recovery site; therefore, significance criteria E.17(a) and E.17(b) are not applicable.

Impact ME-1: The proposed project would not encourage activities that result in the use of large amounts of fuel, water, or energy, or that use these in a wasteful manner. (Less than Significant)

Minor quantities of fuel, water, and energy would be required to replace the existing natural gas transmission line, an activity that is being proposed to accommodate required pipeline integrity inspection activities and support ongoing operation and maintenance of the pipeline. Electrical power would be the primary power source (a generator would not be used for backup power). Final

[221] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on November 24, 2014.

stabilization of the project site following construction would include hydro-seeding cleared areas, which would require water for maintenance. As described in the Final Stabilization Plan under the SWPPP, PG&E would provide supplemental watering of seeded areas, if necessary, to ensure that 70 percent of pre-existing vegetative cover, and at least 75 percent of the absolute baseline vegetation present in areas immediately adjacent to the construction corridor, are achieved. However, maintenance watering would be short term (until sufficient vegetative cover is achieved) and limited to activities required to re-establish vegetative cover. For these reasons, the proposed project's use of fuel, water, and energy would be minimal, and would not be considered wasteful. Therefore, the impact would be less than significant.

Impact C-ME-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not have a significant cumulative impact related to mineral and energy resources. (Less than Significant)

Implementation of the proposed project, in combination with cumulative development projects in the vicinity, is not expected to result in significant impacts on important mineral resources because these resources are not present within the project area. The project site is not located in an MRZ-2 area; therefore, no impacts are associated with the potential loss of availability of a known mineral resource that would be of value to the region, state, or locally.

The relevant area for cumulative energy impacts is the service area for the energy provider, which includes the geographic area of the identified cumulative projects. All of the cumulative projects—particularly large development projects—would use some quantity of fuel, water, or energy, and would contribute to a cumulative impact on energy resources. The proposed project's incremental contribution to energy consumption would not be cumulatively considerable due to the short-term nature of construction. The cumulative impact would be less than significant.

E.18. AGRICULTURE AND FOREST RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.18. AGRICULTURAL AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. – **Would the project:**						
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526)?	☐	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use?	☐	☐	☐	☐	☒

All three segments of the proposed project are located in areas designated as Parks/Open Space in the San Mateo County General Plan, and are within the RM (Resource Management) zoning classification (refer to Section E.1, Land Use and Land Use Planning for a detailed discussion).[222] The proposed project is not located on any lands categorized as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No farmland exists on the project site and no conversion of farmland would occur as a result of the proposed project. Because the project area is not zoned for agricultural use, Williamson Act contracts are not applicable. Furthermore, there are no agricultural uses within the vicinity of the proposed project site and no recognized forest land is present in the project area.

[222] San Mateo County. 1986. General Plan. http://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf. Accessed on November 24, 2014.

Project construction would not alter the existing land use at the project site, and no conversion of farmland or forest land would occur. For these reasons, significance criteria E.18(a), E.18(b), E.18(c), E.18(d), and E.18(e) are not applicable.

E.19. MANDATORY FINDINGS OF SIGNIFICANCE

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
E.19 MANDATORY FINDINGS OF SIGNIFICANCE— Would the project:					
a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐	☐
b) Have impacts that would be individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐	☐
c) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐	☐

Impact MF-1: The proposed project would degrade the quality of the environment, reduce the habitat, or otherwise adversely affect a rare or endangered plant or animal species. (Less than Significant with Mitigation)

The discussion in Section E, Evaluation of Environmental Effects, identifies potentially significant impacts on the environment related to aesthetics, cultural resources, air quality, biological resources, geology and soils, hydrology and water quality, and hazards and hazardous materials. However, mitigation measures have been provided to address these potentially significant project-level impacts. Implementation of the mitigation measures would reduce these impacts to a less-than-significant level.

The proposed project has a moderate to high potential to impact 11 special-status species. As discussed in Impact BI-1 in Section E.13, Biological Resources, project impacts on California red-legged frog and San Francisco garter snake and associated aquatic and upland habitat would be reduced to a less-than-significant level with the implementation of Mitigation Measures M-BI-1a, San Francisco Garter Snake and California Red-legged Frog Protection Measures and M-BI-1f, Habitat Protection Measures. Impacts on pallid bat would be reduced to a less-than-significant level with the implementation of Mitigation Measure M-BI-1b, Bat Roost Surveys and Avoidance and Minimization Measures. In addition, impacts on

breeding birds would be reduced to a less-than-significant level with the implementation of Mitigation Measure M-BI-1c, Pre-construction Bird Surveys, and impacts on San Francisco Dusky-footed woodrat would be reduced to a less-than-significant level with implementation of Mitigation Measure M-BI-1d, San Francisco Dusky-footed Woodrat. Implementation of Mitigation Measures M-BI-1e, Pre-construction Surveys for Fragrant Fritillary, M-BI-1f, Habitat Protection Measures, and M-BI-1g, Mission Blue Butterfly Protection Measures, would reduce impacts on fragrant fritillary, Franciscan onion, bent-flowered fiddleneck, San Francisco collinsia, Crystal Springs lessingia, and Mission Blue Butterfly to a less-than-significant level.

Implementation of Mitigation Measure M-BI-3, Protection Measures for Jurisdictional Water bodies and Riparian Areas, and Mitigation Measure M-BI-1f, Habitat Protection Measures, in addition to compliance with the requirements of the Clean Water Act Section 404 Nationwide Permit 12 (Utility Line Activities) and, if required, Nationwide Permit 33 (Temporary Construction, Access, and Dewatering), RWQCB Section 401 Permit, and CDFW Streambed Alteration Agreement, would address impacts related to jurisdictional water bodies.

Impact MF-2: The proposed project would eliminate important examples of the major periods of California history or prehistory. (Less than Significant with Mitigation)

As discussed in Impact CR-1 in Section E.4, Cultural Resources, there would be no project-related impacts on historic architectural resources. As discussed in Impacts CR-2, CR-3, and CR-4 in Section E.4, construction activities associated with the proposed project could result in potential impacts on unknown archeological resources, human remains, and TCRs. These impacts would be reduced to a less-than-significant level with the implementation of Mitigation Measures M-CR-2, Archeological Monitoring, M-CR-3, Unanticipated Discoveries for Human Remains, and M-CR-4, Tribal Cultural Resources Interpretive Program. As discussed in Impact GE-6 in Section E.14, Geology and Soils, construction activities could disturb or destroy paleontological resources, if they are present at the site. With the implementation of M-GE-6, Unanticipated Discoveries for Paleontological Resources, this impact would be reduced to a less-than-significant level.

Impact MF-3: The proposed project would have impacts that would be individually limited, but cumulatively considerable. (Less than Significant with Mitigation)

Section 15130 of the State CEQA Guidelines requires a reasonable analysis of the significant cumulative impacts of a proposed project. Cumulative impact refers to "two or more individual effects that, when considered together, are considerable or able to compound or increase other environmental impacts." The individual effects may be changes resulting from a single project or an increase in the number of environmental impacts. The cumulative impact is the change in the environment that results when the incremental impact of the project is added to closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects that take place over a period of time (CEQA Guidelines Section 15355 [a][b]).

For the purposes of this Initial Study, the geographic context for the proposed project's cumulative impact assessment described those projects identified by local planning agencies in the project vicinity (urban areas of San Mateo County, as well as the cities of Belmont, Redwood City, Menlo Park, and San Carlos, and the SFPUC Watershed land surrounding the proposed project site). A complete list of potential cumulative projects in the project vicinity is presented in Table 4: Past, Present, and Reasonable Foreseeable Actions. These projects include pipeline (sewer line rehabilitation, water main replacement, gas transmission line replacement), transportation, infrastructure, and development projects (new residential construction and construction of a new school).

The assessments of potential cumulative impacts for environmental resource areas are provided in the relevant subsections of Section E, Evaluation of Environmental Effects. However, for the reasons described in Sections E.1 through E.19, with implementation of mitigation measures to address potentially significant project-level impacts, either there would be no potentially significant cumulative impacts or the proposed project's contribution to all cumulative impacts on the environment would be less than cumulatively considerable.

Impact MF-4: The proposed project would have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. (Less than Significant with Mitigation)

The discussion in Section E, Evaluation of Environmental Effects, identifies potentially significant impacts related to aesthetics, cultural resources, air quality, biological resources, geology and soils, hydrology and water quality, and hazards and hazardous materials. Mitigation measures have been identified in this Initial Study to reduce all potentially significant impacts to a less-than-significant level. No impacts, or

less-than-significant impacts, were identified for the following environmental issue areas: land use, population and housing, transportation and circulation, noise, greenhouse gas emissions, wind and shadow, recreation, utilities and service systems, public services, mineral and energy resources, and agriculture and forest resources. Therefore, with implementation of the mitigation measures specified in Sections E.1 through E.18, the proposed project would not result in substantial adverse effects, direct or indirect, on human beings.

F. MITIGATION MEASURES

The following mitigation measures have been adopted by Pacific Gas and Electric Company and are necessary to avoid potential significant impacts of the proposed project.

Mitigation Measure M-AE-4: Nighttime Lighting

Nighttime lighting shall be shielded and directed specifically onto work areas to minimize light spillover, away from sensitive receptors such as the residences and open spaces adjacent to the project areas.

Mitigation Measure M-CR-2: Archeological Monitoring

The following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged historical resources within areas of moderate and high sensitivity for buried resources. The project sponsor shall retain the services of an archeological consultant from the rotational Department Qualified Archeological Consultants List (QACL) maintained by the Planning Department archeologist. The project sponsor shall contact the Planning Department archeologist to obtain the names and contact information for the next three archeological consultants on the QACL. The archeological consultant shall undertake an archeological monitoring program. All plans and reports prepared by the consultant, as specified herein, shall be submitted first and directly to the Environmental Review Officer (ERO) for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of 4 weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archeological resource—as defined in CEQA Guidelines Section 15064.5 (a)(c)—to a less-than-significant level.

Archeological Monitoring Program (AMP). The AMP shall minimally include the following provisions:

- The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related ground-disturbing activities. The ERO—in consultation with the project archeologist—shall determine which project activities shall be archeologically monitored. In most cases, any

ground-disturbing activities—such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc.—shall require archeological monitoring because of the potential risk that these activities pose to archeological resources and to their depositional context. The results of this meeting, including the schedule, shall be documented in a brief monitoring plan that shall be distributed to the ERO, project sponsor, and the archeological consultant.

- The archeological consultant shall advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archeological resource.

- The archeological monitor(s) shall be present at the project site according to a schedule that is agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities would have no impact on significant archeological deposits.

- The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material, as warranted for analysis.

- If an intact archeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/construction crews and heavy equipment until the deposit is evaluated. If in the case of pile-driving activity (foundation, shoring, etc.), the archeological monitor has cause to believe that the pile-driving activity may affect an archeological resource, the pile-driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archeological consultant shall immediately notify the ERO of the encountered archeological deposit. The archeological consultant shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the ERO.

Consultation with Descendant Communities. On discovery of an archeological site[223] associated with descendant Native Americans or other appropriate descendent group, an appropriate representative[224] of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to consult with the ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. A copy of the Final Archeological Resources Report shall be provided to the representative of the descendant group.

If the ERO, in consultation with the archeological consultant, determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project, at the discretion of the project sponsor, either:

- the proposed project shall be re-designed so as to avoid any adverse effect on the significant archeological resource; or
- an archeological data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

If an archeological data recovery program is required by the ERO, the archeological data recovery program shall be conducted in accord with an archeological data recovery plan (ADRP). The project archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and approval. The ADRP shall identify how the proposed data recovery program will preserve the significant information that the archeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected

[223] By the term "archeological site" is intended here to minimally include any archeological deposit, feature, burial, or evidence of burial.

[224] An "appropriate representative" of the descendant group is here defined to mean, in the case of Native Americans, any individual listed in the current Native American Contact List for the City and County of San Francisco maintained by the California Native American Heritage Commission and in the case of the Overseas Chinese, the Chinese Historical Society of America.

data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archeological data recovery program.
- Security Measures. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities.
- Final Report. Description of the proposed report format and distribution of results.
- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains, Associated or Unassociated Funerary Objects. The treatment of human remains and of associated or unassociated funerary objects discovered during any ground-disturbing activities shall comply with applicable state and federal laws, including immediate notification of the coroner of the County of San Mateo and, in the event of the coroner's determination that the human remains are Native American, notification of the California Native American Heritage Commission, who shall appoint a most likely descendant (MLD) (Public Resources Code Section 5097.98). The archeological consultant, project sponsor, landowner, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human

remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the excavation, removal, recordation, analysis and curation (as appropriate), possession, and final disposition of the human remains and associated or unassociated funerary objects.

Final Archeological Resources Report. The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the draft final report.

Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archeological Site Survey NWIC shall receive one copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Environmental Planning division of the Planning Department shall receive one bound; one unbound; and one unlocked, searchable PDF copy on CD of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented previously.

Mitigation Measure M-CR-3: Unanticipated Discoveries for Human Remains

In the unlikely event that human remains or potential human remains are uncovered during construction, the find shall be secured and the project Head Foreman and/or PG&E shall immediately notify the ERO and suspend any ground-disturbing activities within 100 feet, or a distance recommended by the monitor, of the discovery until the ERO has determined what additional measures should be undertaken.

If the remains are not human, the ERO shall determine whether the find represents an archeological deposit and whether Mitigation Measure M-CR-2 applies. If the remains are human, the ERO shall immediately implement the applicable state law, which can be found in Sections 5097.9 through 5097.996 of the Public Resources Code. This shall begin with the

immediate notification of the San Mateo County Coroner. All archeological work conducted under this mitigation measure shall be subject to review by the ERO or designee.

Mitigation Measure M-CR-4: Tribal Cultural Resources Interpretive Program

If the Environmental Review Officer (ERO) determines that preservation-in-place of previously unidentified archeological resources pursuant to Mitigation Measure M-CR-2, Archeological Monitoring, is not a sufficient or feasible option, and if in consultation with the affiliated Native American tribal representatives, the ERO determines that the resource constitutes a TCR, the project sponsor shall implement an interpretive program of the TCR in consultation with affiliated tribal representatives. An interpretive plan produced in consultation with the ERO and affiliated tribal representatives, at a minimum, and approved by the ERO would be required to guide the interpretive program. The plan shall identify, as appropriate, proposed locations for installations or displays, the proposed content and materials of those displays or installation, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, artifacts displays and interpretation, and educational panels or other informational displays.

Mitigation Measure M-NO-1a: Install Sound Barrier Wall

A 20-foot-tall sound barrier with an STC rating of at least 25 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.

Mitigation Measure M-NO-1b: 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 2 weeks prior and again 1 day prior to daytime and potential nighttime HDD activities.

Mitigation Measure M-NO-1c: Temporarily Relocate Nearby Residents from Nighttime HDD Activities

For the limited locations where PG&E is unable to mitigate noise through Mitigation Measure M-NO-1a, 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 1 night of potential HDD activities. Special medical conditions shall be verified by a doctor.

Mitigation Measure M-AQ-1a: 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 off site 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. 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.

Mitigation Measure M-AQ-1b: 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:

1. 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 Table M-AQ-1b-1: Construction Equipment Summary, below. Documentation of equipment tiers for in-use equipment shall be maintained on site as part of the plan.

2. Construction equipment, as noted in Table M-AQ-1b-1, 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 utilized.

Should any deviations from the requirements or the equipment in Table M-AQ-1b-1: Construction Equipment Summary, be proposed prior to or during construction, the project sponsor shall demonstrate, to the satisfaction of the ERO, that an equivalent amount of emissions reduction would be achieved.

Table M-AQ-1b-1: Construction Equipment Summary

Phase	Equipment Type	Horsepower	Quantity	Engine Tier	DPF Required?
Linear Work Phases					
1 & 2	Other Material Handling Equipment	120	4	NA - Gasoline	No
1 & 2	Off-Highway Trucks	250	3	Tier 4 (Final)	No
1 & 2	Tractors/Loaders/Backhoes	175	1	Tier 4 (Interim)	No
2	Graders	250	1	Tier 3	Yes
2	Rubber Tired Dozers	750	2	Tier 4 (Final)	No
2	Air Compressors	50	1	Tier 3	Yes
4	Other Material Handling Equipment	120	10	NA - Gasoline	No
4	Off-Highway Trucks	250	4	Tier 4 (Final)	No
4	Tractors/Loaders/Backhoes	500	2	Tier 3	Yes
4	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
4	Other General Industrial Equipment	250	1	Tier 4 (Final)	No
4	Generator	50	1	Tier 3	No
5	Other Material Handling Equipment	120	10	NA - Gasoline	No
5	Off-Highway Trucks	250	4	Tier 4 (Final)	No
5	Cranes	250	4	Tier 4 (Interim)	No
5	Other General Industrial Equipment	250	1	Tier 4 (Final)	No
5	Welders	50	6	Tier 4 (Final)	No
5	Air Compressors	50	1	Tier 3	Yes
5	Pressure Washers	50	1	Tier 4 (Final)	No
5	Generator	50	1	Tier 3	No
5	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
6	Other Material Handling Equipment	120	10	NA - Gasoline	No
6	Off-Highway Trucks	250	4	Tier 4 (Final)	No
6	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
6	Rubber Tired Dozers	750	1	Tier 4 (Final)	No
6	Generator	50	1	Tier 3	No
8	Trenchers	175	1	Tier 3	No
8	Other Material Handling Equipment	120	3	NA - Gasoline	No
8	Off-Highway Trucks	250	4	Tier 4 (Final)	No
8	Graders	250	1	Tier 3	Yes
Area Work Phases					
3	Other Material Handling Equipment	120	4	NA - Gasoline	No
3	Off-Highway Trucks	250	1	Tier 4 (Final)	No
3	Bore/Drill Rigs	120	1	Tier 3	Yes
3	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
3	Cranes	250	2	Tier 4 (Interim)	No
3	Welders	50	2	Tier 4 (Final)	No
3	Air Compressors	50	1	Tier 3	Yes

Phase	Equipment Type	Horsepower	Quantity	Engine Tier	DPF Required?
7	Other Material Handling Equipment	120	3	NA - Gasoline	No
7	Off-Highway Trucks	250	5	Tier 4 (Final)	No
7	Tractors/Loaders/Backhoes	500	1	Tier 3	Yes
7	Cranes	250	1	Tier 4 (Interim)	No
7	Welders	50	3	Tier 4 (Final)	No
7	Air Compressors	50	2	Tier 3	Yes

Mitigation Measure M-BI-1a: San Francisco Garter Snake and California Red-Legged Frog Protection Measures

To avoid and minimize potential impacts on California red-legged frog and San Francisco garter snake during construction, the following measures shall be implemented:

- Only biologists approved by the USFWS shall participate in the capture, handling, or relocation of listed species. Pre-construction surveys shall be completed within 2 weeks prior to construction.

- Before the start of construction, a qualified biologist shall conduct an environmental awareness training session for all construction workers. Environmental awareness training may be provided by recorded video or via webinar. The training shall be repeated as new workers join the project. The training shall include a description of California red-legged frog and San Francisco garter snake (including photographs and their habitats), as well as other species that have the potential to be impacted by the project; general measures—as they relate to proposed project activities—that shall be implemented to conserve these species; penalties for non-compliance; and the limits of the construction work area. Construction workers shall sign a log indicating that they have received this training. No work (including material staging, fence installation, parking, excavation, or driving) shall be performed by individuals who have not received this training.

- A qualified biologist shall be present on site during all project activities at the Cañada Road segment and during vegetation clearing and grading activities from station 47+00 to the north end of the Bunker Hill segment that is closest to San Mateo Creek. The biological monitor shall have the authority to stop any action that may

result in take of listed species or unanticipated impacts on their habitats, provided that it does not risk the safety of the construction crews or the public.

- Before the start of work, a USFWS-approved biologist shall identify acceptable locations to which California red-legged frog may be relocated if the species is encountered in a project work location.

- Each morning before the start of work at the Cañada Road segment, a biological monitor shall inspect proposed project work locations—including those for staged materials and equipment, excavations, and fencing—to verify that no listed species are present within designated work areas.

- Before moving vehicles and equipment that have been parked on site for more than 30 minutes, operators at the Cañada Road segment shall check beneath these vehicles/equipment and notify the biological monitor if any reptile or amphibian is observed.

- Before the start of any ground-disturbing activities at the Cañada Road segment, ground-level vegetation that may provide cover for California red-legged frog and San Francisco garter snake shall be removed from excavation areas, including trench and HDD work locations. Immediately before removal, the biological monitor shall visually survey the area. Vegetation from station 125+00 to station 140+00 shall be cut using hand tools (including weed whackers and chain saws), and loose vegetation shall be removed to increase visibility. The biological monitor shall then visually survey the location a second time to verify that no listed species are present.

- Vegetation cleared from construction locations along the Cañada Road segment, from station 125+00 to station 140+00, shall be loaded into containers. On-site chipping may be allowed, subject to approval by the landowner. No cleared vegetation in this area shall be stored on site, unless in a container.

- All rodent burrows, soil crevices, and other potential subterranean retreats between stations 125+00 and 140+00 at the Cañada Road segment shall be inspected for the presence of California red-legged frog and San Francisco garter snake. After inspection, a USFWS-approved biologist shall excavate burrows, soil crevices, and

other potential subterranean retreats by hand—or as otherwise directed by the USFWS—to verify that no California red-legged frogs or San Francisco garter snakes are present. Burrow excavation shall take place between April 1 and October 15.

- At least 30 days prior to commencement of project activities, a Wildlife Exclusion Plan for the Cañada Road segment shall be submitted to the SFPUC for review.

- As detailed in the Wildlife Exclusion Plan, 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. The fencing, which can be made of wood, geotextile fabric, or other durable material, shall be a minimum of 3 feet in height and shall be buried at least 6 inches underground. In areas where this is infeasible, (such as on asphalt), alternative measures will be developed. Gates shall be installed to allow vehicles to enter from access roads. These gates shall be kept closed to the extent practicable during construction activities, and they shall be closed at the end of each workday. Exit funnels shall be installed every 100 feet, or where appropriate (determined by the PG&E biologist), to allow small vertebrates to leave work locations unharmed. A qualified biological monitor shall be on site during installation of the fencing to ensure that the fencing is installed as required. Relocation of federally listed species can only be done if authorized by the USFWS. Relocation of state-listed species can only be done if authorized by the CDFW. Once exclusion fencing is in place, it shall be maintained by PG&E via their contractor until all work within the enclosure has been completed. During construction activities, the biological monitor shall inspect the exclusion fencing each morning before the start of work and again at the end of each workday. Any damaged areas shall be reported to PG&E and shall be repaired by the contractor as soon as practicable. After construction is complete, the exclusion fencing shall be removed under supervision of a qualified biologist.

- Vegetation removal within San Francisco garter snake habitat along the Cañada Road segment shall take place between June 1 and October 15, to the extent feasible, so that any San Francisco garter snakes present can find a suitable alternative winter retreat before the onset of cold-weather conditions. Once these activities are completed,

temporary wildlife exclusion fencing shall be installed around construction work areas and shall be maintained to prevent the re-entry of California red-legged frog and San Francisco garter snake.

- Prior to dewatering trenches along the Cañada Road segment, these locations shall be visually surveyed by the biological monitor for the presence of San Francisco garter snake and California red-legged frog adults, egg masses, and tadpoles. Pumps used for dewatering shall be equipped with a mesh screen to help prevent the entrainment of California red-legged frog and San Francisco garter snake. Dewatering shall not take place during the California red-legged frog breeding season (December through March) if egg masses are present in aquatic habitats. Thirty days prior to commencement of project activities, PG&E shall submit a plan detailing the water-diversion method to the SFPUC for review.

- The limits of the access roads shall be staked and flagged or fenced so that vehicle traffic is confined to the designated areas.

- Speed limit signs shall be posted along the access roads within the entrances to designated construction work areas. All vehicles must adhere to a 15 mile-per-hour (mph) speed limit on access roads within the proposed project areas, or as otherwise required through agency or SFPUC permits.

- Signs shall be posted notifying all personnel of the potential presence of sensitive species on the access roads for the Cañada Road segment.

- The total area of construction activities shall be limited to the minimum necessary within the designated construction work areas to achieve the goal of the proposed project. All environmentally sensitive areas outside of designated construction work areas and access routes shall be avoided.

- All steep-walled excavations more than 2 feet deep shall be either covered at the end of each work day or equipped with one or more escape ramps positioned at no greater than a 45-degree angle, so that wildlife will not become entrapped. All open excavations shall be inspected for wildlife at the beginning of each day, before the start of work. Other entrapment hazards that are shallower than 2 feet will be

identified by the biological monitor, and measures will be taken to prevent entrapment (i.e., installation of covers or placement of escape methods, such as a branched object).

- All fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any riparian habitat or water body, unless a shorter distance is agreed to by the regulatory agencies or SFPUC due to specific site conditions. Before the start of project construction, PG&E shall develop a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and the appropriate measures to take if a spill occurs.

- 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.

- Following the completion of construction activities, areas with listed species habitat that are subject to ground disturbance will be restored pursuant to the Vegetation Restoration Plan identified in Mitigation Measure M-BI-1f, Habitat Protection Measures.

- If a San Francisco garter snake is found in a work location during proposed project activities, the individual shall be allowed to move out of the area on its own volition, as determined and monitored by the biological monitor.

- If a California red-legged frog is found inside an exclusion fence or in another work location where it may be harmed, it shall be moved to a previously identified relocation area under the procedure outlined in permits obtained from regulatory agencies. Only USFWS-approved biologists shall be allowed to handle, transport, and relocate California red-legged frogs.

- The USFWS-approved biologist shall ensure that any California red-legged frogs are relocated to an area where they are not imperiled by predators or other dangers.

Mitigation Measure M-BI-1b: Bat Roost Surveys and Avoidance and Minimization Measures

The Crystal Springs and Cañada Road segments contain trees and habitat that are potentially suitable for use as daytime roosting and foraging for pallid bats. To avoid potentially adverse

impacts on pallid bats, trees shall be evaluated for their potential to serve as maternity or daytime roosts. A qualified biologist (i.e., one familiar with the identification of bats and signs of bats) shall identify trees that might be potential day or maternity roosts. Prior to start of construction, a qualified biologist shall perform a survey for roosting bats or maternity colonies at the proposed project sites. Surveys shall focus on trees slated for removal and shall evaluate the probability for trees to host roosting bats. If day-roosting bats are found or evidence of use by bats is present, the following procedures shall be implemented before felling the tree:

- Trees shall be removed under warm conditions. Noise and vibrations—including running a chainsaw and making shallow cuts in the trunk (where bark has been), and striking the tree base with fallen limbs or tools, such as hammers—shall be created on the tree itself. Disturbance shall be near-continuous for 10 minutes, and then another 10 minutes shall pass before the tree is felled. When cutting sections of the trunk, if any hollows or cavities (such as woodpecker holes) are discovered, they shall be carefully checked for the presence of bats. Cutting shall be done slowly and carefully at all times. If possible, the trunk shall be sectioned near cavities to focus noise and vibrations, and hollows shall be opened by sectioning off a side.

- Additional measures may include monitoring trees, excluding bats from a tree until it is removed and/or restricting the timing of tree removal, and using a construction buffer to avoid disturbance of breeding colonies or disturbance of young before they are able to fly (for pallid bats, this period is between April and August).

Mitigation Measure M-BI-1c: Pre-construction Bird Surveys

Nesting birds and their nests shall be protected during construction by implementation of the following measures:

- Construction activities, including vegetation and tree removal, shall be conducted outside of the bird nesting season (February 1 to August 30), to the extent feasible.

- If construction will occur during the bird nesting season, a qualified wildlife biologist shall conduct pre-construction surveys within 7 days of the start of construction or after any construction breaks of 14 days or more to identify active nests. A nest is defined to be active for raptors if a pair of raptors is displaying reproductive

behavior (i.e., courting) at the nest and/or if the nest contains eggs or chicks. Surveys shall be conducted for the nesting birds and suitable habitat within 100 feet of the proposed project sites to locate any active passerine nests, and within 300 feet of the proposed project sites to locate any active raptor nests.

- If active nests are located during the pre-construction bird nesting survey, the wildlife biologist shall evaluate whether the schedule of construction activities could affect the active nest and the following measures shall be implemented based on their determination:

  - Construction determined not likely to affect the active nest may proceed without restriction; however, the wildlife biologist shall regularly monitor the nest to confirm that there is no adverse effect, and may revise their determination at any time during the nesting season.
  - If construction may affect the active nest, the biologist shall establish a no-disturbance buffer. The biologist shall determine the appropriate buffer to be in compliance with the Migratory Bird Treaty Act and Fish and Game Code 3503, taking into account the species involved, the presence of any obstruction—such as a building—within line-of-sight between the nest and construction, and the level of project and ambient activity (i.e., adjacent to a road or active trail). No-disturbance buffers for passerines typically vary from 25 feet and greater, and for raptors from 300 feet and greater. Active nests shall be monitored and exclusion buffer sizes increased if the monitoring biologist determines this is necessary based on disturbance behavior exhibited by nesting birds in proximity to project construction. For bird species that are federally and/or state-listed sensitive species (i.e., threatened, endangered, fully protected, or species of special concern), a PG&E representative, supported by the wildlife biologist, shall consult with the USFWS and/or CDFW regarding nest buffers.

- Inactive passerine nests may be removed at any time, but inactive raptor nests shall not be removed unless approved by the USFWS and/or CDFW.

- Removing or relocating active nests shall be coordinated by the PG&E representative with the USFWS/and or CDFW, as appropriate, given the nests that are found at the site.

- Any birds that begin nesting within the proposed project areas and survey buffers amid construction activities are assumed to be habituated to construction-related or similar noise and disturbance levels, and no work exclusion zones shall be established around active nests in these cases.

Mitigation Measure M-BI-1d: San Francisco Dusky-footed Woodrat

Prior to and during construction, before any clearing of, or work within, riparian, oak woodland, or coyote brush scrub habitat, a qualified biologist shall conduct a survey for San Francisco dusky-footed woodrat nests no more than 30 days prior to the start of construction in that area. Where nests are found, the following procedures shall be observed:

- If practicable, exclusion fencing shall be installed and a buffer of at least several feet around nests shall be maintained, and moving or bumping the nests—or logs or branches on which the nests rest—shall be avoided.
- If avoidance of nests is not practicable, CDFW shall approve any relocation and post monitoring plan. This plan shall include the following, although CDFW could require additional measures:
    - Woodrat houses shall be live-trapped each night until the project is complete.
    - If no woodrat are captured at a given house, the house will be slowly dismantled by hand so that it is not reoccupied.
    - Captured woodrat will be contained in shaded traps while the stick house is dismantled and the artificial shelter is installed. Each artificial shelter will be installed within approximately 50 to 200 feet of the capture location. Only occupied woodrat houses will be replaced with an artificial shelter, however all stick houses will be disassembled to prevent woodrat occupation of unused houses.
    - At the request of CDFW, remote cameras will be used to monitor five of the artificial shelters for at least one week; if the site is secure, the cameras may be left for approximately 30 days.

- A post-construction survey will be made at approximately one month following the trapping effort to determine activity at each artificial shelter. Within 60 days of the first post-construction survey, a report will be prepared for the ERO and CDFW in standard CDFW format that details the results of the live-trapping and initial monitoring of the artificial shelters, including results from the camera monitoring.

- ~~If avoidance is not practicable, nests shall be dismantled and the nesting material moved to a new location outside of the proposed project's impact areas so that it can be used by woodrats to construct new nests.~~

- ~~Prior to nest dismantling, all understory vegetation shall be cleared within the proposed project site or in the area immediately surrounding the nest, but the nest itself should not be removed at this stage. No trapping is allowed unless specifically permitted by the CDFW.~~

- ~~A location for the replacement nest material shall be identified by attempting to locate other woodrat nests in the area. Generally, replacement nest material should be placed outside of the construction work area and approximately 100 feet away.~~

- ~~Whether the active nest is on the ground or in a tree, the nest shall be nudged/shaken by a qualified wildlife biologist to cause the woodrats to leave the nest and seek refuge out of the impact area. For tree nests, a tarp shall be placed below the nest, and hand tools shall be used to dismantle the nest (either from the ground or from a lift). Dismantling the nest must be done by hand. If woodrat pups are found, nest disassembly shall be halted, the nest shall be reconstructed at the original location, and no work may occur until young are confirmed to be out of the nest, typically within a few weeks.~~

- ~~For dismantled nests, the existing nest material shall be piled at the base of a nearby hardwood tree (preferably an oak, willow, or other appropriate tree species, with refuge sites among the tree roots), outside of the impact area. If nearby habitat outside of the impact area lacks suitable structure, logs (approximately 4 feet long and 6 inches in diameter) shall be placed in undisturbed riparian or oak woodland habitat nearby, and the sticks from the dismantled nests shall be placed among these~~

~~logs. Ideally, the spacing distance between the newly placed piles of sticks should not be less than 100 feet, unless a qualified wildlife biologist has determined that a specific habitat can support higher densities of nests.~~

- ~~The biologist shall report findings – including the number of nests dismantled and reconstructed, as well as the number of woodrats observed – to the CDFW.~~

Mitigation Measure M-BI-1e: Fragrant Fritillary Protection Measures

A qualified biologist shall conduct surveys for fragrant fritillary within suitable habitat of the Cañada Road and Bunker Hill segments in the same year prior to construction and during the appropriate blooming period, to ensure that any plants that were not blooming during previous surveys are identified, as well as to obtain specific locations of previously identified plants. Prior to surface-disturbing activity, the locations of individuals within the construction work area shall be flagged and documented in the field using a sub-meter accuracy global positioning system (GPS) unit. The extent of the colonies shall be staked and marked in the field, and their boundaries collected using a sub-meter accuracy GPS.

Bulbs and seeds shall be collected by hand prior to mechanical topsoil salvage. Biologists shall record the approximate average depth at which bulbs are collected so that they can be replanted at the same average depth during site restoration. Topsoil salvaged from these areas shall be stored separately from other materials. Any bulbs exposed during the stripping of topsoil, as described in M-BI-1f, Habitat Protection Measures, shall be collected and stored until construction is complete. After collection, bulbs and seeds shall be stored in a cool and dry location.

Colonies removed during construction shall be restored. The restoration area for a colony shall be the extent of the removed colony, unless otherwise specified through agreement between the SFPUC and PG&E prior to restoration. If bulbs and seeds cannot be replanted by November 1, they will be properly stored and replanted the following fall, September 1 to October 31.

The Vegetation Restoration Plan, as required in Mitigation Measure M-BI-1f, shall contain the following specific monitoring and performance criteria for the restoration of fragrant fritillary:

- Areas replanted with fragrant fritillary bulbs and seeds shall be monitored for a minimum period of 5 years.
- Flowering fragrant fritillary shall be censused annually within the work area and an adjacent reference population. The number of detectable fragrant fritillary in leaf and/or flower is expected to vary in the work area and in the reference site from year to year, depending on precipitation, herbivory and other ecological variables.
- Restoration will be considered to have been a success if, in addition to success criteria identified for the overall vegetation restoration area, for the final period of 2 years of monitoring, the number of individual fragrant fritillary in the restoration area is at least 70 percent of the number censused in the construction work area during the 2015 blooming season (350 plants), as adjusted annually based on reference site plant counts. The numbers of fragrant fritillary counted in the reference population each year will be compared to the 2015 pre-construction reference population number to adjust the yearly plant targets. For example, if only half of the plants known to occur in the undisturbed reference population are present in any given year, the target number of plants for the reestablished population in the work area will be adjusted (lowered) proportionately.
- If the number of plants does not reach the performance criterion or if data from earlier years suggest the site is not on a trajectory to meet this success criterion, then adaptive management actions will be developed and supplemental activities may be performed. These could include supplemental salvage and transplantation, seed collection and plant propagation (on site only), or seed collection and direct sowing.

Mitigation Measure M-BI-1f: Habitat Protection Measures

The following general habitat protection measures shall be implemented for the proposed project:

- Prior to construction, PG&E shall coordinate with the SFPUC to prepare and equipment and material arriving on site is clean and free of soils and plant material,

and will include tire-wash requirements for equipment that has been driven off-road prior to arriving at the proposed project sites.

- Riparian and other wetland areas within the proposed project sites shall be denoted as environmentally sensitive areas and will be avoided during construction, to the extent practicable, or as otherwise directed by the regulatory agencies.
- Special-status plant colonies that have been identified for avoidance shall be fenced to prevent encroachment by construction activities.
- Crystal Springs lessingia individuals that cannot be avoided in areas to be cleared or grubbed shall have seed or vegetative material containing seed collected at the appropriate time, to be stored and distributed on top of the salvaged topsoil when it is redistributed.
- The topsoil from trenching through grasslands, and other plant communities with predominantly native plant species, shall be salvaged and stockpiled separately in upland construction work areas. Topsoil shall be stored in such a way that it is protected from invasive propagules, but does not overheat and kill off the native plant propagules. This shall include placing the stored topsoil where it is not in contact with non-native grassland soil and protecting it with weed-free straw mulch or other suitable cover. Following construction, the salvaged topsoil will be spread over the disturbed area from which it was removed, and the area will be graded to match the pre-construction natural grade. Once the salvaged topsoil has been spread and the area returned to the pre-existing topography, the area will be revegetated with locally collected (where possible) native grassland species. If topsoil in grasslands has a substantial population of non-native plant species, as identified in the Vegetation Restoration Plan, it may be buried below the subsoil during backfill, and the serpentine soils from deeper in the trench placed on the surface.
- Existing topography shall be restored to pre-project conditions to the extent possible. For herbaceous and grass-dominated riparian areas, it is expected that revegetation will naturally occur once the topography is restored using topsoil salvage requirements. Riparian areas will be revegetated with an appropriate mix of native plants, including species such as creeping wild rye, meadow barley, blue wild rye,

arroyo willow, California bay, and coast live oak, as shall be detailed in the Vegetation Restoration Plan.

- Prior to the start of construction, PG&E shall develop a Vegetation Restoration Plan in coordination with the SFPUC and the appropriate resource agencies. PG&E shall submit the Vegetation Restoration Plan to CDFW and SFPUC for review and approval. The Vegetation Restoration Plan shall include the following measures:

  - Mitigation shall consist of a minimum 1:1 ratio of on-site restoration of sensitive habitats and plant communities, including needlegrass grassland, serpentine grassland, riparian areas, coast live oak woodland, and shrublands. Tree replacement ratios shall be 3:1 for native oak trees.
  - The plan will identify specific areas of topsoil to be salvaged during construction for re-spreading, as well as areas where topsoil carries a greater percentage of non-native species; in the latter areas, topsoil may be buried under fresher material. PG&E shall develop seed mixes for each plant community, consisting of locally collected native species. Following construction, the sites will be prepared and stabilized with coir or weed-free rice straw (or jute netting material in steeper areas), and vegetation will be restored using the defined seed mixes appropriate to each area.
  - Additional plantings of shrubs and tree propagules will be completed in the appropriate plant communities during the fall or winter immediately following construction. Replacement shall occur within the temporary construction work spaces ~~easements~~ and adjacent areas, as determined in coordination with the SFPUC Natural Resources and Lands Management Division and other applicable resource agencies.
  - Non-native trees, such as Monterey pine, Monterey cypress, and eucalyptus, shall be replaced with native tree species if they meet the definition of "Significant" trees in the San Mateo County Significant Tree Ordinance (see Impact BI-1e).
  - To minimize the temporal loss of trees and shrubs, when site conditions permit, a variety of native trees and shrubs with different growth rates shall be planted to

ensure that nest and roost sites will be available in the short term for birds and bats.

PG&E will be responsible for ensuring that the Vegetation Restoration Plan is implemented under the guidance of a qualified biologist. The plan shall be designed such that it meets the following success criteria, or other equally protective success criteria, as approved by the resource agencies ~~through the permitting process~~:

- The restored site is composed of a mix of appropriate native species appropriate for each site, as outlined in the Vegetation Restoration Plan
- Cover of non-native invasive weed species shall not exceed 20 percent within serpentine grassland areas. This criterion may be revised, if approved by CDFW, if it is deemed that achieving 20 percent cover is not reasonable due to the presence of high levels of non-native invasive weeds adjacent to the project area.
- The restored site has at least 75 percent of the ~~absolute cover of~~ preconstruction baseline cover. ~~baseline vegetation present in reference sites that reflect the composition of the pre-construction corridor.~~
- After revegetation and restoration are completed, monitoring shall be conducted by a restoration specialist or biologist for a minimum of 5 years. The sponsor can choose to continue monitoring for an additional year for each year of below-average precipitation during the monitoring period. If by the end of monitoring the approximately 5.8 acres of serpentine grasslands temporarily disturbed by construction fails to meet the restoration success criteria, then PG&E shall provide for additional off-site mitigation at a ratio of two acres for each acre of serpentine grassland that fails to achieve success criteria, unless otherwise approved by the applicable regulatory agencies. Serpentine grasslands shall be evaluated as separate units based on their location along a given pipeline segment (i.e., Bunker Hill), or obvious breaks in the continuity or composition of the serpentine grassland communities within a given pipeline segment. Serpentine units for the purposes of monitoring the success criteria shall be identified in the Vegetation Restoration Plan.

- o Off-site mitigation could include funding of serpentine grassland restoration, such as through the Presidio Trust Stewardship Program in San Francisco.[225] Funding would be tied to the number of acres of serpentine grasslands restored through actions that may include tree and brush removal, exotic species management, grassland cover management (i.e., mowing, grazing, rotational tarping, and reseeding), and monitoring.

- ~~o Functions and values of the restored habitat are comparable to the baseline as characterized during the pre-project surveys. After revegetation and restoration are completed, monitoring shall be conducted by a restoration specialist or biologist for a minimum of 5 years to ensure that the success criteria, as identified in the Vegetation Restoration Plan, are met, and to identify any necessary remedial actions during the monitoring period. At a minimum, the success criteria shall be met for the final 2 years of the monitoring period. Remedial action—such as additional planting or seeding—shall be identified and implemented by PG&E, in coordination with the SFPUC, if any of the previously listed criteria are not met by the end of the monitoring period, and additional monitoring shall be required until the success criteria are met. Annual restoration monitoring reports shall be submitted to the SFPUC.~~

Mitigation Measure M-BI-1g: Mission Blue Butterfly Protection Measures

The following protection measures shall be implemented for the Crystal Springs segment work area west of I-280:

- Not more than 2 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.

[225] National Park Service and Presidio of San Francisco. 2001. Vegetation Management Plan and Environmental Assessment.

- 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.

Mitigation Measure M-BI-3: Protection Measures for Jurisdictional Water Bodies and Riparian Areas

The following measures shall be implemented during project design, construction, and post-construction, as relevant:

- Design and installation of pipeline spans and temporary bridges shall be such that the water flow (velocity and low-flow channel width) is not impaired.
- Prior to construction, the construction work area shall be flagged or fenced to identify its limits within the stream. Vegetation shall not be removed or intentionally damaged beyond these limits.
- Any materials placed in or adjacent to the stream that could be washed downstream shall be removed prior to the rainy season.
- Equipment shall not be operated in jurisdictional areas without prior written approval of the relevant resource agencies.
- Within 3 days following construction, all disturbed channels shall be restored to their original condition.
- No construction shall occur outside of the dry season (April 15 through October 15), unless approved by a relevant resource agency, as appropriate.
- The contractor shall stabilize exposed slopes within 3 days of completion of construction/installation activities. Erosion-control measures shall be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas.

Mitigation Measure M-BI-5: Pre-construction Tree Surveys and Tree Removal

A qualified arborist shall conduct a pre-construction tree survey of the riparian and oak woodland areas, identifying each tree to species and providing diameter at breast height. Any tree removal, pruning, or work within the drip line of trees—other than in paved areas—will be reviewed and approved by a PG&E arborist or their designee. All trimming and removal shall be conducted by a PG&E arborist.

Tree trimming and removal shall be minimized to what is required to implement the proposed project, and PG&E will evaluate the feasibility of further minimizing impacts on native trees through selective narrowing of construction work areas or other construction practices, and/or through a contractor incentive program to avoid trees. PG&E will clearly show Tree Protection Zones on project drawings. Any Significant or Heritage Trees, as defined in the San Mateo County Tree Ordinances, that cannot be avoided will be documented and replaced at a minimum 3:1 ratio. Tree replacement, maintenance, and monitoring requirements shall be included with the Vegetation Restoration Plan described in Mitigation Measure M-BI-1f, Habitat Protection Measures. The newly planted trees shall be monitored for a minimum of 7 years.

Mitigation Measure M-GE-3: Site Preparation

Areas that will receive fill shall be stripped of existing surface vegetation, organic topsoil, debris, and any other deleterious materials prior to over-excavation or placement of engineered fill. Any stripped organic materials or debris will not be reused as engineered fill.

Initial site grading shall include a reasonable search to locate soil disturbed by previous activity, undocumented fill soils, abandoned underground structures, and/or existing utilities that may exist within the areas of construction. Any loose or disturbed soil, void spaces made by burrowing animals, or undocumented fill shall be over-excavated to expose firm soil.

Mitigation Measure M-GE-6: Unanticipated Discoveries for Paleontological Resources

If construction crews discover fossils or fossil-like material during excavation and/or earthmoving operations, all earthwork and other types of ground disturbance within 50 feet, or as recommended by the paleontologist, of the find shall stop immediately until a qualified paleontologist—as defined by the Society of Vertebrate Paleontology guidelines—can assess the nature and importance of the find. Based on the uniqueness of the find, the qualified paleontologist may record the find and allow work to continue, or recommend salvage and

recovery of the fossil. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation of a report describing the finds. Fossil remains collected during monitoring and/or salvage shall be cleaned, repaired, sorted, cataloged, and deposited in a scientific institution with permanent paleontological collections, and a paleontological report shall be written. The paleontologist's recommendations shall be subject to review and approval by the ERO or designee.

Mitigation Measure M-HY-1a: Trench Plugs

Trench plugs (1-cubic-foot burlap sacks with rock-free earth) will be spaced at every 25 to 100 feet along the alignment. The spacing of the trench plugs will be based on the slope of the terrain, sharp changes (greater than 5 degrees) along the trench line, and locations where backfill material may cause the trench to act as a drain.

Mitigation Measure M-HY-1b: HDD Fluid Release Contingency Plan

PG&E shall prepare and implement an HDD Fluid Release Contingency Plan. The plan shall include specific frac-out contingency measures, material required to contain a frac-out or fluid spill, and control measures to ensure that drilling mud is contained. PG&E shall submit the HDD Fluid Release Contingency Plan to the CDFW for review (if required by that agency) at least 30 days prior to the commencement of project activities. If an HDD Fluid Contingency Plan is not required by the CDFW, PG&E shall submit the plan to the ERO at least 30 days prior to commencement of project activities. HDD-related project activities may not start until PG&E has received written notification either from the CDFW that the HDD Fluid Release Contingency Plan has been accepted, or from the ERO. PG&E shall ensure that all material necessary to contain a frac-out or fluid spill shall be on site and immediately available prior to the commencement of HDD activities.

Mitigation Measure M-HZ-2: Treatment of Unanticipated Hazardous Materials

If any stained or odiferous soils that may be considered hazardous materials are encountered during project-related excavation activities, PG&E shall immediately halt work and properly characterize the material, and shall take appropriate measures specific to the materials to protect human health and the environment.

PG&E will comply with all existing federal and state hazardous materials regulations. If the results of soil testing indicate that the project spoils are hazardous, PG&E shall manage and dispose of the waste through a separately contracted vendor certified through the Contractors State Licensing Board for hazardous waste removal, and send the waste to an appropriate Class 1 disposal facility. Hazardous spoils awaiting disposal shall be appropriately labeled and shall be contained or stockpiled with plastic encapsulation to prevent sedimentation.

Mitigation Measure M-HZ-3: Notify and Consult with Affected Schools

PG&E shall provide written notification of the proposed project to schools located within 0.25 mile of the project site, including West Hillsborough Elementary School and Highlands Elementary School. PG&E also shall consult with appropriate school or district personnel about the types of construction activities that shall occur and the estimated timing of such activities, as well as provide examples of the types of hazardous materials that could be used during construction activities.

Mitigation Measure M-HZ-6: Fire Avoidance and Suppression

PG&E shall clear trees and shrubs in accordance with utility corridor standards, which include no structures or trees within a 20-foot pipe zone (10 feet on each side of the pipeline). On-site chipping may be allowed, subject to approval by the landowner. If chipping is allowed, all debris less than 6 inches in diameter shall be chipped by the PG&E contractor if the site is within 100 feet of a service road. Chips shall be broadcast or hauled away. All wood from trimming and removals that is larger than 16 inches in diameter may be left on site in lengths of 8 feet or less. Tree debris less than 16 inches in diameter that is not chipped shall be hauled away. Project personnel shall be directed to drive on areas that have been cleared of vegetation; park away from dry vegetation; and carry water, shovels, and fire extinguishers in times of high fire hazard. PG&E shall also prohibit trash burning, and no smoking is permitted within SFPUC Watershed lands. Additionally, clearly marked fire-suppression materials and equipment shall be stored adjacent to all work areas and within staging areas.

The project sponsor and/or its contractor shall contact the SFPUC Natural Resources and Lands Management Division (NRLMD) Watershed Forester 24 hours in advance of work to confirm that conditions are suitable for construction. In addition, the project sponsor and/or its contractor shall submit fire prevention measures, particularly for any hot work (e.g., welding), to the

NRLMD Watershed Forester for review and approval. During construction, the project sponsor and/or its contractor shall contact the National Weather Service daily to confirm that local weather conditions are suitable for construction activity. The project sponsor and/or its contractor will cease all construction activities during red flag days (high fire hazard periods) or if directed to do so by the NRLMD Watershed Forester.

G. PUBLIC NOTICE AND COMMENT

G.1. COMMENTS RECEIVED IN RESPONSE TO NOTIFICATION OF PROJECT RECEIVING ENVIRONMENTAL REVIEW

A "Notification of Project Receiving Environmental Review" was mailed on July 3, 2014, to property owners of property within 300 feet of the project sites, responsible and trustee agencies, local jurisdictions, and interested parties. The following comments were received in response to the notification:

- Friends of Edgewood – Requested additional parcels crossed by Line 109 to be added to the California Environmental Quality Act document.
- California Native Plant Society (Santa Clara Valley Chapter) (CNPS) – Recommended identification, documentation (including mitigation), and avoiding impacts, to the highest degree possible, of rare plant species. The CNPS also recommended avoiding or minimizing impacts to serpentine soil areas. Agreed with and endorsed comment from the Committee for Green Foothills and Friends of Edgewood.
- Committee for Green Foothills (CGF) – Requested further consideration of the Ridgeline Route alternative so that all possible efforts be made to avoid construction on serpentine soils, and to avoid sensitive habitats in the Edgewood Park Preserve area. CGF asked if environmental review had been conducted for the portion of the Edgewood Park segment that crosses San Francisco Watershed-owned lands, and for another segment between Edgewood Park and the southern end of the Cañada Road segment. CGF also noted that the San Mateo County zoning of the Peninsula Watershed Lands is Resource Management, not Recreation Management. Agreed with San Mateo County Planning and Parks Departments, Friends of Edgewood, and CNPS.
- San Mateo Highlands Community Association – Requested that their comment letter from May 14, 2014, regarding Pacific Gas and Electric Company safety plans and the proximity of the pipeline to residential backyards and houses be addressed and included. The association requested clarification on maps showing gas lines going through backyards of homes in the Highlands community.
- Donald McFarlan – Expressed concern about general construction issues via telephone, including dust and/or dirt in his pool as his property is less than 100 feet from the pipeline.

- Cynthia D'Agosta (Executive Director at the Filoli Estate) – Inquired and expressed concern via telephone about any work on Cañada Road that might necessitate them to cancel any public reservations at the estate.

- U.S. Fish and Wildlife Service – Requested evaluation of the following federally listed species, and inclusion of appropriate avoidance, minimization, and compensatory mitigation measures: California red-legged frog, San Francisco garter snake, Bay checkerspot butterfly, mission blue butterfly, Marin western flax, white-rayed pentachaeta, San Mateo thorn-mint, San Mateo woolly sunflower, and fountain thistle.

G.2. COMMENTS RECEIVED IN RESPONSE TO THE PRELIMINARY MITIGATED NEGATIVE DECLARATION AND INITIAL STUDY

On September 9, 2015, the Planning Department circulated a Notice of Availability of and Intent to Adopt a Preliminary Mitigated Negative Declaration and Initial Study (PMND). Below is a summary of one phone call (September 29, 2015), one email (September 30, 2015) from a member of the public, and one written letter (October 30, 2015) received from the California Department of Fish and Wildlife (CDFW).

G.2.1. Phone Call and Email Comments from Craig Dremann

- Craig Dremann stated that grassland mitigation areas should achieve 95 percent cover within months, and would then probably drop back to existing levels. Mr. Dremann also stated that if restoration does not reach 95 percent cover in the first 6 months, there is a danger that the mitigation area could drop to zero, as it could be overwhelmed by weeds.

  The SFPUC is not aware of restoration projects that have included the same special-status plant species as are found in the project area and have restoration success criteria of 95 percent or better native cover. The goal of the restoration is to return disturbed areas to a condition that is comparable to pre-project conditions. Mitigation Measure M-BI-1f, specifies restoration success criteria: the restored site shall have at least 75% of preconstruction baseline cover, with no more than 20% cover of non-native invasive weed species.

- Craig Dremann stated that that PG&E went through a Caltrans parcel in Woodside where restoration failed, and also said to look at the PG&E Edgewood Preserve, where restoration was unsuccessful.

As the comment does not relate to the adequacy of the environmental analysis or conclusions in the PMND, no response is required. However, these restoration sites are discussed in Response 13 to the CDFW comment letter, below.

- Craig Dremann asked if the Edgewood Preserve lands are owned by the SFPUC or if there is an easement across County parks land.

  The commenter should request this information from the SFPUC, and as the comment does not relate to the adequacy of the environmental analysis or conclusions in the PMND, no response is required.

- Craig Dremann asked for permission to visit a 5-acre revegetated spoils pile for the Crystal Springs Bypass tunnel project and a 50-acre native grassland off of Highway 92, above the Crystal Springs Lake.

  The commenter should request access from the SFPUC, and as the comment does not relate to the proposed project, adequacy of the environmental analysis, or conclusions in the PMND, no response is required.

- Craig Dremann requested acreage information regarding the sensitive plant species that would be affected by the project. Specifically, the commenter requested "the numbers of acres of each of the ten species plus the number of acres of native grasslands that will be disturbed by the project."

  As shown in Table 22 on page 234 of the FMND, eight special-status plant species were identified during surveys. Five of these species may occur within work areas, but should be mostly or completely avoided through exclusion fencing. The approximate boundary locations for Crystal Springs lessingia, Marin western flax, and fragrant fritillary colonies, as well as point locations for individual plants, are shown in Figures 6B and 6C; the areas where the construction work areas or access roads overlap these locations reflect the areas of potential disturbance. Given the scattered nature of some of these species within the grassland communities, acreage estimates were not provided and were not required in order to perform the necessary impact analysis; however, the approximate number of individual plants that would be impacted is provided beginning on page 244 of the FMND. Approximately 18.4 acres of native grasslands would be disturbed, as shown in Table 23 on page 262 of the FMND.

- Craig Dremann requested vegetation transect data. Specifically, the commenter asked, "does your agency have any basic vegetation transects of each species plus the native grassland areas that are in

the project path, like percentage cover native grasses, percentage cover of the target plant, percentage cover exotic grasses, percentage cover exotic broadleaf, and percentage cover other wildflowers?"

In order to detect special-status plant species, biologists walked meandering transects within 20-meter-wide strips during the field surveys. The special-status plant survey reports do not provide the requested basic vegetation transect data that was requested. Individuals within colonies of special-status plant species found within the survey areas were counted, or, in the case of Crystal Springs lessingia, the populations were estimated based on densities arrived at by counting plants in randomly selected square-meter plots within mapped colonies. The estimated number of special-status plants that could be impacted during construction is provided in the special-status plants impact discussion beginning on page 244 of the FMND.

- Craig Dremann asked if any soil nutrient analysis is available from the top 2 inches of soil from areas containing the thickest concentrations of each special-status plant, or from soil testing of the native grassland areas.

  No soil nutrient analysis has been performed. Topsoil will be stripped and segregated during site-preparation activities, and will be returned after the trench has been backfilled. Discussions of topsoil-handling procedures are included under Site Preparation, page 12 of the FMND; Backfilling, page 15; Site Restoration, page 21; and Mitigation Measures M-BI-1e and M-BI-1f on pages 255 and 257 of the FMND.

- Craig Dremann asked, regarding the current fountain thistle restoration efforts, about the percentage of native plant cover that has been achieved and the best fountain thistle cover at this point.

  The SFPUC has not yet started to restore fountain thistle because this restoration project is still in the planning stages. The SFPUC will begin implementing some fountain thistle restoration tasks the winter of 2015-2016, but this will be primarily limited to invasive plant/scrub removal.

G.2.2. CDFW Comment Letter

CDFW provided comments on October 30, 2015 in response to the PMND. Although these comments were submitted past the close of the public review period, CDFW requested and was granted an extension.

Numerous concerns were raised regarding biological resources. In response to these comments, mitigation measures have been revised to be more effective, and new information has been added, but merely to clarify information in the PMND. No substantial revision of the PMND has been required. In response to these revisions, CDFW has agreed that the FMND, including its analysis and mitigation measures, is adequate.[226]

Comment 1: It appears that the cumulative impacts of the Project are being considered only on the SFPUC property and the immediate surrounding area. PG&E has replaced several miles of the same L109 transmission line north and south of the SFPUC property, and only a few of those replacement projects were mentioned in the MND. When analyzed in full and not just for the segments to be replaced on SFPUC property, the impacts to serpentine grassland and rare plants associated with this habitat as well as oak woodlands would potentially be significant.

Response 1: As noted on page 270 of the FMND, "the geographic scope of cumulative biological resource impacts encompasses the proposed project sites and nearby biologically linked areas that contain the same types of biological resources." Including the nearby biologically linked areas helped ensure that the analysis focused on the same species that would be affected by the proposed project. Most natural lands within the region are also within SFPUC property. The geographic region considered for the proposed project was not restricted to projects only on SFPUC property, as the analysis included the Line 109 Edgewood Gas Transmission Line Replacement Project in Redwood City and other projects located further to the east that are not located on natural lands, and therefore, are not likely to affect biological resources. However, in response to this comment, Table 4 has been updated to add the PG&E Line 109 Sharon Heights Project, the PG&E Line 109 San Francisquito Creek Project, and the PG&E Line 109 Farm Hill Boulevard Project. The cumulative impacts of these projects have been added to the analysis in the Aesthetics and Biological Resources sections of the FMND. Potential impacts are found to be less than significant, with mitigation measures.

Comment 2: Serpentine grassland is rare and tends to be localized and sporadic in its distribution. Historically, the serpentine areas in San Mateo County within and around the L 109 pipeline was contiguous, but became fragmented by the construction of Highway 280 (McCarten 1993). Much of the

[226] DeLeón, Suzanne. Environmental Scientist, CDFW. Email to Scott MacPherson, Environmental Planner, San Francisco Planning Department. April 20, 2016.

entire L109 pipeline occurs in what is left of the native plant populations associated with this (serpentine) habitat. Kruckeberg (1984) has shown that nearly ten percent of the plant species diversity in California is associated with the serpentine habitats. This Project is impacting one large area of serpentine habitat; however, the rest of the L 109 pipeline that has been replaced and will likely be replaced in the future has and will impact almost the entirety of serpentine habitat left in San Mateo County. The MND also states a 20-foot wide right-of-way centered above the pipe would be kept permanently clear of vegetation higher than 18 inches. This could potentially be a permanent impact along this pipeline as well as the rest of the pipeline to be replaced, and the cumulative impact of permanently managing this habitat should be analyzed in the MND.

Response 2: Serpentine outcrops in San Mateo County are associated with the San Andreas Fault and are found near Crystal Springs Reservoir, Edgewood Nature Preserve, and at Jasper Ridge Preserve.[227] The Pacific Gas and Electric Company (PG&E) Line 109 pipeline passes through serpentine habitat near Crystal Springs Reservoir and Edgewood Nature Preserve, but it would be an overstatement to suggest that past and future replacement projects along the pipeline would impact almost the entirety of serpentine habitat left in the County. The majority of Line 109 projects completed to date were located within paved roads, ruderal communities, and residential areas, and the proposed project contains a total of 4.9 acres of serpentine bunchgrass grassland (2.49 acres of serpentine bunchgrass grassland for the Bunker Hill segment and 2.41 acres of serpentine bunchgrass grassland for the Crystal Springs segment). It is not known how many acres of serpentine grassland occur in the County, but geologic data indicate that approximately 1,400 acres of undeveloped land with serpentine substrate exist in the County.[228]

As noted on page 232 of the FMND, serpentine bunchgrass is a diverse grassland type and is listed as a natural community of special concern by the California Natural Diversity Database (CNDDB). Project work areas were developed to avoid this plant community and sensitive plants where possible. Examples include the horizontal directional drilling (HDD) planned for the Bunker Hill segment, configuration of the work area north of Bunker Hill Drive that largely avoids the serpentine grasslands, and narrowed work areas south of Haynes Road and near Windemere Road for the Crystal Springs segment.

[227] U.S. Fish and Wildlife Service. 1998. Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area.
[228] GANDA. 2015. San Mateo County Serpentine Substrates. Geologic Map of the San Francisco Bay Region, http://geomaps.wr.usgs.gov/sfgeo/geologic/downloads.html . Removed from the map are areas of serpentine substrates that are now developed which is where the 1,434 acres of undeveloped serpentine grassland was calculated from.

To protect the pipeline from root damage, brush and trees would not be allowed to persist over the pipeline. Instead, grassland vegetation would be allowed. This is a long-standing operational policy of PG&E, and, as stated on page 29 of the FMND, "the pipeline replacement would require no change to existing operation and maintenance activities." While the frequency of maintenance activities may fluctuate from that of the past, the existing pipeline corridor does support serpentine bunchgrass and would continue to do so in the future upon completion of the proposed project; thus, the impacts are not considered to be permanent. In the absence of disturbance by fire or livestock grazing, coyote brush scrub and other scrub and woodland plant communities have likely encroached on formerly grassland communities. Older aerial photographs of the project area ranging from 1993 to 2013 show that coyote bush scrub on Buri Buri Ridge has become somewhat more extensive and much more dense over this 20-year period.[229] To the extent that these woody plant communities are not allowed to regrow over the 20-foot PG&E easement, a net gain of serpentine bunchgrass could result.

Comment 3: As stated above, the MND does provide some discussion of the other segments of Line 109 Replacement Project. Under Impact C-BI-1, it states the Line 109 Edgewood Gas Transmission Line Replacement Project includes approximately 0. 79 mile of pipeline replacement approximately 1.3 miles south of the Canada Road segment, and likely crosses habitat for the bay checkerspot butterfly, a federally listed species. It further states that, it is conservatively estimated that that project would temporarily disturb up to approximately 10 total acres of land during construction. It is not clear if the MND analyzed the cumulative impacts of the 1.3 miles south of the Canada Road segment along with this Project since habitat for the bay checkerspot butterfly also exists for this project on SFPUC lands and will be impacted.

Response 3: The proposed project crosses critical habitat for Bay checkerspot butterfly in the Bunker Hill Segment on Pulgas Ridge. Part of the Line 109 pipeline that is being trenched follows the eastern margin of this tract, near the disked firebreak and east of the access road, for approximately 250 feet. While it contains some serpentine grassland and native floral resources, it is one of the more disturbed areas because it is at the eastern margin of the grassland and has a history of disturbance. The portion of the Line 109 pipeline northwest of this section passes under the higher quality serpentine grassland/critical

[229] Google Earth. 2013. Images of Buri Buri Ridge from 1993 to 2013. http://www.google.com/earth/index.html. Accessed on August 27, 2013. As reported in Orion, 2013.

habitat that occurs west of the eastern firebreak/margin and east of the access road; this portion of the pipeline is planned to be installed using HDD. The cumulative impacts on Bay checkerspot butterfly are discussed on pages 273 and 274 of the FMND, and the impacts were determined to be less than significant. This included consideration of the approximately 2 acres of Bay checkerspot butterfly habitat that would be temporarily impacted by the proposed project, and the temporary impacts on Bay checkerspot butterfly habitat from the Line 109 Edgewood Gas Transmission Line Replacement Project, which included just a portion of the total of 10 acres estimated to be impacted by that project.

Comment 4: Past projects that are not included in the cumulative impact analysis include the removal of 830 individual Marin western flax plants, a species listed as threatened under CESA and ESA, during construction activities involved in replacement of the transmission L109 line in Woodside, San Mateo County in July of 2014. The MND states that Marin western flax colonies located within the construction work area could potentially be significantly impacted by vehicle movement or trampling by foot traffic. Impacts to several populations of Marin western flax could result in a significant impact to the population as a whole.

Response 4: PG&E's Line 109 Farm Hill Boulevard and Sharon Heights replacement projects near Woodside are between 2.5 and 6 miles from the southern end of the Cañada Road segment, and were not considered within the geographic scope of the cumulative analysis. However, in response to this comment and Comment 1, three past Line 109 replacement projects have been added to the Final MND for the purposes of cumulative impact discussion and analysis. Marin western flax is found along the Bunker Hill and Crystal Springs segments of the proposed project. As was shown in Figures 6B and 6C of the FMND, Marin western flax plants do not occur directly in line with the trenched pipeline locations; rather, they are adjacent to, along the edge of, or outside of work areas. As stated on page 272 of the FMND, this species would be fenced for avoidance in accordance with Mitigation Measure M-BI-1f. Therefore, cumulative impacts on Marin western flax would be less than significant.

Comment 5: Also mentioned in the MND but not analyzed, is the transmission Line 109 San Mateo Creek Pipeline Replacement Project which includes replacing approximately 0.51 mile of pipeline north of the Bunker Hill segment. This segment crosses habitat for San Francisco garter snake, California red-legged frog, and San Francisco dusky-footed wood rat, all of which are species with associated habitat types that are present in the proposed Project. The MND states the specific amount of potentially suitable habitat for California red-legged frog or San Francisco garter snake that would be impacted by the Line 109 San

Mateo Creek Pipeline Replacement Project is not known. This is a component of the proposed Project and should be analyzed at a minimum as cumulative impacts in this CEQA document.

Response 5: The San Francisco Planning Department does not have a project description for the Line 109 San Mateo Creek Pipeline Replacement Project at this time, and it is not a component of the proposed project. The Line 109 San Mateo Creek Pipeline Replacement Project is listed as a future cumulative project in Table 4 on page 33 of the FMND, and is qualitatively analyzed in the cumulative analyses. Without a description of this cumulative project, a specific amount of habitat disturbance is not available. However, the potential effects on San Francisco garter snake, California red-legged frog, and San Francisco dusky-footed woodrat from this project were included in the cumulative effects analysis on pages 273 to 275 of the FMND, which made conservative assumptions about the amount of acreage that could potentially be impacted by that project. When an application for the future Line 109 San Mateo Creek Pipeline Replacement Project is submitted by PG&E, the San Francisco Planning Department will perform a project-specific analysis under the California Environmental Quality Act (CEQA).

Comment 6: Other Line 109 construction projects discussed in the MND but potentially not analyzed as a cumulative impact include the Line 109 4B Replacement Project, completed in 2012, which resulted in impacts to approximately 20 Crystal Springs lessingia plants, a species designated as 1 B.2 by the California Rare Plant Rank.

Response 6: The Line 109 4B Replacement Project is listed as a cumulative project in Table 4 on page 33 of the FMND, and is analyzed in the cumulative analyses. While no complete census of Crystal Springs lessingia (*Lessingia arachnoidea*) on SFPUC Watershed Lands (which contain the vast majority of all Crystal Springs lessingia) has been conducted, entries in CNDDB from very limited surveys suggest well more than 500,000 individuals of this annual plant may occur along the Skyline Boulevard corridor. While this species has a limited distribution, it is relatively common where it does occur. Cumulative impacts on Crystal springs lessingia from Line 109 4B were determined to be less than significant on page 272 of the FMND.

Comment 7: The MND states trench breakers which intend to keep subsurface water from migrating along the pipeline trench would be installed approximately every 25 to 100 feet as a minimization measure to protect a Crystal Springs fountain thistle mitigation area. It doesn't appear that this change in subsurface hydrology which occurs from trenching, has been analyzed for impacts to rare serpentine or

plant populations for the entire pipeline trenching area, or for the other pipeline projects. A hydrological change is a potentially significant cumulative impact and permanent impact that would not be mitigated to a lesser-than-significant level given that the pipeline replaced in the other segments not included in the CEQA document were also located in serpentine grasslands. The MND should discuss hydrological change and provide similar protective measures as the trench breakers to mitigate for that impact.

Response 7: Mitigation Measure M-HY-1a on page 290 of the PMND/Initial Study specifies trench plugs spaced every 25 to 100 feet along the alignment. As this design is to ensure that the project would minimize the downslope flow of water by reducing the voids in the soil to prevent water from being conveyed down the pipeline trench and would not alter native hydrological conditions, no further analysis of subsurface hydrological change is warranted.

Comment 8: The MND states some rare plant populations will be avoided by boring underneath them instead of trenching, however, there is no discussion on why this method is not being used for all segments of the pipeline within sensitive habitat areas. The feasibility of boring as an avoidance measure should be analyzed for all areas of rare plant populations and serpentine grassland to reduce impacts to a less-than-significant level.

Response 8: PG&E did not propose boring as an avoidance measure at other locations, with the exception of the two sections of HDD along the Cañada Road and the Bunker Hill segments, as noted on page 17 of the FMND. The proposed project utilizes HDD, as noted in the comment, to avoid impacting sensitive biological resources. No other construction activities within sensitive habitat would result in significant impacts that would not be mitigated to a less-than-significant level. As the proposed project was found to have less than significant impacts, analysis of possible alternatives was not required.

Comment 9: CDFW is unable to determine if the minimization measures included in the MND are sufficient to ensure that the Project will not cause significant environmental impacts. Many of the mitigation measures defer to consultation with SFPUC and only sometimes with the appropriate regulatory agencies. Mitigation Measure M-BI-1a states wildlife exclusion fencing shall be installed as determined by the PG&E biologist. CDFW recommends the specifics of a wildlife exclusion fencing plan such as the fence design, location, timing of installation and removal be included in the MND due to the presence of special-status animal species such as the California red-legged frog and San Francisco garter

snake. Additionally, CDFW and the U.S. Fish and Wildlife Service should provide final approval of the wildlife exclusion plan.

Response 9: Mitigation Measure M-BI-1a on page 246 of the FMND describes the performance standards that the wildlife exclusion fencing must meet; these standards shall be included in the Wildlife Exclusion Plan. Specifics of the performance standards include the type of materials, fence height, installation depth, gate operation, and exit funnels. Installation of the fences is required to be completed following vegetation removal within San Francisco garter snake habitat. The measure also requires monitoring and maintenance of the fence, and specifies removal of the fence after construction has been completed. Because performance standards for the Wildlife Exclusion Plan are included in the mitigation measure, mitigation is not deferred. CDFW and the U.S Fish and Wildlife Service could require final approval of the Wildlife Exclusion Plan during the 1600 and Section 7 consultation processes, respectively.

Comment 10: Mitigation Measure M-BI-1f states a Vegetation Restoration Plan shall be developed and Mitigation Measure M-BI-5 states the tree protection zones will be included in the Vegetation Restoration Plan. Formulation of mitigation measures should not be deferred until after the MND is final, this can lead to improper deferral of the actual environmental assessment. The mitigation measures should be fully developed, clearly defined and made available to agencies for review, comment and approval. The MND should articulate specific performance criteria that would ensure adequate mitigation measures are implemented. Performance criteria are discussed further and articulated below for serpentine grasslands.

Response 10: The commenter incorrectly states that Tree Protection Zones will be included in the Vegetation Restoration Plan. Tree Protection Zones were identified in the arborist reports developed for the three segments, and Mitigation Measure M-BI-5 states that PG&E will clearly show Tree Protection Zones on project drawings. Mitigation Measure M-BI-1f (on page 257 of the FMND) does not defer the formulation of mitigation, but rather, includes specific measures required for inclusion in the Vegetation Restoration Plan, along with specific minimum performance standards of the restoration. Specific requirements include measures to reduce the potential for introduction and spread of noxious weeds, fencing and avoidance of environmentally sensitive areas and special-status plant colonies, collection of seed and vegetative material, topsoil salvage and treatment, restoration of existing topography and revegetation with native plants, plant community and tree replacement ratios, success criteria, timing, and other details. See the response to Comment 11 for additional discussion of performance criteria for serpentine grasslands restoration. Impacts, including the acreage of various plant communities that

would be affected and the number of oak trees that would be removed, were determined based on the work areas and construction procedures shown in project maps. Mitigation Measure M-BI-1f also requires that the Vegetation and Restoration Plan be submitted to CDFW for review and approval.

Comment 11: CDFW is concerned specifically about the Habitat Protection Measures and Vegetation Restoration Plan. The MND states the Project's impacts to rare plants and habitats will be mitigated to a less-than-significant level by restoring the special-status plant species and serpentine grasslands to their pre-construction baseline conditions. Part of the mitigation measures include collecting and salvaging seeds and topsoil, storing it and then redistributing it in the mitigation and construction areas. However, this mitigation has not been successful in the past and CDFW has not found any reference sites that have restored any of the rare plants that will be impacted by this project by salvaging the seeds and topsoil and translocating or replanting them.

Response 11: Most of the local serpentine restoration programs found in the literature are related to attempts to return native species to locations where they are largely absent. This is different from and more challenging than the mitigation requirement for the proposed project, which is to return the disturbed work areas to pre-project conditions.

The Inspiration Point restoration at the Presidio, as described in the Inspiration Point Adaptive Management Plan, has included removal of nonnative trees, removal of tree litter and duff, and intensive revegetation, including collection and distribution of seed. These actions have resulted in an increase of occupied Presidio clarkia habitat from 0.32 acre in 1997 to 2.5 acres in 2010. Other actions have led to preliminary results for Marin dwarf flax that point to their success over controls. The Adaptive Management Plan includes collection of data every 5 years to detect and describe broad changes in vegetation communities, and lists percent cover management objectives at various sites. In 2009, the sites typically met objectives for percent cover of exotic species, but fell short of objectives for native perennial grasses.[230] The target objectives are not based on comparison to references sites, as there are no sites within the Presidio that are closely analogous. Comparisons with other serpentine sites in the Bay Area indicate that the objective of 20 percent or greater cover for native perennial grass is high, although

[230] Niederer, Chrystal, Stuart B. Weiss. 2010. Inspiration Point Adaptive Management Plan. Creekside Center for Earth Observation. Menlo Park, CA.

attainable with planting. The Presidio website states that approximately 20 acres of serpentine habitats have been restored or enhanced over the last decade.[231]

Other serpentine grassland restoration sites in the Bay Area include timely disturbance practices as a key management tool for enhancing the native grasslands. The East Bay Regional Park District began restoration of the Skyline Serpentine Prairie in Redwood Park in 2009.[232] It has found that serpentine grasslands respond favorably and quickly to mowing to increase bare ground and native annual forbs while decreasing non-native annual grasses. It also found that tree removal was an effective technique for creating more Presidio clarkia habitat. The Santa Clara Valley Transportation Authority (VTA) acquired a 548-acre site at Coyote Ridge, south of San Jose, as compensation for known and predicted impacts on serpentine communities.[233] Livestock grazing is the primary management tool at this site. In general, the monitoring activities in 2011 documented that management of the VTA Coyote Ridge Property continues to maintain sensitive habitats and allow for the persistence of the rare and sensitive species that depend on these habitats.

Based on other restoration projects in the Bay Area and adaptive management, which is included in Mitigation Measure M-BI-1f, it is anticipated that the restoration of native serpentine bunchgrass habitat and associated sensitive plant species would be successful following the work that is conducted in these plant communities. The goal of the restoration would be to return disturbed areas to a condition that is comparable to pre-project conditions. No translocation of topsoil or rare plants is proposed. Mitigation Measure M-BI-1f, on page 257 of the FMND, specifies a restoration success criterion specifies restoration success criteria: the restored site shall have at least 75% of preconstruction baseline cover, with no more than 20% cover of non-native invasive weed species. The very location where the project would be completed and where serpentine bunchgrass habitat was found is within an area that was previously trenched and graded for installation of the existing Line 109 pipeline. The additional careful topsoil segregation and restoration practices that were unlikely to have been implemented when the pipeline was first installed would help ensure that the existing ecological conditions that currently allow these

[231] Presidio Trust. 2015. The Presidio: Dune + Serpentine Habitat. http://www.presidio.gov/about/Pages/dune-and-serpentine-habitats.aspx. Accessed on November 20, 2015.
[232] Naumovich, Lech, Christal Niederer, Stuart Weiss, 2015. Serpentine Prairie Restoration Project, Redwood Regional Park. 2014 Annual Report: Year 6.
[233] Weiss, Stuart, Christal Niederer, James Quenelle, 2012. VTA-Coyote Ridge Property, Year 5 (2011) Monitoring Report. Prepared for Santa Clara County Open Space Authority, San Jose, CA.

plants and plant communities to persist would be replaced. This, along with the required long-term monitoring, help to provide added confidence that successful restoration would be achieved. The Mitigation Measure also includes a safety net of off-site mitigation in the event on-site restoration is not successful.

Comment 12: The California Department of Transportation (Caltrans) issued a contract to the University of California at Davis in 2002 to restore two acres of serpentine grasslands with only one species of native grass and with no other native or special-status plants included. After over ten years of effort, five years of re-sowing attempts and a decade of weed management, only one of the two acres is 80% native cover (http://www.ecoseeds.com/road.test.html).

Response 12: It is noted that, as stated in the supplied reference for this restoration project, it is extremely challenging and expensive to "get … native grasslands established from scratch." It is acknowledged that establishing and maintaining native grasslands is challenging, particularly in a setting such as the one that is referenced, where it is surrounded by non-native grassland species that continually provide a source of seed to compete with the native species, and where there is a potential for pollutants from the adjacent highway to increase nitrogen fertility in the soil, to the detriment of native species. As previously noted and described in the FMND, the proposed project would not be restoring native grassland from scratch, but rather, it would be restoring the ecological conditions that currently exist at the project site, which allows for the current assemblage of plant species to exist.

Comment 13: PG&E has also conducted two serpentine grassland restoration projects after clearing and grubbing the land for its pipeline replacement projects in Edgewood County Park Preserve in 2013 and in the Town of Woodside in 2015 (Dremann 2015). The Woodside Project was approximately 10 acres of disturbed habitat and also included mitigation to restore the Marin western flax habitat, plus an area of the native Danthonia prairie. Neither project appears to be successful to date in restoring the habitat to pre-construction conditions. In the Edgewood Preserve, the new dominant plants were composed of exotic species after construction, restoration and native seed sowing. The weed grasses including wild oats, annual ryegrass, foxtails, and red brome made up 40% cover of the restoration area. The new exotic grasses were seen in the construction site, but they were not seen in the undisturbed grassland reference area. Thirty three percent cover at the restoration site was composed of exotic red clover and filaree. These plants were not seen in May 2015 within the undisturbed grassland reference plot transect. The two restoration plots in Edgewood Preserve are still dominated by exotic weeds covering a reported 0.34 acre

(Dremann 2015). After 160 hours of weeding and additional seeding with native species, the two plots are still 64-80% exotic plant cover in 2015, compared to the undisturbed reference site, which is only 23% weed cover.

Response 13: The comment is not related to the project that was analyzed in the PMND/Initial Study. PG&E reports that they have a restoration plan that has been approved by the Town of Woodside, this plan is being followed, and the site is responding as can be expected after 7 months of restoration during drought conditions. PG&E provided a table documenting compliance with the restoration plan.[234]

PG&E completed pipeline safety work at two sites in Edgewood Park in late 2013. Prior to project disturbance, the two sites supported serpentine bunchgrass grassland dominated by native purple needle grass as well as non-native rye grass, soft chess, and wild oat. The grassland also contained native perennial blue wildrye grass, hayfield tarweed, California poppy, golden-carpet wild buckwheat, soap plant, and yarrow. Before construction, approximately 50 pounds of seed and native plants were grubbed from the work sites. At each site, topsoil was stripped and stockpiled. PG&E subsequently backfilled the excavations, replaced the topsoil, and replaced the grubbed seed and plants on the soil surface. The sites were seeded with a mixture of California poppy, yarrow, purple needle grass, and blue wildrye grass.[235] The 2014 annual monitoring report for the project documented a higher percentage of native cover at the larger restoration site #1 than the smaller restoration site #2. It documented 160 hours of non-native vegetation removal by hand, and supplemental seeding in March and November. Additional non-native plant-removal efforts were recommended for April and May 2015. The monitoring conducted in 2015 documented an increase in average native cover at site #1 from 17.8 percent in 2014 to 55 percent in 2015, and at site #2 from 4 percent in 2014 to 16 percent in 2015. Native cover at the reference site was documented as 44 percent, and non-native cover was documented as 37 percent. Crews spent 116 hours removing non-native vegetation during March and April in 2015.[236]

[234] PG&E. 2015. Email to City and County of San Francisco Regarding the Farm Hill Project Restoration Project and Seed Collection for the Line 109 Project.

[235] Mieske, Andy. 2014. 2014 Annual Restoration Report for the Edgewood County Park Restoration Project Gas Line 132 at Mile Post 25.05. Prepared for Pacific Gas and Electric Company, San Ramon, CA.

[236] PG&E. 2015. Gas Line 132 In-Line Inspection Project Edgewood County Park Restoration Sites. Summary Update. June 17, 2015.

PG&E reports that restoration work for the Woodside Project, referred to as the Farm Hill Project, was forced to begin in late March 2015 due to circumstances beyond their control. Both of these projects are early in the restoration process. In particular, restoration at the Farm Hill Project site only began in 2015; thus, it is too early to draw conclusions regarding the potential success or failure of restoration at this site. The Edgewood Park restoration work appears on target to meet the success criteria in the approved restoration plan, despite the severe drought conditions.

Comment 14: The Woodside restoration area project began in 2015 and is still currently covered with rice straw mulch along the entire 7,000 feet of pipeline except for two test plots and the site where the threatened western dwarf flax was removed and is being restored. One plot is bare and not covered with topsoil; the second has no rice straw and the topsoil was put back. Because of the drought, very few seedlings were sprouting in these plots by May 2015 (Dremann 2015). PG&E was also charged with restoring the staging area for this project to pre-existing conditions. The cover of the staging area by June 20, 2015 consisted of 58% California poppies and 2% native Plantago. The other 40% cover were exotics including 14% wild oats, 7% yellow star thistle, 6% vetch, 4% yellow sweet clover, 4% ryegrass, 2% mustard and 2% ripgut grass. No seedlings of any of the six native seeds sown in February were seen in May or June (Dremann 2015). A ryegrass species has also sprouted at this site, growing at nearly 100% cover at the edge of the construction site. The seed heads of this new ryegrass do not match those of the ryegrass growing further into the undisturbed serpentine grassland and it is not known how this highly invasive ryegrass was introduced (Dramann2015).

Response 14: Refer to the response to Comment 13 regarding the restoration status of the Woodside (Farm Hill) Project. PG&E reports that the Farm Hill Project is restoring 6.21 acres of serpentine grassland, 0.5 acre of danthonia prairie, and 4.65 acres of upland non-native grassland. The objective of PG&E's approved restoration plan is to return the site to as close to pre-project conditions as possible. The rye grass was identified on a small section of the site near some homes by the danthonia prairie restoration area, and according to PG&E, will be managed as part of their weeding commitment for the site. Prior to commencement of work on the project, PG&E reports that a large amount of yellow star thistle was cut, bagged, and removed from the site. During two weeding efforts in 2015, PG&E removed

thistle from the site prior to setting seed. Additional restoration efforts, including application of procured seed, were planned to occur prior to the start of the rainy season.[237]

Comment 15: CDFW believes the proposed mitigation measures for restoration, translocation and re-vegetation have not been successfully proven for rare serpentine plants and the Lead Agency cannot make the determination that restoration will result in a less-than-significant impact. Portions of the serpentine grasslands in this area are among the most pristine grasslands left in California, in terms of diversity and in terms of the lack of nonnative weed invasive species.

Response 15: See response to Comment 12 regarding the basis for confidence in the proposed restoration measures. It is also noted that subsequent to this initial comment, CDFW has concurred that with the revised Mitigation Measure M-BI-1f, the proposed project would have a less than significant impact.

Comment 16: Some areas of the Woodside PG&E project previously mentioned were mapped as non-native grasslands. However, when restoration ecologists walked through the area in April 2015 with PG&E staff, the area contained a large stands of the native Melica grass, growing about two feet tall (personal communication, Craig Dremann, Restoration Ecologist).

Response 16: The comment has been noted. As the comment does not relate to the adequacy of the environmental analysis or conclusions in the PMND/Initial Study, no response is required.

Comment 17: Due to the sensitive and limited nature of this natural community and the uncertain effectiveness of potential restoration measures, CDFW provides the following mitigation recommendations to reduce impacts to less-than-significant:

1) Provide permanent protection and management of serpentine grasslands and native plant communities, and

2) Provide for restoration effectiveness by a) delaying Project activities in those segments of the pipeline replacement until local seed have been collected and methods to successfully propagate native and rare plants in adjacent small-scale test plots are established or b) require restoration success criteria, approved

[237] PG&E. 2015. Email to City and County of San Francisco Regarding the Farm Hill Project Restoration Project and Seed Collection for the Line 109 Project.

by CDFW, that include the potential for repeated, adaptive restoration efforts and require financial security until restoration success is achieved. If restoration is unsuccessful after repeated attempts, require additional permanent protection and management of natural habitat. Successful restoration should also include seed stock retention or propagation to ensure adequate plant material, prevention of weed and exotic plants being accidentally introduced into the revegetation sites and aggressive management of weeds and invasives before they become established.

Response 17: The commenter recommends that the mitigation include permanent protection and management of serpentine grasslands and native plant communities. Mitigation measures in the PMND/Initial Study address impacts on serpentine grasslands and native plant communities to ensure that impacts would be less than significant. These include Mitigation Measures M-BI-1e, Fragrant Fritillary Protection Measures, M-BI-1f, Habitat Protection Measures, and M-BI-5, Pre-construction Tree Surveys and Tree Removal. These mitigation measures require pre-construction planning and preparation (surveys; vegetation mapping, flagging, and fencing; development of an Invasive Weed Control Plan; seed collection; and development of a Vegetation Restoration Plan, to be approved by CDFW) during construction (topsoil salvage and replacement, bulb collection and storage, weed control, impact avoidance areas, and tree pruning measures), post-construction activities (seeding, planting, monitoring, and maintenance) and off-site mitigation, if necessary. Additional mitigation in the form of permanent protection and management is not necessary to reduce the impacts to a less-than-significant level.

Seed collection and amplification began in 2014 under botanist supervision[238] and the time to establish test plots for propagation of native plants would potentially compromise PG&E's commitment to comply with CFR 192, Subpart O, which specifies minimum requirements for gas transmission pipeline integrity management programs to increase the reliability and integrity of natural gas transmission pipelines, including Line 109. In 2015, PG&E collected native and local seed from the Line 109 project area under an SFPUC access permit for seed collection. Local and native seed was collected in May and July 2015 under botanist supervision within the SFPUC watershed.[239]

[238] PG&E. 2015. Email to City and County of San Francisco Regarding the Farm Hill Project Restoration Project and Seed Collection.
[239] Ibid.

In addition, Mitigation Measure M-BI-1f, Habitat Protection Measures, has been modified to require review and approval of the Vegetation Restoration Plan by CDFW.

Comment 18: CDFW is willing to discuss these alternative compensation methods in further detail to help facilitate a proper effective mitigation and monitoring plan for impacts to the serpentine and rare plant species associated with the Project.

Response 18: The San Francisco Planning Department, TRC, and CDFW participated in two conference calls on February 1 and 8, 2016 to discuss CDFW comments on the proposed project and in particular the mitigation measures for restoration that is required per CEQA. After the conference calls and subsequent follow up between the Planning Department and CDFW, the following mitigation measures have been updated in this Final MND: Mitigation Measure M-BI-1d: San Francisco Dusky-footed Woodrat, Mitigation Measure M-BI-1f: Habitat Protection Measures, and Mitigation Measure M-BI-5: Pre-construction Tree Surveys and Tree Removal.

Comment 19: The MND states that San Francisco dusky-footed wood rat (SFDW) is known to occur on the property. Some of the measures included in the MND may be considered avoidance or minimization measures for SFDW and should not be considered as mitigation for any potential impacts of the Project to SFDW. Mitigation generally consists of protecting an appropriately sized area and/or enhancing the remaining habitat to maintain or strengthen the local population.

Response 19: Avoidance and minimization measures are appropriately considered mitigation within the context of a CEQA document, which is stated in CEQA Guidelines Section 15370. However, Mitigation Measure M-BI-1d has been revised to incorporate CDFW recommendations.

Comment 20: Measure M-BI-1d describes flushing out SFDW and destroying nests for those nests that cannot be avoided during construction. CDFW does not recommend this practice. In particular, SFDW individuals need to be physically relocated to a temporary shelter while being displaced, otherwise, they are an easy target for predators and are likely to be killed. CDFW has several examples of how to provide temporary shelter, trapping and relocating SFDW, enhancing the habitat, and other minimization and mitigation measures for this species. CDFW recommends that an effective mitigation and monitoring plan be prepared to compensate for all potential impacts of the project on SFDW. CDFW staff is available to assist in preparing the mitigation and monitoring plan for SFDW.

Response 20: Mitigation for San Francisco dusky-footed woodrat was prepared using recent permit conditions from CDFW for San Francisco projects. However, after discussions and emails with CDFW, Mitigation Measure M-BI-1d has been updated to include CDFW's most recent mitigation guidance.

Comment 21: Oak trees are a valuable resource, provide food and shelter for numerous species, sustain high levels of biodiversity, and are very slow-growing. California Public Resources Code §21083.4, effective January 1, 2005, requires lead agencies to evaluate impacts to oak woodlands as part of the environmental analysis conducted in compliance with CEQA. Oak woodlands are described as followed: a woodland (grouping of trees) on a unit of land or project site where oak trees encompass 10 percent or greater of the canopy cover. The 10 percent canopy cover applies to the individual woodland and not the entire project site (which may contain one or more woodlands). Mitigation for removal of oaks may include planting a sufficient amount of trees and maintaining those plantings and replacing dead or diseased trees.

CDFW recommends oaks be planted at a ratio of a minimum of six trees for every one removed (6:1) to ensure appropriate compensation for loss of habitat these trees provide. CDFW also recommends that a monitoring plan be prepared to monitor the newly planted trees for at least seven years and include measures to reach a 100 percent survival rate. These measures may include replacement planting, weeding, invasive exotic eradication, or any other practice, to achieve the survival requirement. CDFW staff is available to assist in preparation of the vegetation mitigation and monitoring plan.

Response 21: As discussed on page 266 of the FMND, the Oak Woodland Conservation Act (Public Resources Code Section 21083.4 [Senate Bill 1334]) grants local jurisdictions the authority to enforce oak woodland conservation requirements by imposing mitigation measures to reduce, or compensate for, the loss of oak woodlands. One element of this law is that counties must impose one of more of the following mitigation measures:

- Conserve oak woodlands through the use of conservation easements
- Plant an appropriate number of trees, including maintaining plantings and replacing dead trees
- Maintain planted oak trees for 7 years
- The planting of oak trees shall not fulfill more than one-half of the mitigation requirements for the project
- Contribute funds to the Oak Woodlands Conservation fund

- Other mitigation measures developed by the county

Although San Mateo County has not adopted ordinances to implement this law, the proposed project complies with this requirement. Mitigation Measure M-BI-5 requires that tree replacement, maintenance, and monitoring requirements be included in the Vegetation Restoration Plan. See the response to Comment 19 for changes made to Mitigation Measure M-BI-1f: Habitat Protection Measures, which include additional language specifying invasive weed control. Mitigation Measure M-BI-1f requires a tree replacement ratio of 3:1 for all native oak trees. This exceeds the San Mateo County Tree Ordinance, which requires 3:1 replacement only for Significant or Heritage Trees. In addition, Mitigation Measure M-BI-5 has been revised to include monitoring for 7 years for oak tree mitigation.

Comment 22: CDFW considers the MND, to generally provide for the adequate analysis of a majority of the impact of this Project to SFPUC lands, but CDFW does not believe the MND provides a thorough analysis of the cumulative impacts of the Project that have occurred and will occur along the entire length of transmission line L 109 and potential permanent impacts with long term maintenance of the entire pipeline. CDFW recommends the MND be recirculated with sufficient data and other information to adequately inform and describe the environmental baseline; identify short-term, long-term, and cumulative impacts; and thoroughly disclose and discuss the appropriate avoidance, minimization, and mitigation measures to offset impacts to biological resources.

Response 22: CDFW has been given the responses to their October 30, 2016 comment letter and the San Francisco Planning Department has provided the revisions to mitigation measures to CDFW for review and comments for subsequent revisions. CDFW indicated to the Planning Department that the revisions to the mitigation measures are acceptable. Because all comments were addressed in this Final MND and no new impacts, mitigation measures, or changes to the level of significance was determined for the proposed project, recirculation is not required. No substantial revision of the PMND has been required, mitigation measures have been revised to be more effective, and new information has been added merely to clarify information in the PMND. Additionally, as required by Mitigation Measure M-BI-1f: Habitat Protection Measures, PG&E shall develop a Vegetation Restoration Plan in coordination with the SFPUC and the appropriate resource agencies, and PG&E shall submit the Vegetation Restoration Plan to CDFW for review and approval. CDFW noted that details of restoration can be discussed when the plan is submitted to CDFW approval.

H. DETERMINATION

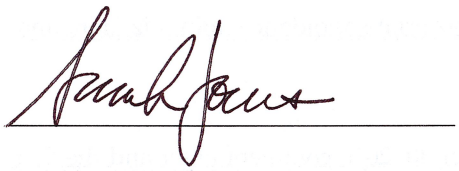
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.



Sarah B. Jones
Environmental Review Officer
for
John Rahaim
Director of Planning

Date May 2 2016

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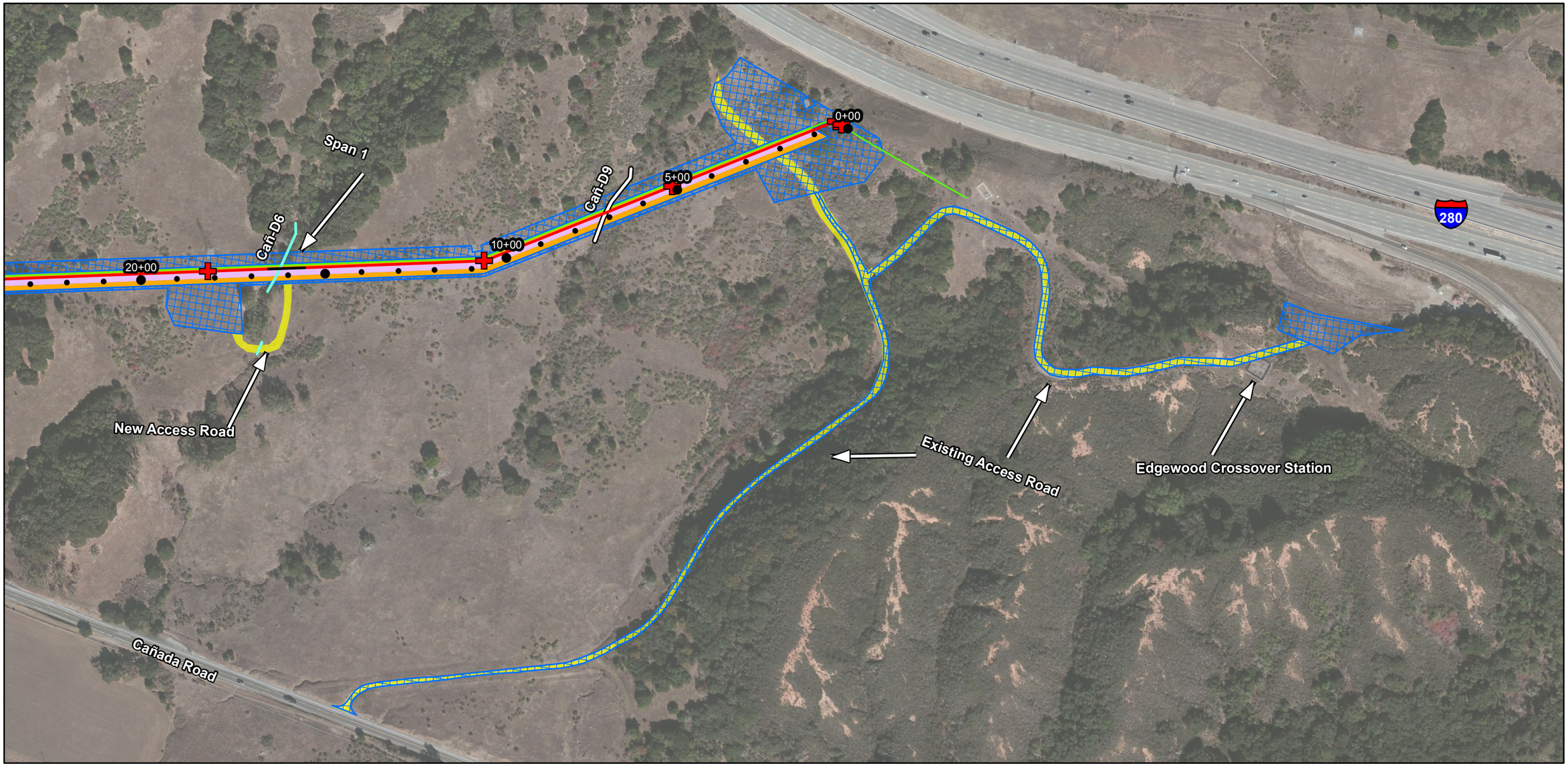
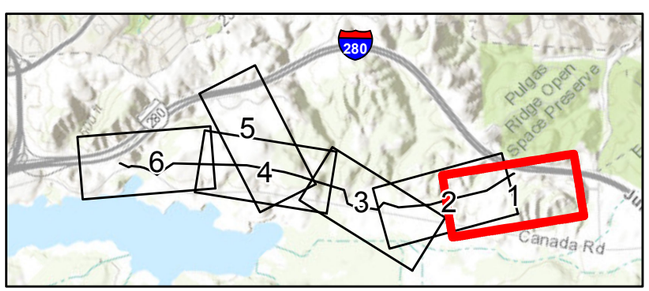
Project Site Owner

San Francisco Public Utilities Commission

Appendix A
Project Overview Maps





Legend

- Stationing
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- HDD Equipment Location
- HDD Work Area
- Existing Permanent Easement
- Proposed Permanent Easement
- Access Roads

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- Drainage to be crossed by HDD
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- Non-jurisdictional Cement-lined V-ditch

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Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 1
Project Overview Map
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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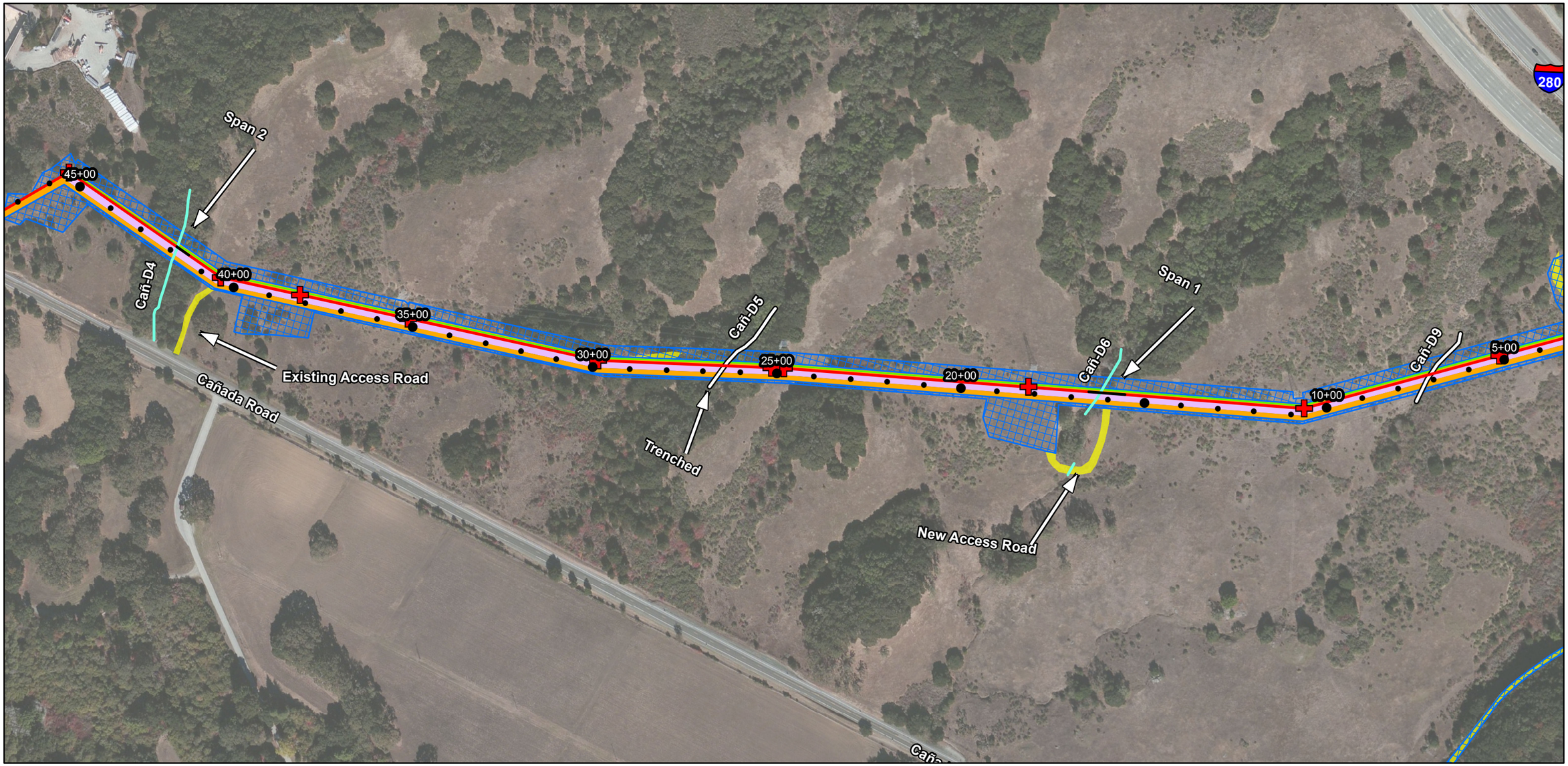

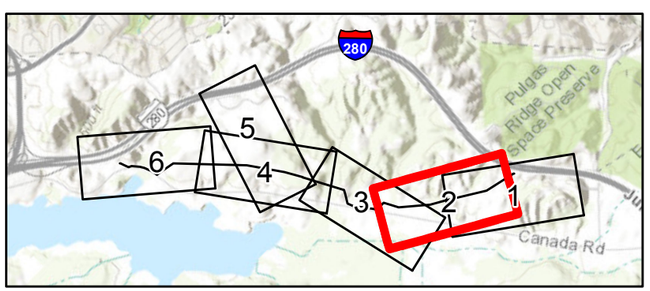

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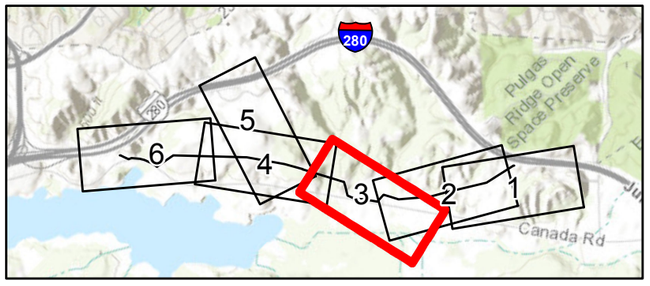

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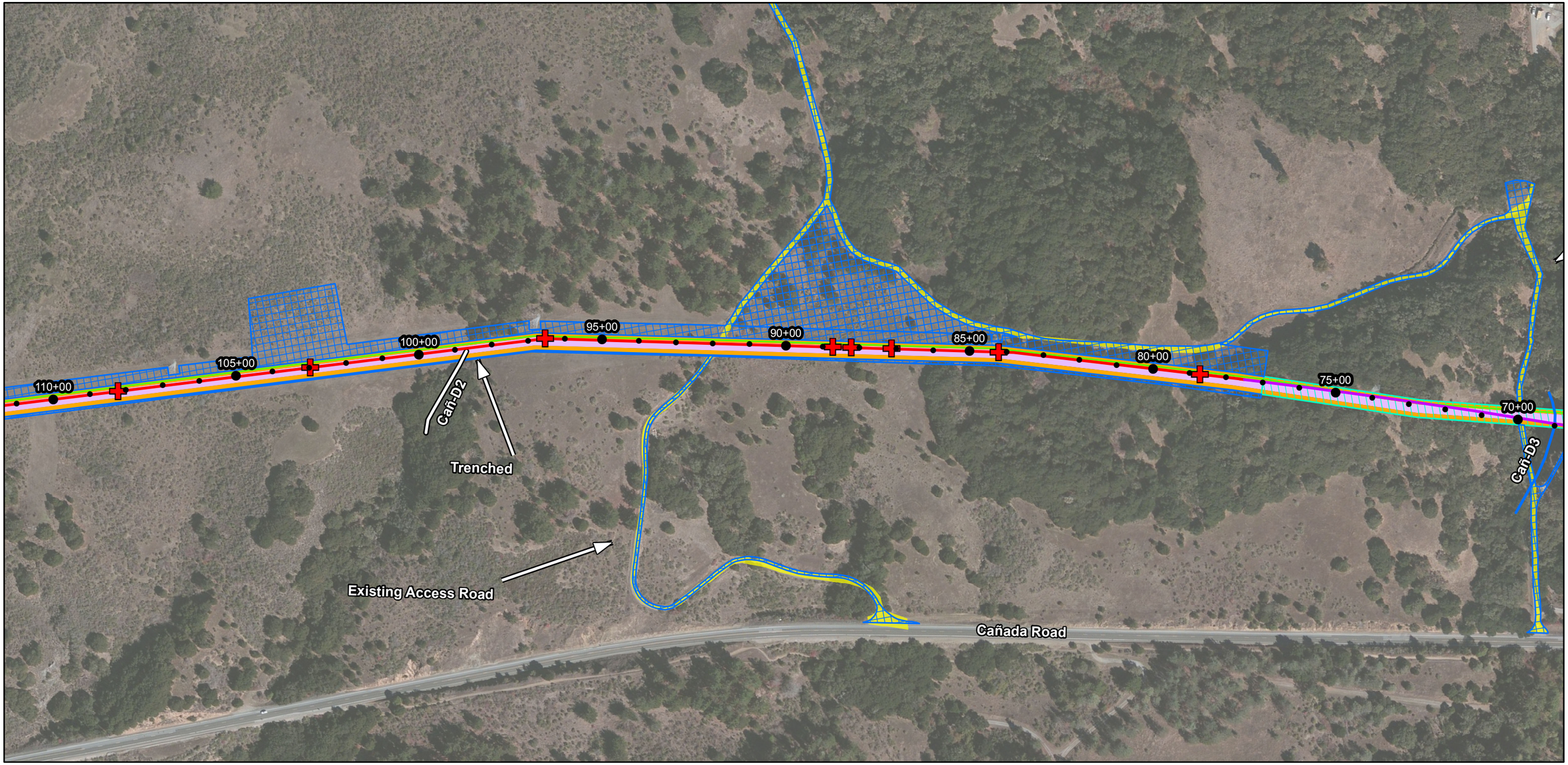

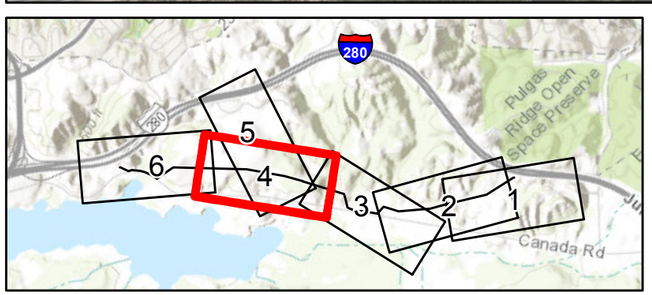

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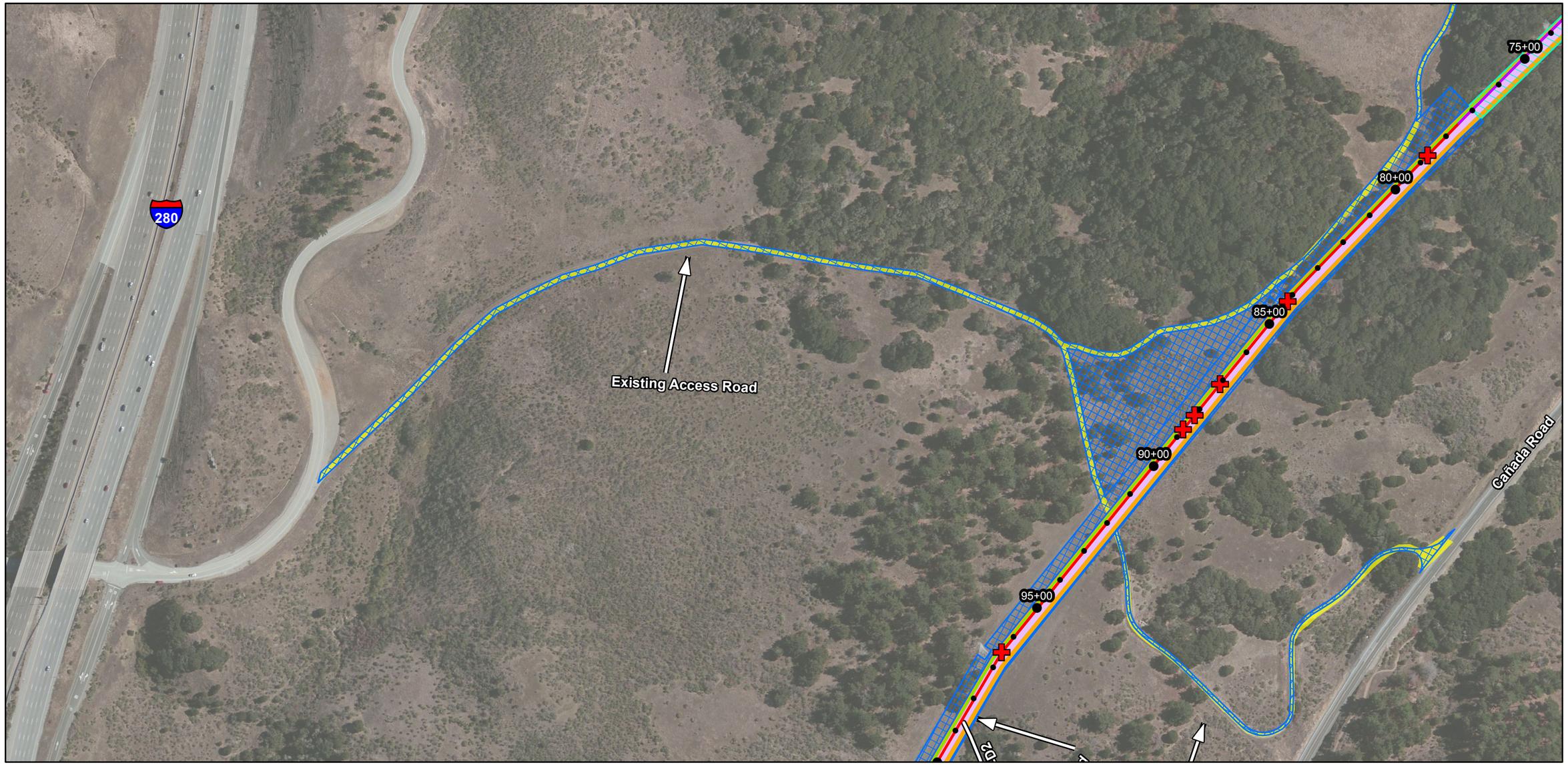

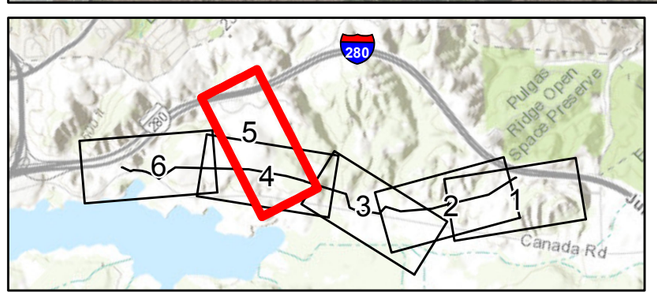

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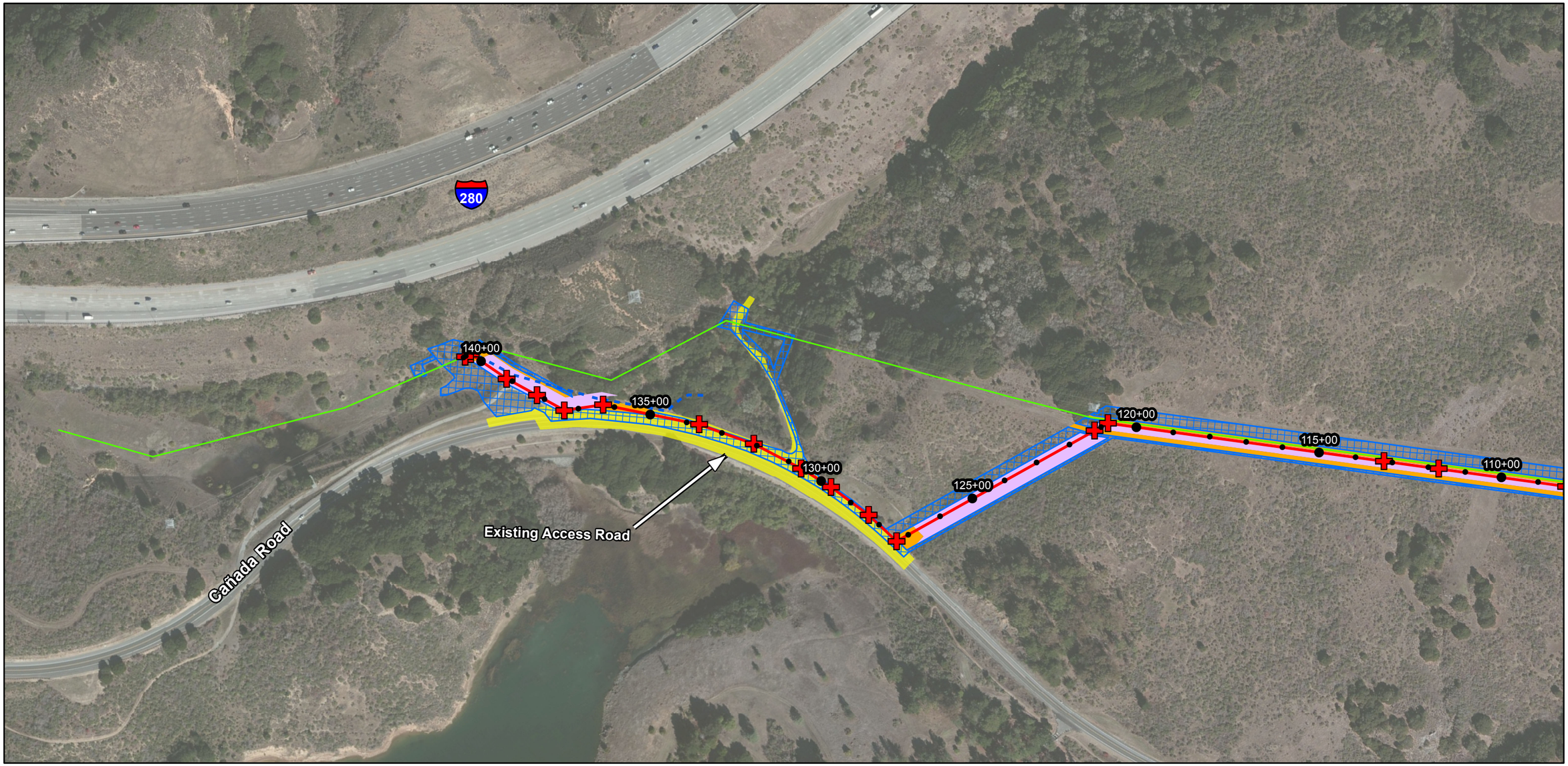
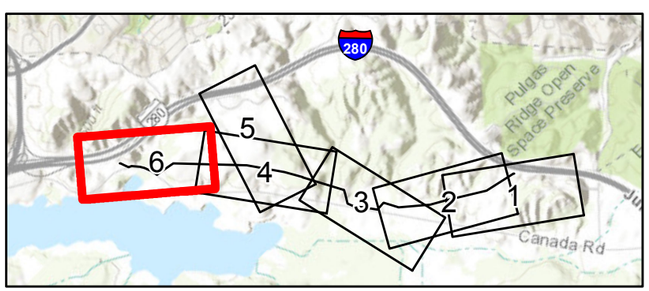




Legend

- Stationing
- Electrolysis Test Station
- Aerially Spanned Pipeline Replacement
- HDD Pipeline Replacement
- Line 109 Pipeline Replacement
- Existing Pipeline
- Temporary Work Area
- HDD Equipment Location
- HDD Work Area
- Existing Permanent Easement
- Proposed Permanent Easement
- Access Roads

Waters

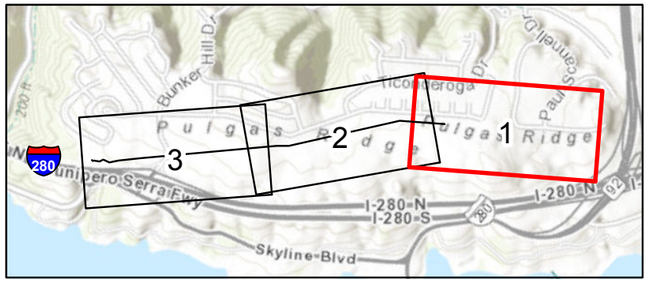
- Ephemeral Stream
- Drainage to be crossed by Trenching
- Drainage to be crossed by HDD
- Aerially Spanned Crossing
- Non-jurisdictional Cement-lined V-ditch

0 275 550
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 1
Project Overview Map
Cañada Road Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, TRC 2014, PG&E 2014



Legend

- Stationing
- Access Points
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- HDD Pipeline Replacement
- Existing Pipeline
- Temporary Work Area
- HDD Equipment Location
- HDD Work Area
- Existing Permanent Easement
- Proposed Permanent Easement
- Access Roads
- Ephemeral Swale to be Crossed by HDD

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2
Project Overview Map
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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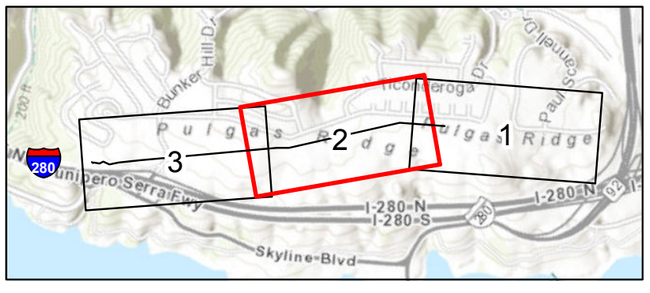

Legend

- Stationing
- Access Points
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- HDD Pipeline Replacement
- Existing Pipeline
- Temporary Work Area
- HDD Equipment Location
- HDD Work Area
- Existing Permanent Easement
- Proposed Permanent Easement
- Access Roads
- Ephemeral Swale to be Crossed by HDD

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2
Project Overview Map
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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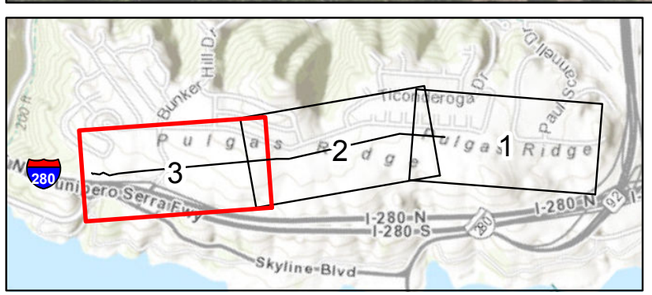

Legend

- Stationing
- Access Points
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- HDD Pipeline Replacement
- Existing Pipeline
- Temporary Work Area
- HDD Equipment Location
- HDD Work Area
- Existing Permanent Easement
- Proposed Permanent Easement
- Access Roads
- Ephemeral Swale to be Crossed by HDD

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2
Project Overview Map
Bunker Hill Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Windemere Road

Lakeview Drive

CS-D3

Staging Area

15+00

10+00

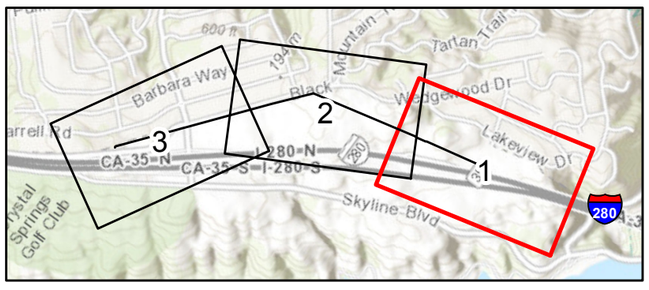
5+00

0+00

280

Staging Area

Caltrans Crystal Springs
Safety Roadside Rest Area



Legend

- Stationing
- Access Points
- Sniff Hole
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- Existing Pipeline
- Existing Permanent Easement
- Proposed Permanent Easement
- Temporary Work Area
- Access Roads

Waters

- Ephemeral Swale
- Non-Jurisdictional Cement-lined V-ditch
- Mesic Meadow
- Non-Jurisdictional Swale

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 3
Project Overview Map
Crystal Springs Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Tartan Trail Rd

Barbara Way

Denise Drive

Heather Pl

Wedgewood Dr

Darrell Rd

30+00

35+00

Black Mountain Road

25+00

40+00

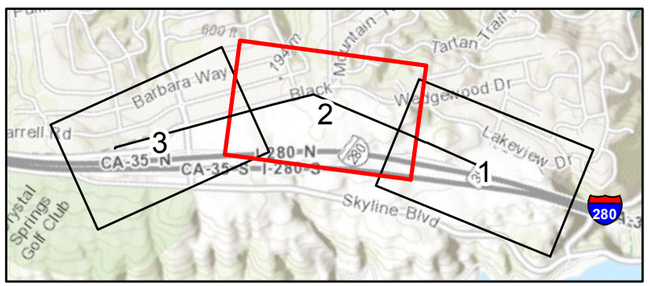
20+00

CS-D2

45+00

15+00

280



Legend

- Stationing
- Access Points
- Sniff Hole
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- Existing Pipeline
- Existing Permanent Easement
- Proposed Permanent Easement
- Temporary Work Area
- Access Roads

Waters

- Ephemeral Swale
- Non-Jurisdictional Cement-lined V-ditch
- Mesic Meadow
- Non-Jurisdictional Swale

0 200 400

Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 3

Project Overview Map
Crystal Springs Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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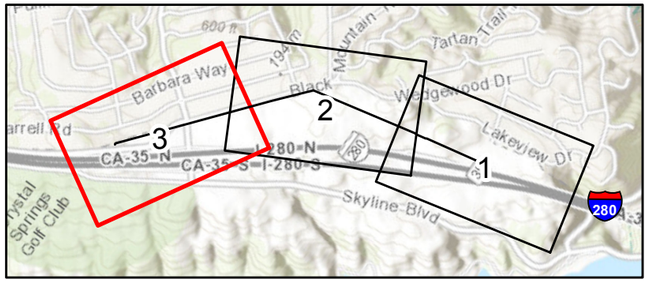

Legend

- Stationing
- Access Points
- Sniff Hole
- Electrolysis Test Station
- Line 109 Pipeline Replacement
- Existing Pipeline
- Existing Permanent Easement
- Proposed Permanent Easement
- Temporary Work Area
- Access Roads

Waters

- Ephemeral Swale
- Non-Jurisdictional Cement-lined V-ditch
- Mesic Meadow
- Non-Jurisdictional Swale

0 200 400
Feet

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 3
Project Overview Map
Crystal Springs Segment

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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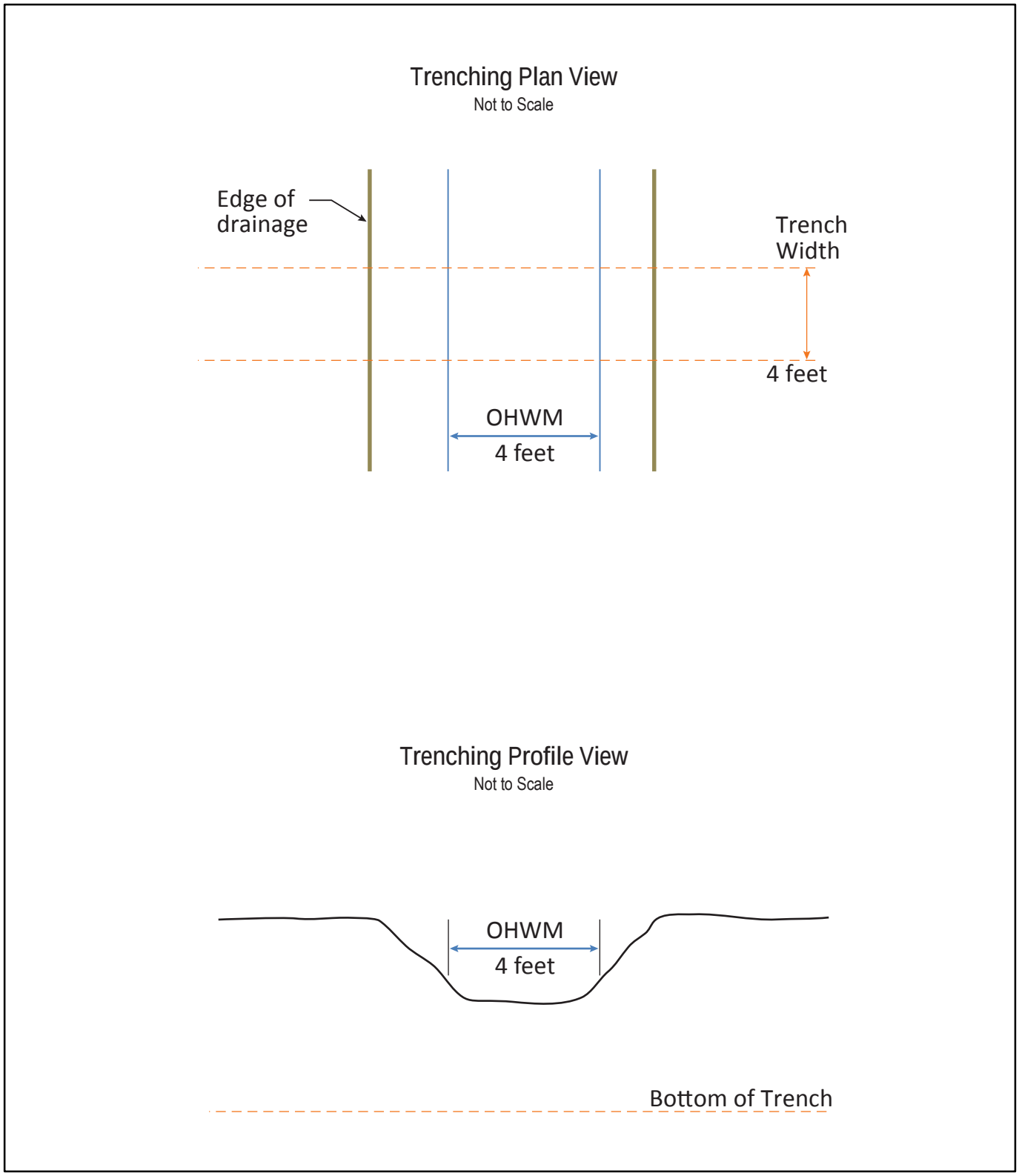
Appendix B
Drainage and Aerial Crossing Views

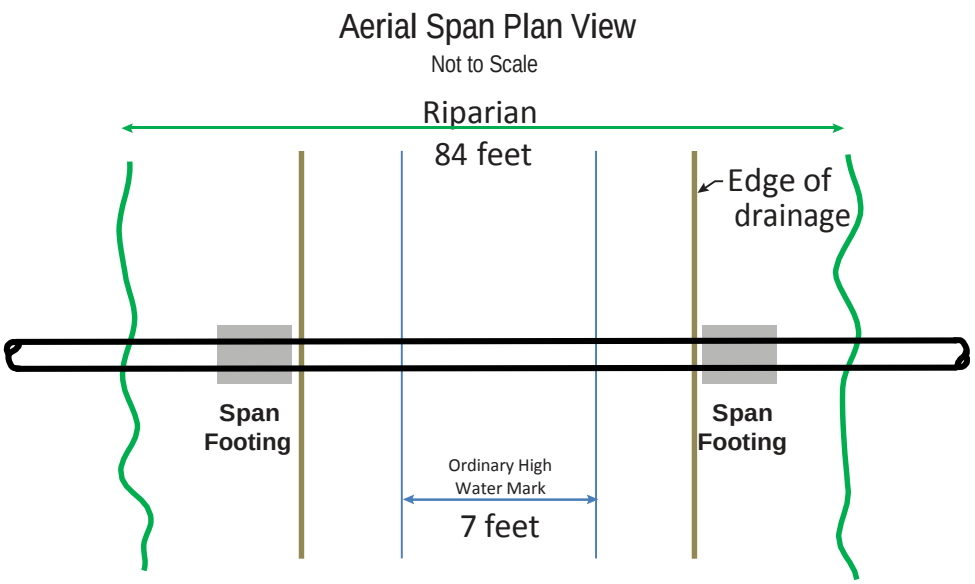


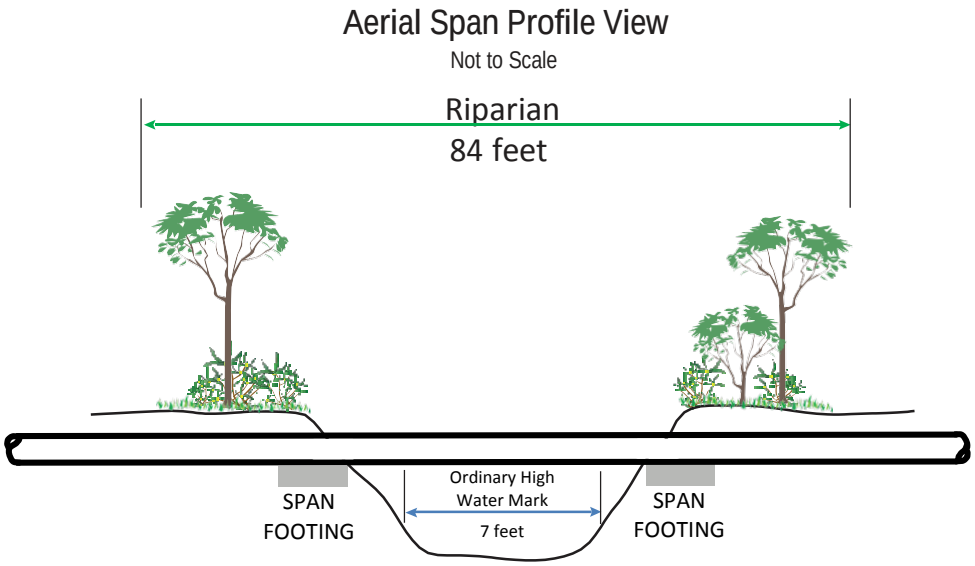
Source: PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 1

D-2 Drainage Crossing
Cañada Road Segment

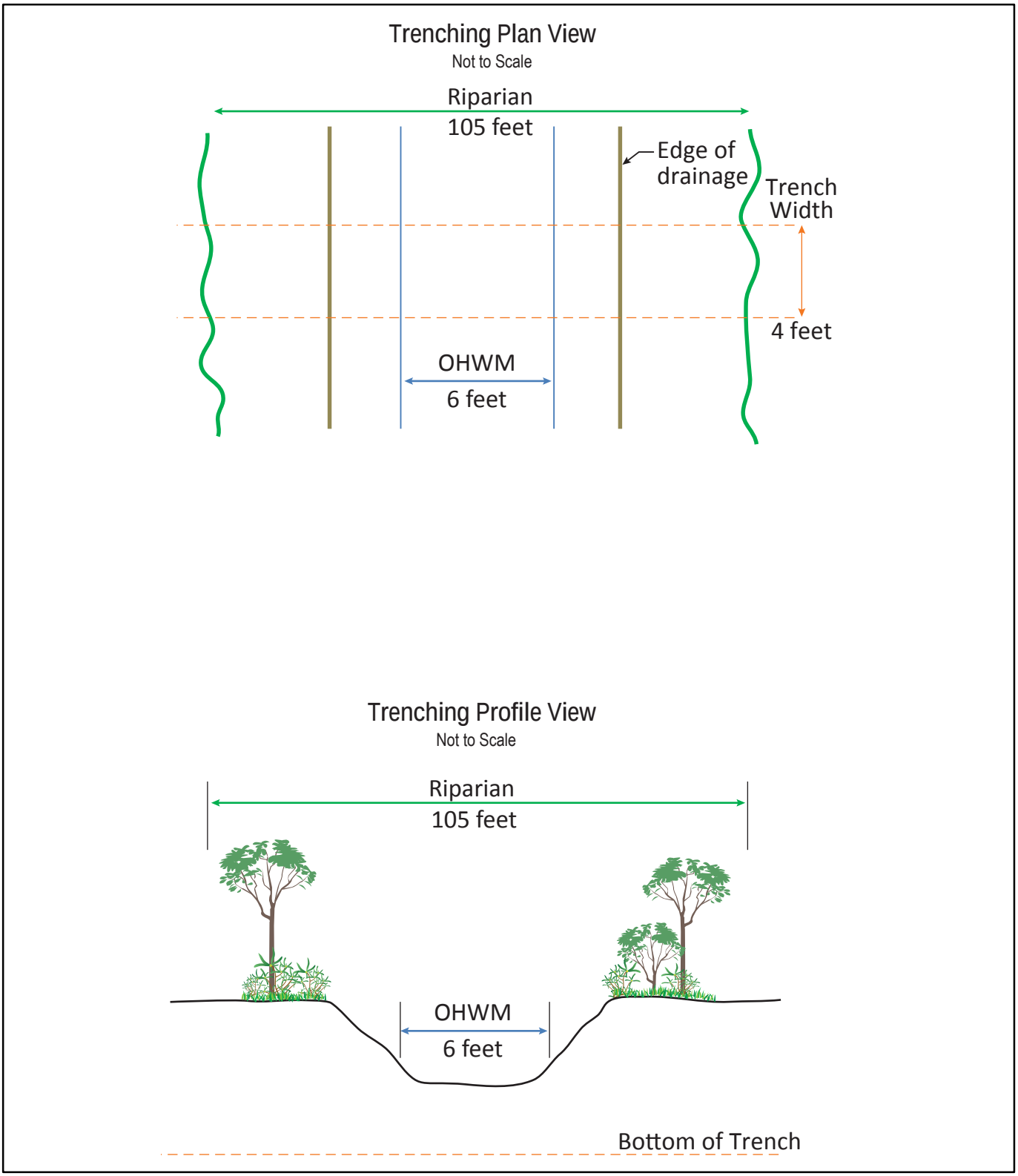




Source: PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 2
D-4 Drainage Crossing
Cañada Road Segment

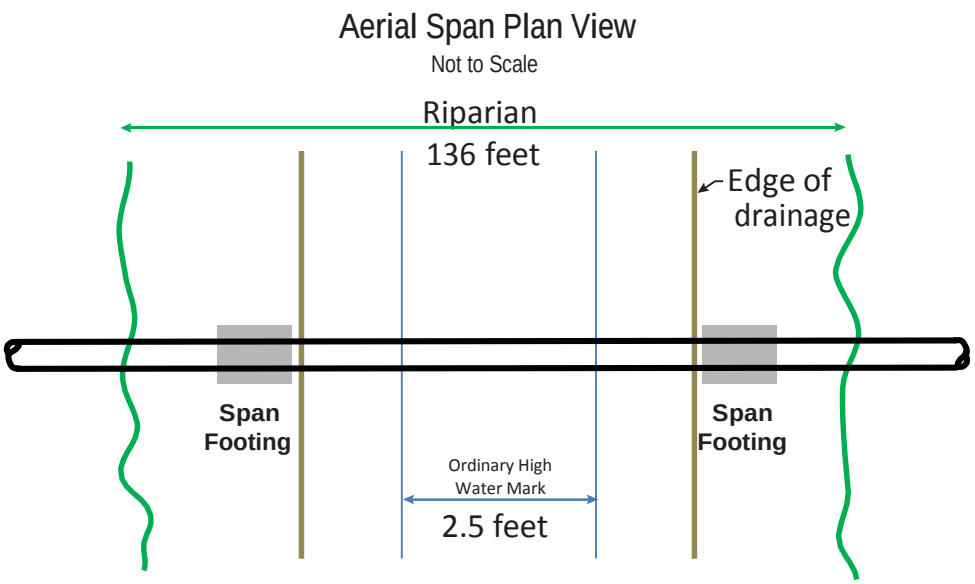


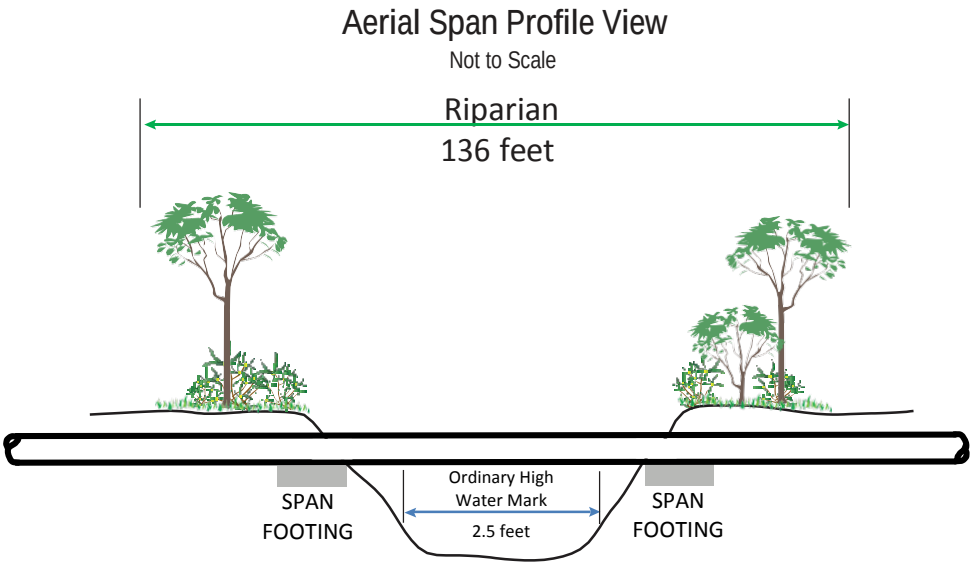
Source: PG&E 2014

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 3

D-5 Drainage Crossing
Cañada Road Segment

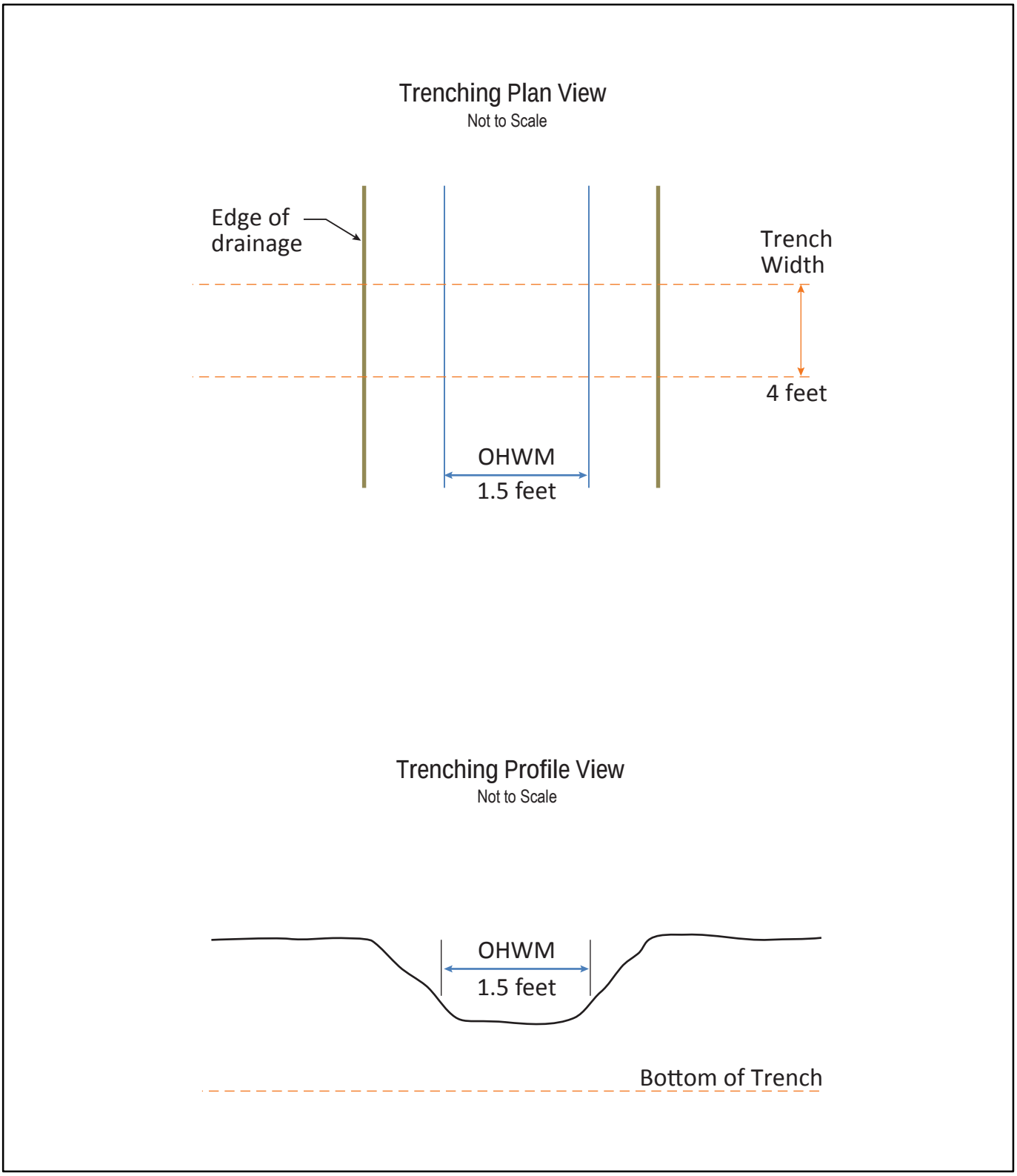




Source: PG&E 2014

Line 109 Cañada Road, Bunker Hill, and
Crystal Springs Pipeline Replacement Project

Figure 4
D-6 Drainage Crossing
Cañada Road Segment



Source: PG&E 2014

Line 109 Cañada Road, Bunker Hill, and Crystal Springs Pipeline Replacement Project

Figure 5

D-9 Drainage Crossing
Cañada Road Segment